BRITISH APPROVALS SERVICE FOR CABLES

PRODUCT CERTIFICATION REQUIREMENTS

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End of Document

1 GENERAL

This document (***BASEC Product Certification Requirements***) sets out BASEC's requirements for clients seeking to achieve and maintain BASEC product certification for cable and related products. It also sets out requirements in connection with other BASEC schemes of certification such as Quality and Environmental Management.

This section (Section 1, General) sets out an introduction to the document and also provides in a collated form BASEC's rules, regulations, terms and conditions that apply to BASEC's certification and approval services.

1.1 INTRODUCTION

This document (***BASEC Product Certification Requirements, or "PCR"***) supersedes BASEC's former Product Marking Handbook and associated guides, and also replaces BA2250 Parts 1 & 2.

The contents and some requirements of the aforementioned Handbook / Standard have not been modified significantly in the creation of this new document. Other changes to eligibility rules and risk-based certification and surveillance have been introduced. The fundamental changes are the structure of the overall document and that it will in future be controlled and made available electronically rather than by the use of paper copy updates. This will enable easier updating and amendment.

A requirement of the PCR is that any manufacturer seeking BASEC product certification and holding a product marking licence must be certified by BASEC to PCR Section 2.6 for all relevant aspects of production and administration. The requirements of PCR Section 2.6 include all the requirements of ISO 9001. Certification by BASEC to ISO 9001 may be held in parallel but is not required for product certification.

Manufacturers must hold certification to ISO 9001 for their production facilities and administration at each location involved in the production and supply of cable. Manufacturers may be certified to ISO 9001 by BASEC, or alternatively by another certification body [See Note 1]. In the latter case, BASEC may take this certification into consideration where appropriate. However, the manufacturer must in addition, by means of an audit by BASEC, demonstrate compliance to Section 2.6 of the PCR.

Note 1: This must be an Accredited Certification Body with its accredited scope covering cable manufacturing and which has been accredited by a member signatory of the IAF Multi-Lateral Agreement.

1.1.1 Publication of this Document

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1.1.2 Updates to this Document

This document will be made available to BASEC clients and prospective clients, and to other appropriate parties on request. BASEC will notify clients of amendments to the PCR via an email notification system. BASEC clients are expected to notify BASEC of any changes to recipients or email addresses. There is no maximum number of email addresses that a client may register to receive updates / amendments to the PCR.

There is no requirement for a BASEC client to hold a hard copy of the PCR, and BASEC encourages clients to use the PCR electronically, so reducing the possibility of using a superseded document and furthermore creating a more environmentally friendly document.

It should be noted that BASEC anticipates that amendments will be required to the PCR from time to time, as cable standards develop and other changes are needed. Changes to the PCR are developed and approved in conjunction with BASEC's Certification Committee. However, with the new structure of the PCR any future amendments should be made swiftly and communicated to BASEC clients promptly. The current issue of the PCR will always be available in the "clients area" on the BASEC website at www.basec.org.uk.

1.2 RELATIONSHIP WITH REGULATORY REQUIREMENTS

Regulatory requirements which are the responsibility of the cable Supplier are not addressed directly as part of the Schemes, Rules and Regulations set out in this document. However, the requirements of some regulatory measures may be wholly or partially fulfilled by Supplier conformity to the requirements herein, for example the requirements of the Low Voltage Directive (applicable within Europe). Other local regulatory requirements may require separate activity by the Supplier. It remains the responsibility of the Supplier to assess and comply with regulatory requirements.

The forthcoming requirements of the Construction Products Regulation for certain cables, applicable within Europe, are not directly addressed by this document. BASEC provides parallel services in this area – contact BASEC for further details. Some conformity assessment activities, for example factory audit and selected testing, may be undertaken by BASEC in parallel, for the purposes of both the Construction Products Regulation and the requirements of the Schemes set out in this document, where permissible and appropriate. BASEC will discuss this with relevant Suppliers.

1.3 BASEC REGULATIONS, RULES, TERMS AND CONDITIONS

The following diagram sets out the applicability of BASEC's rules and regulations to applicants and clients, depending on the services provided.

Applicability of BASEC Rules

1.4 MANAGEMENT SYSTEM CERTIFICATION SCHEME REGULATIONS

These Regulations set out BASEC's approach to the certification of the management systems of organisations. Separate Regulations set out BASEC's requirements for product certification. In order to be eligible for Product Certification and the award of a Product Marking Licence (which permits the use of the BASEC Registered Certification Trade Marks on products) it is required that the organisation achieves and maintains certification by BASEC to PCR Section 2.6, as set out in these Regulations.

1.4.1 Scope

Unless otherwise stated these Regulations apply equally to each of the following Schemes:

a) Quality Management Systems to BS EN ISO 9001

b) Environmental Management Systems to BS EN ISO 14001

c) Health & Safety Management Systems to BS OHSAS 18001

d) PCR Section 2.6 (necessary for a Product Marking Licence)

e) Other Schemes for the certification of an organisation's management systems as offered by BASEC from time to time.

1.4.2 Definitions

"British Approvals Service for Cables" (or BASEC) means company number 1150237 incorporated in England and Wales, and having its headquarters at Presley House, Presley Way, Crownhill, Milton Keynes, MK8 0ES, United Kingdom.

"Applicant" means an organisation which has applied for but has not yet been granted a Certificate.

"Board" means the Board of Management of British Approvals Service for Cables appointed in accordance with the Articles of Association thereof.

"Certification Committee" is a Committee appointed by the Board of Management for the purposes of monitoring the impartiality of the services offered by BASEC.

"Certificate" means a document issued by BASEC recording the certification of the Certified Client and authorising the use of the logo appropriate to the particular Scheme, in accordance with these Regulations and in recognition of the Certified Client's satisfaction of the requirements of the relevant Scheme.

"Certified Client" means an organisation whose management system has been certified by BASEC.

"Chief Executive" means the member of the permanent staff of BASEC appointed by the Board of Management to be in charge of the operations of BASEC or such other person to whom the powers of the Chief Executive may from time to time be delegated.

"UKAS" means the United Kingdom Accreditation Service.

"BASEC Rules for the Use of Marks" means the document published by BASEC which sets out conditions for the use of logos, trademarks and related material by Certified Clients.

"Appeals Panel" means a panel selected by the Chairman of the Board for the purpose of hearing appeals.

1.4.3 Eligibility for Certification

1.4.3.1 Certification by BASEC to the management systems Schemes set out above is available only to organisations operating within any of the following areas of scope:

- the manufacture of rod, wire, cable and cable accessories;
- the ~~supply~~ sale of rod, wire, cable and cable accessories;
- the manufacture and ~~supply~~ sale of components, materials or equipment associated with the manufacture and ~~supply~~ sale of rod, wire, cable and cable accessories; and,
- the provision of services associated with the design, manufacture, ~~supply~~ sale, installation, testing or recycling of rod, wire, cable and cable accessories.

1.4.3.2 BASEC will conduct an assessment of each application for the purposes of determining eligibility (as defined above). If BASEC determines that the activities of the Applicant are not within the scope defined above then BASEC may decline to process the application further.

1.4.3.3 An application may also be declined if the Applicant has had a previous certificate cancelled by BASEC under circumstances which would prejudice the reputation of BASEC.

1.4.3.4 Following assessment of eligibility, BASEC will issue to the Applicant a formal quotation for the processes of establishing and maintaining certification. The costs of preliminary assessment activities may be incorporated into the quotation or quoted separately. The terms of any quotation may be altered subsequently as more information is obtained about the Applicant.

1.4.3.5 Following acceptance of the quotation by the applicant, BASEC will begin initial assessment activities, which will be in a number of stages. As part of this process BASEC will conduct a risk-based assessment of each application against a number of criteria for the purposes of determining the acceptability of the application and the level of assessment activity required, including the ownership and organisational structure of the organisation, its establishment and facilities, professed capabilities, trading history, financial standing, and reputation. A fee may be charged for conducting this assessment. The outcome of this assessment will be communicated to the Applicant.

1.4.3.6 If BASEC determines that the application exhibits features such that the risk to the reputation of BASEC is substantial and that the application should not be accepted, then BASEC may require additional assessment activities, may decline to process the application further, or impose special conditions on the Applicant.

1.4.3.7 Applicants whose applications are declined by BASEC under the any of the above circumstances may make an appeal to the BASEC Appeals Panel.

1.4.4 Certification Process

1.4.4.1 The BASEC Board is the sole authority by which certification may be granted, but this authority is delegated to the Chief Executive and BASEC staff for day to day operations.

1.4.4.2 Applicants for certification against any of the BASEC Schemes shall submit to BASEC:

a) a completed Application Form signed in the defined place to signify that the Applicant will abide by these Regulations and with the rules, regulations and requirements of the particular Scheme (copies are available on request from BASEC);

b) a copy of the requisite documentation in English as set out on the Application Form or in written requirements from BASEC.

1.4.4.3 For certification in relation to ISO 9001, ISO 14001, OHSAS 18001 and under PCR Section 2.6, applications must normally cover all operations / facilities on each site for which certification is sought.

1.4.4.4 BASEC will conduct a risk-based assessment of each application against a number of criteria for the purposes of determining the level of effort to be applied to the Applicant for initial assessment and also for surveillance activity to be applied once certification is issued. The criteria will include the criteria previously applied in assessing acceptability, regulations and guidance issued by accreditation authorities including IAF and UKAS, and taking account of any pre-existing certifications, operating language, the ease of conducting audits and other criteria. The outcome of this assessment will be communicated to the Applicant. The terms of BASEC's quotation may be amended at this point as a result of this assessment.

1.4.4.5 For PCR Section 2.6 certification and any UKAS accredited management system certification Schemes BASEC will conduct initial assessments in two stages separated by a defined period.

1.4.4.6 On successful completion of all initial assessment activities and the clearance of non-conformities by the Applicant, certification will be granted and Certificate(s) issued.

1.4.4.7 The initial audit for Product or Management Systems Certification is carried out in two parts (stage 1 and 2), usually back to back. If during the stage 1 audit the auditor identifies potential Major non-conformities, then the stage 2 audit may be postponed and any resulting costs may be invoiced or quoted separately). However we must point out that if during stage 1 audit concerns of potential Major NCs are raised, then stage 2 may not result in a successful outcome. In the event potential Major NCs are raised at Stage 1, the auditor will evaluate the related risks and will discuss with your representatives the positive and negative aspects. We would, in general recommend that we still continue with the stage two audit to ensure that there are no other major breakdowns. However this may result in repeating the Stage 2 or even the Stage 1 audit.
For your reference the Stage 1 audit is to ensure that your documented management system complies with the basic requirements of the appropriate standard(s), to ensure that they are implemented, to ensure that you have the required production capability for the scope requested and to ensure that your organisation is meeting any applicable

statutory requirements.
The Stage 2 audit may be repeated if corrective actions to non-conformities are not resolved within 6 months from the issue of the audit report.

1.4.4.8 Certificates are valid for three years from the date of issue until formal recertification, withdrawal or amendment of certification by BASEC, and subject to the payment of the applicable fees. Certificates shall remain the property of BASEC.

A Stage 1 audit may be also required during **re – certification** of Management Systems, in situations where there have been significant changes to the management system, the organisation, or the context in which the management system is operating (e.g. changes to legislation) and any resulting costs may be invoiced or quoted separately.

1.4.4.9 BASEC shall keep at its offices a record in which shall be entered the name, address, trade and description of every Certified Client, the date of issue, re-issue, suspension or cancellation of all Certificates, the unique certification number allocated to the Certified Client, the scope of certification and any other particulars which BASEC may from time to time deem necessary. Summary information from this record will be made publically available on the BASEC website.

1.4.4.10 A Certified Client's right to any Certificate is not transferable without the permission in writing of BASEC.

1.4.4.11 If a Certificate is lost or inadvertently destroyed the Certified Client shall be entitled to a duplicate thereof on furnishing BASEC with a Statutory Declaration satisfactory to BASEC evidencing the circumstances of such loss or destruction and on payment of such a fee as is set from time to time.

1.4.4.12 Copy Certificates may be given if the Certified Client makes a written application detailing the proposed use of these copy Certificates. A charge will be made for these services.

1.4.5 Scheme Logos

1.4.5.1 Each Scheme has a unique logo which is depicted on the appropriate Certificate. The Scheme logos are Registered Trade Marks of BASEC, they remain the property of BASEC, and may only be used by Certified Clients in accordance with Rules published from time to time by BASEC.

1.4.5.2 Applicants may not under any circumstances make reference to BASEC, use any Scheme logo or Registered Trade Mark, use the BASEC name in any way, or refer to their application in any communication or promotional material without the written permission of BASEC.

1.4.5.3 A Certified Client is entitled to use the logo appropriate to each Scheme for which they hold a valid Certificate, subject to the conditions specified in these Regulations as follows:

Quality Management Systems to BS EN ISO 9001

Environmental Management Systems to BS EN ISO 14001

Health & Safety Management Systems to BS OHSAS 18001

PCR Section 2.6

1.4.5.4 Certified Clients are not permitted to use any Management System Scheme logo in connection with any product for which separate Product Certification may be obtained from BASEC. A logo may not under any circumstances be used directly on or closely associated with products in such a way as to imply that the products themselves are certified by BASEC unless the Certified Client is the holder of a separate BASEC Product Certification Licence authorising the use of the BASEC Registered Certification Trade Marks in relation to such products. In particular, the Certified Client may not use any logo in association with any product, or in connection with any laboratory test, calibration or inspection report, where any Certificate(s) held relate(s) only to

management systems and a Product Certification Licence is not held for that product. A suggested use of the Management System scheme logo is: <Clients name> is applying a <……(1).... Management System> certified by BASEC to <management system standard> - (1) e.g. Quality.

1.4.5.5 The relevant logo may be used by the Certified Client only in accordance with the BASEC Rules for the Use of Marks and must always be used in conjunction with the Certified Client's name and address as stated on the Certificate, and have the Certificate number adjacent to it. For UKAS accredited schemes the latest issue of rules set by UKAS and by the UK Government for the use of the UKAS accreditation symbols apply.

1.4.5.6 The relevant logo may only be used in correspondence, advertising and promotional literature and must not be used except in connection with those sites listed on the Certificate or schedule thereto.

1.4.5.7 The Certified Client shall discontinue any use of the logo which is unacceptable to BASEC and any form of statement relating to the certification which, in the opinion of BASEC, might be misleading. In cases of blatant misuse the Certificate may be summarily withdrawn at the discretion of BASEC.

1.4.5.8 The Certified Client shall, upon the suspension or withdrawal of any Certificate, forthwith cease any claim of BASEC certification, and discontinue the use of the BASEC logos, certificate(s) and all advertising or promotional material which uses or makes any reference to them. In addition, any other documents in the possession of the Certified Client which bear any reference to the certification of the Certified Client by BASEC shall, if BASEC requires, be so treated as to erase the reference.

1.4.6 Obligations of Applicants and Certified Clients

1.4.6.1 The Applicant or Certified Client shall at all times comply with these Regulations, with the requirements of the certification schemes for which they are being assessed and related documents issued by BASEC from time to time and shall pay all charges relevant to the Scheme(s).

1.4.6.2 If a Certified Client wishes to withdraw from certification or does not intend to renew its certification after the expiry of any Certificate it must notify BASEC in writing giving 90 clear days notice.

1.4.6.3 The Applicant or Certified Client shall promptly notify BASEC of any changes in name, address, documentation, organisational ownership or structure, or other circumstances which may affect the validity of the Certificate.

1.4.6.4 The Applicant or Certified Client shall give representatives of BASEC and UKAS access at any time during normal working hours to the premises or sites on which work relevant to the Certificate is performed for the purpose of surveillance or establishing that the procedures on suspension or cancellation of a Certificate described above have been carried out.

1.4.6.5 The Applicant or Certified Client shall nominate for the approval of BASEC a management representative and one or more deputies authorised to act in the main nominee's absence (and replacement nominees as may be necessary) who shall be

responsible for all matters in connection with the requirements of the relevant Scheme(s).

1.4.6.6 If the relevant premises or sites are in a country for which a visa is required for BASEC personnel, the Applicant or Certified Client shall facilitate and expedite the obtaining of a visa for the period which BASEC has allocated for assessment and / or routine surveillance.

1.4.6.7 The Applicant or Certified Client shall keep for inspection by BASEC a record of all complaints and remedial actions relative to the scope of the relevant Certificate.

1.4.6.8 The Applicant or Certified Client shall notify BASEC of any breach, potential, alleged or otherwise, of statutory or legislative regulations, as soon as recognised or notified, as appropriate.

1.4.6.9 Any certification documents provided by the Applicant or Certified Client (certificate holder) shall be supplied in their entirety.

1.4.7 Obligations of BASEC

1.4.7.1 For ISO 9001, ISO 14001, OHSAS 18001 and PCR Section 2.6 schemes BASEC shall, at its own discretion, send a representative to the Applicant / Certified Client not less than twice in any year, for the purpose of verifying that the obligations of the Applicant / Certified Client in respect of these Schemes are being met.

1.4.7.2 BASEC shall notify the Applicant or Certified Client of any changes in the applicable documents relating to the appropriate Scheme(s) and give it such time as, in the opinion of BASEC, is reasonable in which to adjust its procedures to meet the revised requirements.

1.4.7.3 BASEC shall on a regular basis review and revise as necessary the risk-based assessments conducted during the application process for each Applicant and Certified Client. The outcome of this review will be communicated to the Applicant / Certified Client. The terms of BASEC's contract with the Applicant / Certified Client may be amended from time to time as a result of this review.

1.4.7.4 BASEC shall not disclose any confidential information relating to the Applicant / Certified Client unless required to do so by law.

1.4.7.5 BASEC shall notify the Applicant / Certified Client as necessary of any complaints relating to its certification.

1.4.8 Fees Payable to BASEC

1.4.8.1 All fees and charges are due payable thirty days from date of invoice unless otherwise stated and are payable in advance at the discretion of BASEC.

a) An application fee.

b) A fixed annual fee for each Certificate issued.

c) Fees for ~~pre-~~Certification assessment, surveillance, recertification, re-issue or endorsement of the Certificate and for administration such as shall from time to time be determined by BASEC to be fair and appropriate.

d) As appropriate, the fees may be charged to cover travel, subsistence and administration.

e) A final assessment fee upon termination of the certification if such assessment is required by BASEC.

f) Any additional costs incurred by BASEC due to the Applicant or Certified Client's non-compliance with these Regulations, or the particular rules, regulations and requirements of a particular Scheme, e.g. special visits.

1.4.8.2 There shall be no discrimination in the level of fees charged and all Applicants and Certified Clients shall be charged at an identical rate for a particular service, but additional costs will be charged arising from the extra costs of travel, subsistence and administration.

1.4.8.3 Any Applicant or Certified Client which defaults in payment of its fees by the due date shall be given notice in writing by BASEC and unless payment in full shall have been made within fifteen days from the dispatch of such notice BASEC may cancel (i) any application or (ii) certification and in such cases shall give the Applicant / Certified Client notice in writing of such cancellation.

1.4.9 Suspension

1.4.9.1 If BASEC at any time is satisfied that either:

a) the Certified Client is failing to conform to the particular rules and requirements of the relevant Scheme; or,

b) the Certified Client no longer meets the requirements set out in these Regulations;

then suspension of certification may be considered until conformity is again achieved.

1.4.9.2 Other conditions under which BASEC may suspend or cancel certification are stated in BASEC's Terms and Conditions of Business.

1.4.9.3 If BASEC decides that the matter is not urgent or there has in BASEC's view not been a history of such failings, one month's written notice may be given of the intention to suspend certification unless appropriate action is taken by the Certified Client to remedy the failing(s).

1.4.9.4 If after the elapse of a notice issued under these regulations BASEC is not satisfied that appropriate action has been taken to remedy the failing(s) written notice suspending certification may be given.

1.4.9.5 Where the scope, scale or severity of the failings are deemed by BASEC to be sufficiently serious to have significant implications for products, services, customers' interests, or BASEC's reputation, then BASEC may suspend certification immediately without notice.

1.4.9.6 On suspension of certification the relevant provisions with respect of the use of logos and certificates during suspension as set out above must be implemented by the Certified Client. BASEC will publish a notification of suspension on the BASEC website.

1.4.9.7 BASEC will investigate the circumstances of the suspension, and may choose to conduct additional visits, which may be at the next surveillance or separately, at BASEC's discretion. The Certified Client will be liable for BASEC's charges for any such activities, and for other reasonable costs necessarily incurred by BASEC in association with the suspension.

1.4.9.8 Within 30 days of the start of a suspension BASEC shall conduct a review of the suspension, taking account of the actions by the Certified Client and the findings of BASEC's investigations. BASEC shall determine whether the suspension should be continued while further investigations are made, the suspension lifted, the scope of certification reduced or otherwise amended, or the certification withdrawn, and shall give notice of such decision. Suspension may not be continued beyond 60 days from the start of the suspension.

1.4.10 Lifting of Suspension and Reinstatement of Certification

1.4.10.1 If the decision of BASEC is to lift the suspension and to reinstate certification, BASEC will publish a notice to this effect on the BASEC website for a minimum of 90 days.

1.4.10.2 Following the lifting of suspension, BASEC will review and revise as necessary the risk-based assessment conducted for the Certified Client. The outcome of this review will be communicated to the Certified Client. The terms of BASEC's contract with the Certified Client may be amended as a result of this review.

A special or even a stage 2 audit may be required before the re-issue of certificates is decided.

1.4.11 Withdrawal of Certification

1.4.11.1 The powers of withdrawal of certification given by these Regulations shall be exercised by BASEC giving notice to the Certified Client that certification has been withdrawn. BASEC may give notice withdrawing certification if the Certified Client commits a breach of or ceases to comply with any other of these Regulations or if BASEC determines that a particular Scheme shall cease. In this latter circumstance the Certified Client will be given not less than twelve months notice of the withdrawal of certification.

1.4.11.2 Withdrawal of certification may also be invoked where the Certified Client becomes bankrupt or makes any arrangement or composition with its creditors, or, being a Company, is dissolved or enters into legal administration or liquidation, whether compulsory or voluntary, save for the purpose of amalgamation or reconstruction, or has a Receiver or equivalent person appointed of his business, or the equivalent of these in local law.

1.4.11.3 Upon receipt of a notice of withdrawal, the Certified Client shall immediately cease the use of and surrender the BASEC certificate(s), remove from use any marketing

material or other public display of the BASEC certificate(s), logo(s) and the BASEC name, except as expressly granted in writing by BASEC.

1.4.11.4 The Certified Client will be liable for any reasonable costs necessarily incurred by BASEC in association with the withdrawal of certification.

1.4.11.5 Any Certified Client which has its certification withdrawn will not be accepted for re-application for certification within six months of the date of that withdrawal. Following acceptance of any subsequent re-application, BASEC may impose additional requirements, in consultation with the BASEC Certification Committee.

1.4.12 Appeals

1.4.12.1 An Applicant or Certified Client may appeal to the BASEC Appeals Panel against any refusal by BASEC to process an application, the refusal to issue or reissue certification, or the withdrawal of certification. Such appeal shall be initiated by a notice in writing addressed to the Chief Executive served within fourteen clear days after the date of service of the refusal or cancellation notice issued by BASEC.

1.4.12.2 A meeting of the BASEC Appeals Panel shall be held within forty-five clear days after service of the notice of appeal and the Applicant or Certified Client shall be given at least seven clear days' notice of the time and place of such meeting.

1.4.12.3 The decision of BASEC shall stand pending the decision of the BASEC Appeals Panel.

1.4.12.4 At the meeting of the BASEC Appeals Panel the Applicant / Certified Client and BASEC shall be entitled to be heard in confidence.

1.4.12.5 The decision of the majority of the BASEC Appeals Panel as declared by its Chairman shall be final and shall be conveyed to the Applicant / Certified Client within five days of the hearing.

1.4.13 Amendment of Regulations

1.4.13.1 These Regulations and associated rules may from time to time be altered by BASEC.

1.4.13.2 No such alteration shall affect the right of any Certified Client to use the BASEC logos or claim to be certified under the relevant Scheme(s) unless or until it shall have been given notice in writing of such alterations by BASEC who will notify the Certified Client of the date by which it must comply with the altered Regulations, which shall normally be within three to six months from the date of notification of the alterations.

1.4.14 Notices under the Regulations

1.4.14.1 Any notice under these Regulations shall be in writing and signed by or on behalf of the party giving it and may be served by leaving it or sending it by prepaid recorded delivery or registered post, in the case of BASEC or the Applicant / Certified Client, at or to its address for the time being (registered office where applicable).

1.4.14.2 Any notice so served by post shall (unless the contrary is proved) be deemed to have been served forty-eight hours from the time of posting. In proving such notice it shall be sufficient to prove that notice was properly addressed and posted in accordance with this Regulation.

[Note: This section (BASEC Management System Certification Regulations) is extracted from a controlled BASEC document, reference BSF066, available and updated separately; the text of BSF066 Issue 5 is included here for information. The current issue of the document should be used in all cases, which is available upon request from the BASEC office or can be downloaded via BASEC website.]

1.5 PRODUCT CERTIFICATION SCHEME REGULATIONS

These Regulations set out BASEC's approach to the certification of products and for licensing the use of Registered Certification Trade Marks. Separate Regulations set out BASEC's requirements for management systems certification. In order to be eligible for product certification, the issue of Product Certificates, and the award of a Product Marking Licence (which permits the use of the Registered Certification Trade Marks on products) it is required that the organisation achieves and maintains certification by BASEC to PCR Section 2.6 for the applicable locations and activities. Note: PCR Section 2.6 incorporates all the individual requirements of BS EN ISO 9001.

1.5.1 Definitions

"British Approvals Service for Cables" (or BASEC) means company number 1150237 incorporated in England and Wales, and having its headquarters at Presley House, Presley Way, Crownhill, Milton Keynes, MK8 0ES, United Kingdom.

"Applicant for Product Certification" means a Certified Client or an organisation which has applied for but has not yet been granted a Certificate or Product Certificate.

"Certified Client" means an organisation whose management system has been certified by BASEC.

"Licensee" means an organisation that is a Certified Client (holding BASEC certification to PCR Section 2.6, who has gained one or more Product Certificates, and who has been awarded a Product Marking Licence enabling the use of one or more Registered Certification Trade Marks.

"Board" means the Board of Management of British Approvals Service for Cables appointed in accordance with the Articles of Association thereof.

"Certification Committee" is a Committee appointed by the Board of Management for the purposes of monitoring the impartiality of the services offered by BASEC.

"Certificate" means a document issued by BASEC recording the certification of the Certified Client to one or more management system schemes, as set out in the BASEC Management System Certification Scheme Regulations.

"Product Certificate" means a document issued by BASEC recording the certification of a particular range / scope of products, in accordance with these Regulations and in recognition of the Certified Client's satisfaction of the requirements of the relevant Scheme. Product Certificates are normally issued as schedules to a Product Marking Licence.

"Product Marking Licence" means a document issued by BASEC recording the use of Product Certificates issued for specified products made by the Licensee and authorising the use of specified Registered Certification Trade Marks (as detailed on each Product Certificate), in accordance with these Regulations and in recognition of the Licensee's satisfaction of the requirements of the relevant Scheme(s).

"Chief Executive" means the member of the permanent staff of BASEC appointed by the Board of Management to be in charge of the operations of BASEC or such other person to whom the powers of the Chief Executive may from time to time be delegated.

"UKAS" means the United Kingdom Accreditation Service.

"BASEC Rules for the Use of Marks" means the document published by BASEC which sets out conditions for the use of logos, trademarks and related material by Certified Clients and Licensees.

"Appeals Panel" means a panel selected by the Chairman of the Board for the purpose of hearing appeals.

1.5.2 Scope and General

1.5.2.1 BASEC operates a number of separate Schemes of Product Certification. The schemes are designated Scheme A, Scheme B, Scheme C, CAD, etc. and are each listed in the Index and requirements are set out in this section and in later sections of the BASEC Product Certification Requirements document.

1.5.2.2 These Regulations and the various Schemes define the responsibilities and obligations of BASEC as the certification / licensing authority and of the Applicant for Product Certification / Licensee.

1.5.2.3 Where an appropriate Scheme does not exist, or the specific product specification is not listed within that scheme, BASEC will undertake certification procedures and issue certificates (including CADs), provided that the Standard(s) and / or Specification(s) are considered suitable by BASEC's Technical Committee.

1.5.2.4 Applications for management systems certification to PCR Section 2.6 and also for product certification may be processed concurrently or sequentially at BASEC's discretion. It is not possible to issue Product Certificate(s) or a Product Marking Licence until such management systems certification is held for the respective production facility.

1.5.2.5 Applicants for Product Certification gaining a Product Certificate for at least one product type within any Scheme may be granted a Product Marking Licence entitling them to use specific Registered Certification Trade Marks in connection with the respective product(s). Use of Registered Certification Trade Marks is subject to the BASEC Certification Trade Mark Regulations in addition to these Regulations and Rules. The BASEC Certification Trade Mark Regulations are set out in another document.

1.5.2.6 The requirements of the various Schemes are applicable to both Applicants for Product Certification applying for product certification and to Licensees who already hold one or more Product Certificates and a Product Marking Licence.

1.5.2.7 Unless otherwise stated these Regulations apply equally to each of the following Schemes:

a) Product Certification to Scheme A, B, C, D, E, F, G, etc.

b) Certificates of Assessed Design (CAD)

c) Capability Approval

d) Other Product Certification Schemes as offered by BASEC from time to time.

1.5.3 Eligibility for Product Certification and Licensing

1.5.3.1 Product certification by BASEC to the BASEC Product Certification Schemes, and the issuing of a Product Marking Licence for the use of Registered Certification Trade Marks as set out above is available only to organisations operating within any of the following areas of scope:

- the manufacture and sale of rod, wire, cable and cable accessories; and,
- the manufacture and sale of components, materials or equipment associated with the manufacture and / or sale of rod, wire, cable and cable accessories.

1.5.3.2 The following requirements must be met by all Applicants for Product Certification and must be maintained by all Licensees:

a) The Applicant for Product Certification / Licensee must own, control via a lease, or have alternative arrangements approved by BASEC, installed and operational machinery which is suitable and capable for the manufacture of the type(s) and range(s) of product for which the application is being made.

b) The Applicant for Product Certification / Licensee must own, control via a lease, or have alternative arrangements approved by BASEC, installed, operational and suitably calibrated facilities to carry out all the tests and measurements prescribed in the relevant product / testing Standard(s) and / or Specification(s) and as identified in the relevant Scheme requirements for the particular product.

c) The Applicant for Product Certification / Licensee must manufacture all products as required by the individual product Standard(s) and / or Specification(s) for which the Product Certificate(s) and Licence are held, or to be held, or have alternative arrangements approved by BASEC.

d) The Applicant for Product Certification / Licensee must perform to a level acceptable to BASEC all tests and inspections that are specified and described in the relevant product Standard(s) and /or Specification(s), or have alternative arrangements approved by BASEC.

e) The Applicant for Product Certification / Licensee must establish, maintain and operate a management system which meets the requirements of PCR Section 2.6, any other requirements of the product certification scheme for which they are being assessed, which will be audited by BASEC at least twice per year. Loss or suspension PCR 2.6 certification will result in the immediate suspension of any Product Certificate(s) and Licence.

1.5.3.3 BASEC will conduct an assessment of each application for the purposes of determining eligibility (as defined above). If BASEC determines that the activities of the Applicant for Product Certification are not within the scope and requirements defined above then BASEC may decline to process the application further.

1.5.3.4 Following acceptance of eligibility as within scope and that the above requirements are met, BASEC will issue the Applicant for Product Certification a formal quotation for the processes of establishing and maintaining certification, and for the issuing of the appropriate Product Marking Licence. The costs of pre-quotation assessment activities may be incorporated into the quotation. The Applicant for Product Certification accepts the terms of the quotation by signing a certification agreement. The terms of the quotation and agreement may be altered subsequently as more information is obtained about the Applicant for Product Certification.

1.5.3.5 Following acceptance of the quotation BASEC will provide information (as appropriate) and undertake initial assessment activities. As part of this process BASEC will conduct a risk-based assessment of each application against a number of criteria for the purposes of determining acceptability of the application, including the ownership and organisational structure of the organisation, its establishment and facilities, professed capabilities including personnel and equipment, trading history, financial standing, and reputation. A fee may be charged for conducting this assessment. The outcome of this assessment will be communicated to the Applicant for Product Certification.

1.5.3.6 If BASEC determines that the application exhibits features such that the risk to the reputation of BASEC is substantial and that the application should not be accepted, then BASEC may require additional assessment activities, may decline to process the application further, or impose special conditions on the Applicant for Product Certification.

1.5.3.7 An application may also be declined if the Applicant for Product Certification has had a previous certificate (of any nature) or Licence withdrawn by BASEC under circumstances which would prejudice the reputation of BASEC.

1.5.3.8 Applicants for Product Certification whose applications are declined by BASEC under any of the above circumstances may make an appeal to the BASEC Appeals Panel.

1.5.3.9 Following acceptance of the application, BASEC will issue to the Applicant for Product Certification a formal quotation for the processes of establishing and maintaining certification, and for the issuing of the appropriate Product Marking Licence. The costs of pre-quotation assessment activities will be incorporated into the quotation. The Applicant for Product Certification accepts the terms of the quotation by signing a certification agreement. The terms of the agreement may be altered subsequently as more information is obtained about the Applicant for Product Certification.

1.5.4 Certification Process

1.5.4.1 The BASEC Board is the sole authority by which product certification may be granted and a Product Certificate and Product Marking Licence issued, but this authority is delegated to the Chief Executive and BASEC staff for day to day operations.

1.5.4.2 Applicants for Product Certification shall submit to BASEC:

a) completed Application Form(s) signed in the defined place to signify that the Applicant for Product Certification will abide by these Regulations, the BASEC Certification Trade Mark Regulations, and with the rules, regulations and requirements of the particular Scheme(s);

b) a copy of the requisite documentation in English and supporting information as defined on the Application Form(s) or in written requirements from BASEC .

1.5.4.3 BASEC will conduct a risk-based assessment of each application against a number of criteria for the purposes of determining the level of effort to be applied to the Applicant for Product Certification for initial assessment / type testing and also for surveillance activity to be applied once certification is issued. The criteria will include the criteria previously applied in assessing acceptability, regulations and guidance issued by accreditation authorities including IAF and UKAS, and taking account of any pre-existing certifications, the ease of conducting audits and other criteria. The outcome of this assessment will be communicated to the Applicant for Product Certification. The terms of BASEC's quotation may be amended at this point as a result of this assessment.

1.5.4.4 The following additional procedures and requirements shall be applied:

a) Fees for all services are to be paid under the terms specified on BASEC's quotation and / or invoice(s). A list of test fees is available from BASEC.

b) If there is a planned BASEC visit to collect samples, but the samples requested are not made available, the Applicant for Product Certification / Licensee will be charged for the aborted visit. In addition, BASEC may choose to purchase product from the market for testing, the full cost of which is recoverable from the Licensee.

c) The Applicant for Product Certification shall provide the specified number, type, range and length of samples for type test as set out in BASEC's quotation to allow BASEC to verify that the product complies with the Standard(s) and / or Specification(s) identified in the quotation and that the applicant is capable of manufacturing the product.

d) An Applicant for Product Certification may request product certification for the whole range of conductor sizes and constructions relating to one cable type, but where an applicant requests only a limited range of sizes and / or constructions then the quotation will specify the range of approval.

e) BASEC will issue job numbers for the type test samples when the Applicant for Product Certification advises BASEC of the readiness of samples. Type test samples must be clearly labelled with the relevant BASEC job number.

f) Each sample shall be fully inspected and tested by BASEC or a BASEC nominated laboratory under the direction and supervision of BASEC to all the requirements of the product Standard(s) and / or Specification(s). Alternatively, witnessed type testing at the client's site is possible if requested, subject to adequate facilities and at BASEC's discretion.

Note 1: Scope of product certification. Where an individual cable Standard or Specification classifies one or more cable construction variants in the form of "tables" of permitted values of construction parameters, the term "cable type" used here denotes all permitted constructions of cables or cords covered by an identified single table within the Standard or Specification. Where a Standard or Specification does not use tables, and uses another means of classification of cable construction variants or does not classify cable construction variants, then the term "cable type" used here denotes

all permitted constructions of cables or cords covered by the entire Standard or Specification, unless specifically restricted by BASEC.

Note 2: Conductor size range. The range of approved products to be included within the scope of certification may be two standard sizes lower than the minimum size of type test sample submitted, and two standard sizes above the maximum size of type test sample submitted, provided there would be no differences in construction.

Note 3: Origin marking. BASEC requires an unambiguous mark of origin (marking, tape or thread as appropriate) on all products, as defined in the relevant product standards and specifications. For traceability purposes this mark of origin shall not be used by any other manufacturer. Where it is commercially requested by a third party (e.g., customer, wholesaler, distributor or other intermediary) for their brand name or similar to be used as the only mark of origin (without the manufacturer's own mark of origin being present), BASEC will require a written legal undertaking from the third party granting the manufacturer exclusive and time unlimited use of the third party's proposed mark of origin, together with appropriate legal permissions if the mark of origin is protected as a registered trade mark, and an undertaking that the mark of origin will not be used by the third party with any other manufacturer. The third party's mark of origin will be recorded on the relevant Product Certificate.

1.5.5 Issue of Product Certificates and Product Marking Licence

1.5.5.1 On satisfactory completion of all of the following requirements, certification will be granted, BASEC will issue a Product Marking Licence and Product Certificate(s) will be issued for each relevant product type (in the form of schedules to the Product Marking Licence). This will entitle the Licensee to use the appropriate Registered Certification Trade Mark(s) for the type of cable identified on the Product Certificate at the place or places of manufacture of the products referred to on the Product Certificate(s).

a) All initial assessment activities and the clearance of non-conformities by the Applicant for Product Certification. The initial audit for Product or Management Systems Certification is carried out in two parts (Stage 1 and 2), usually back to back. If during the stage 1 audit the auditor identifies potential Major non-conformities, then the Stage 2 audit may be postponed and any resulting costs may be invoiced or quoted separately.
However we must point out that if during the Stage 1 audit concerns of potential Major NCs are raised, then the Stage 2 audit may not result in a successful outcome. In the event potential Major NCs are raised at Stage 1, the auditor shall:
a. evaluate the related risks; and
b. discuss with your representatives the positive and negative aspects.

We would, in general recommend that we still continue with the stage 2 audit to ensure that there are no other major breakdowns. However this may result in repeating the Stage 2 or even the Stage 1 audit.
For your reference the stage 1 audit is to ensure that:
a. your documented management system complies with the basic requirements of the appropriate standard(s),
b. the above requirements are implemented,
c. you have the required production capability for the scope requested,

and

d. your organisation is meeting any applicable statutory requirements.

The Stage 2 audit may be repeated if corrective actions to Non-conformities are not resolved within 6 months from the issue of the audit report.

a) The specified requirements set out in these Regulations;

b) All type testing required by BASEC has been successfully completed; and,

c) Payment of any outstanding fees.

1.5.5.2 Product Certificates and the Product Marking Licence are valid from the date of issue or reissue until formal withdrawal or revision of certification by BASEC, and subject to satisfactory ongoing surveillance and the payment of the applicable fees. Product Certificates and the Product Marking Licence shall remain the property of BASEC.

1.5.5.3 BASEC shall keep at its offices a record in which shall be entered the name, address, trade and description of every Certified Client and Licensee, the date of issue, re-issue, suspension or withdrawal of all Product Certificates and Product Marking Licences, the unique certification and Licence numbers allocated to the Licensee, the scope of certification and any other particulars which BASEC may from time to time deem necessary. Summary information from this record will be made publicly available on the BASEC website.

1.5.5.4 A Licensee's right to any Product Certificate and / or Product Marking Licence is not transferable without BASEC's prior permission in writing.

1.5.5.5 If a Product Certificate or Product Marking Licence is lost or inadvertently destroyed the Licensee shall be entitled to a duplicate thereof on furnishing BASEC with a statutory declaration satisfactory to BASEC evidencing the circumstances of such loss or destruction and on payment of such a fee as is set from time to time.

1.5.5.6 Copies of Product Certificates and / or Product Marking Licences may be provided if the Licensee makes a written application detailing the proposed use of these copies. A charge will be made for these services.

1.5.6 Maintenance of Product Certification and Product Marking Licences

1.5.6.1 To ensure that certified products continue to meet the requirements of the relevant Standards and Specifications, surveillance testing or witness testing shall be carried out according to the following procedures.

1.5.6.2 Continued use of the Product Marking Licence is subject to satisfactory compliance with the requirements of the BASEC Product Certification Regulations, BASEC Certification Trade Mark Regulations and the requirements of the relevant Scheme(s).

1.5.6.3 In addition:

a) The Licensee shall continue to own, control via a lease, or have alternative arrangements approved by BASEC, installed and operational machinery which

is suitable and capable for the manufacture of the type(s) and range(s) of product for which Product Certificate(s) are held.

b) The Licensee shall continue to own and control, control via a lease, or have alternative arrangements approved by BASEC, installed, operational and suitably calibrated facilities to carry out all the tests and measurements prescribed in the relevant product / testing Standard(s) and / or Specification(s) and as identified in the relevant Scheme requirements for the particular product(s) for which Product Certificate(s) are held.

c) The Licensee shall manufacture all products as required by the individual product Standard(s) and / or Specification(s) for which the Product Certificate(s) and Licence are held, unless a Cross-Licence agreement or subcontracting agreement is approved by BASEC, or have alternative arrangements approved by BASEC.

d) The Licensee shall mark all product made that is within the technical scope (standard or specification, type, size range, etc.) of each Product Certificate held with the origin and certification markings as specified on the relevant Product Certificate(s). The Licensee is not permitted to supply product that is within the technical scope of a Product Certificate without these markings, except as expressly set out in writing by BASEC. Clients' customer requests shall not override this requirement.

Products already certified to an equal or similar technical scope (e.g. a national standard and EN standard) by other CBs need to be declared during the initial enquiry or whenever they are certified.

e) The Licensee shall continue to perform to a level acceptable to BASEC all tests and inspections that are specified and described in the relevant product Standard(s) and /or Specification(s) for the products for which Product Certificates are held, or have alternative arrangements approved by BASEC.

f) The Licensee's management system shall also meet the requirements of PCR Section 2.6, which will be audited by BASEC at least twice per year. Loss or suspension of any such management system certification will result in the immediate suspension of any Product Certificate(s) and Product Marking Licence.

g) The Licensee shall immediately inform BASEC of any changes that may affect the condition under which the Licence has been granted to enable BASEC to take any required action. This includes any relevant changes of supplier, materials, production or testing equipment, calibration status, manufacturing locations, and personnel.

h) If the Licensee wishes to deviate from any BASEC requirements such as:

- Test equipment requirements;
- Procedural requirements and other similar deviations from normal practice;
- Requirements of standards;
- Requirements of BASEC PCR Section 2.6;

then the Licensee must apply to BASEC for a concession using form BSF 238.

As an example, if a licensee does not possess their own test equipment for the assessment of halogens, as may be required under the BASEC PCR, the licensee requests a concession to have this testing undertaken at a third party laboratory for a period, until they obtain the test equipment, then this form should be used. Details of the subcontracting laboratory, copies of agreements and sample reports etc. should be added as supporting information. For HAR scheme, the related rules apply.

Application for a concession does not necessarily mean that BASEC will agree to it. Requests may be declined, or special terms applied, at BASEC's discretion.

In normal circumstances any concession would be valid until recertification is required, and reviewed / renewed / rescinded at that time, only if this is requested by the Licensee.

1.5.7 Visits / Number of Samples

1.5.7.1 BASEC will determine the number of routine visits by a BASEC representative in each certification year (1st April to 31st March) to each place of manufacture. During the visits, the following shall be reviewed and checked:

a) The appropriate management system is still operating satisfactorily and demonstrates that products meet the standards / specified requirements.

b) That there are satisfactory management system processes for testing samples of unfinished and finished product for continuous process controls, or on any other technique suitable for the purpose and acceptable to BASEC.

c) That the Licensee has and uses, or has access to and uses, the facilities to carry out all the tests and measurements prescribed in the scheme description for the product and such test and measurement equipment is maintained, functional, calibrated and suitable for the tests and measurements.

d) The results of any such tests shall be made available to the BASEC representative on request.

1.5.7.2 The number(s) of samples to be submitted by the Licensee will be determined by reference to the Rules of the particular Scheme(s) and confirmed by BASEC. Variation of the number(s) by BASEC may be made, with reference to performance and risk rating.

1.5.7.3 BASEC may at its absolute discretion at any time make unannounced visits to any location of a Licensee for the purposes of taking samples for testing, for inspection of facilities and for checking that the provisions of these Regulations are being adhered to.

1.5.7.4 BASEC may at its absolute discretion at any time obtain samples of product produced by the Licensee from the market (including from customers of the Licensee) for testing, in addition to the samples obtained during routine surveillance visits. If test failures are noted at actionable level, the Licensee shall be responsible for BASEC's costs.

1.5.7.5 BASEC will on a regular basis conduct a risk-based assessment of the performance of each Licensee against a number of criteria for the purposes of determining whether the level of surveillance activity is adequate. The outcome of this assessment will be communicated to the Licensee.

1.5.8 Product Test Failures

1.5.8.1 Where a test failure has been identified on a routine surveillance sample selected by BASEC at a previous visit, the BASEC representative shall verify that any corrective / preventive actions have been satisfactorily implemented.

1.5.8.2 If the implementation of the corrective / preventive actions is not acceptable, BASEC may increase the number of routine samples selected, may require additional internal testing by the Licensee, or BASEC may conduct additional testing of the Licensee's product(s), the cost of which will be borne by the Licensee.

1.5.9 Registered Certification Trade Marks, Logos and Designations

1.5.9.1 Product certification Schemes resulting in the issue of a Product Marking Licence permit the use of specified BASEC Registered Certification Trade Marks, as listed on each Product Certificate.

1.5.9.2 A Licensee is entitled to use the relevant marks appropriate to the Scheme for which they have a Product Certificate, subject to the conditions specified in these Regulations, the BASEC Certification Trade Mark Regulations and the BASEC Rules for the Use of Marks.

"BASEC Roundel",

and / or the "***BASEC***" name.

For UKAS accredited product certification schemes, the BASEC Roundel may be used in combination with the relevant UKAS symbol and accreditation and Licence numbers. BASEC will provide the Licensee with appropriate graphics on request.

Note 1: HAR Scheme. Suitably qualified Licensees may be granted permission by BASEC to use the HAR Scheme Registered Certification Trade Mark in addition to the BASEC marks, for those cable types which it is permitted to approve under the HAR scheme, in a form that will be specified by BASEC and set out on the Product Certificate.

HAR scheme mark: **BASEC** ◁**HAR**▷

Note 2: The marking of "BASEC" on a cable or other product should wherever possible appear directly adjacent to the manufacturer's origin mark, or as close as is reasonably practicable, taking account of other markings present.

1.5.9.3 The relevant mark may be used by the Licensee only in accordance with BASEC regulations and associated rules and must always be used in conjunction with the Licensee's name and address as stated on the Product Certificate, and have the Product Marking Licence number adjacent to it. For UKAS accredited schemes the latest issue of rules set by UKAS and bu the UK Government for the use of the UKAS accreditation symbols apply.

1.5.9.4 The mark(s) may only be used on product, on packaging, in correspondence, in product technical information, advertising and promotional literature and must not be used except in connection with those goods and/or sites listed on the Product Certificate. The Licensee must identify the goods to which the certification applies when using a mark in a context where the scope of the application is open to doubt.

1.5.9.5 The mark(s) may not under any circumstances be used directly on or closely associated with any products in such a way as to imply that the product is certified by BASEC unless the Licensee holds a Product Certificate authorising the use of the relevant Registered Certification Trade Mark(s) in relation to such products. In particular, the Licensee may not use any mark in association with any product, where any Certificate(s) held relate(s) only to management systems and a Product Certificate is not held for that product.

1.5.9.6 The Licensee shall discontinue any use of the mark(s) which is unacceptable to BASEC and any form of statement relating to the certification which, in the opinion of BASEC, might be misleading. In cases of blatant misuse the Product Certificate(s) and / or the Product Marking Licence may be summarily withdrawn at the discretion of BASEC.

1.5.9.7 The Licensee shall, upon the suspension or withdrawal by BASEC of any Product Certificate or the Product Marking Licence, forthwith discontinue the use of the BASEC mark(s) and all advertising matter which contains them or any reference to them, including websites. In addition, any other documents in the possession of the Licensee which bear any reference to the certification of the Licensee by BASEC shall, if BASEC requires, be so treated as to erase the reference. Any product that bears any BASEC mark shall be quarantined pending review by BASEC.

1.5.10 Obligations of Applicants for Product Certification and Licensees

1.5.10.1 The Applicant for Product Certification or Licensee shall at all times comply with these Regulations and related documents and notifications issued by BASEC from time to time and shall pay all charges relevant to the Scheme(s).

1.5.10.2 If a Licensee wishes to withdraw from certification or does not intend to renew its certification after the expiry of any Certificate it must notify BASEC in writing giving 90 clear days notice.

1.5.10.3 The Applicant for Product Certification or Licensee shall promptly notify BASEC of any changes in name, address, documentation, organisational ownership or structure, or any other circumstance which may affect the validity of a Product Certificate or Product Marking Licence.

1.5.10.4 The Applicant for Product Certification or Licensee shall promptly notify BASEC of any changes to or changes of status of any production equipment, material, test equipment, personnel, technical or other issue which might affect in any way the

compliance of any product for which a Product Certificate has been issued with the relevant Standard(s) or Specification(s).

1.5.10.5 The Applicant for Product Certification or Licensee shall promptly notify BASEC of any breach, potential, alleged or otherwise, of statutory or legislative regulations, as soon as recognised or notified, as appropriate.

1.5.10.6 The Applicant for Product Certification or Licensee shall give representatives of BASEC and UKAS access at any time during normal working hours to the premises or sites on which work relevant to a Product Certificate or Product Marking Licence is performed for the purpose of surveillance, taking of samples or establishing that the procedures on product recall, suspension or withdrawal of a Product Certificate or Product Marking Licence have been carried out.

1.5.10.7 The Applicant for Product Certification or Licensee shall nominate for the approval of BASEC a management representative and one or more deputies authorised to act in the main nominee's absence (and any replacement nominees as may from time to time be necessary) who shall be responsible for all matters in connection with the requirements of the relevant Scheme(s) and the fulfilment of obligations under these Regulations and the Product Marking Licence.

1.5.10.8 If the relevant premises or sites are in a country for which a visa is required for BASEC personnel, the Applicant for Product Certification or Licensee shall facilitate and expedite the obtaining of a visa for the period which BASEC has allocated for audit and / or routine surveillance.

1.5.10.9 The Licensee shall maintain for inspection by BASEC, or submit to BASEC on request, records of all batches of licensed product manufactured within the scope of any Product Certificate or Product Marking Licence, these records to include batch number(s), date(s) of production, quantities, test results, specifications, type(s) and size range(s), and customer details.

1.5.10.10 The Licensee shall maintain for inspection by BASEC, or submit to BASEC on request, a record of all complaints received, and all related corrective and preventive actions, arising from the manufacture or supply of any product within the scope of any Product Certificate or Product Marking Licence.

1.5.10.11 The Licensee shall promptly quarantine and / or recall from customers, or from the market generally, any relevant batch(es) of product within the scope of a Product Certificate, on notification to the Licensee by BASEC of an actionable test failure or other relevant finding of serious non-conformity, as decided by BASEC. Furthermore, the Licensee shall promptly communicate with all necessary points in the supply and use chain about the recall of product and shall be responsible for co-ordinating all such activities with customers and the market in general. The Licensee shall facilitate the prompt and effective recovery, and rework or disposal of any such product, especially those carrying any BASEC Registered Certification Trade Mark, and shall promptly follow any reasonable instruction issued by BASEC in this regard. These obligations shall continue beyond the suspension or withdrawal by BASEC of any Product Certificate or Product Marking Licence or the termination of certification by the Licensee, and shall apply equally to the Licensee and any representative (such as legal, financial, or ownership) taking on the rights and duties of the Licensee. The Licensee shall pay BASEC's reasonable costs in regard to any such recall of product.

1.5.10.12 The Licensee shall include in their conditions of sale suitable provision to ensure that customers must comply with any reasonable request for the quarantine or recall of any product that is subject to a recall notice issued by the Licensee or by BASEC as set out above, and to cascade relevant communications in this regard to further customers.

1.5.11 Obligations of BASEC

1.5.11.1 For product certification Schemes BASEC shall, at its own discretion, send a representative to the Applicant for Product Certification or Licensee not less than twice in any year (depending on the Scheme), for the purpose of verifying that the obligations of the Applicant for Product Certification or Licensee in respect of these Schemes are being met. For HAR Scheme Licensees this will be not less than four times in any year.

1.5.11.2 BASEC shall notify the Applicant for product Certification or Licensee of any changes in the applicable documents relating to the appropriate Scheme(s) and give it such time as, in the opinion of BASEC, is reasonable in which to adjust its procedures to meet the revised requirements.

1.5.11.3 BASEC shall on a regular basis review and revise as necessary the risk-based assessment conducted for each Applicant for Product Certification, and following each surveillance visit / test of surveillance samples for each Licensee. The outcome of this review will be communicated to the Applicant for / Certified Client. The terms of BASEC's contract with the Applicant for Product Certification or Licensee may be amended by BASEC from time to time as a result of this review (see below).

1.5.11.4 BASEC shall not disclose any confidential information relating to the Applicant for Product Certification or Licensee unless (a) as requested by accreditation bodies such as UKAS, or (b) as required to do so by regulatory bodies or by law, or (c) in order to promote public safety.

1.5.11.5 BASEC reserves the right to publish any Licensee-related information about non-conforming product, the causes of non-conformity, the progress and findings of investigations and other matters as determined necessary by BASEC to promote public safety or to maintain the reputation of BASEC and / or its Schemes.

1.5.11.6 BASEC shall notify the Applicant for Product Certification or Licensee as necessary of any complaints relating to its certification.

1.5.12 Risk Assessment, Level of Initial Audit and Level of Surveillance

1.5.12.1 The risk assessments conducted as part of the application process (for an Applicant for Product Certification) or following normal surveillance activities (for Licensees) will result in a risk rating of the Applicant for Product Certification or Licensee. The risk rating will be classified as (a) Low, (b) Normal, (c) Raised, or (d) High. This risk rating and information about the areas contributing to higher risk will be communicated to the Applicant for Product Certification or Licensee, and will remain confidential between the parties. Applicants for Product Certification and Licensees may appeal against a risk rating to the BASEC Appeals Panel.

1.5.12.2 The level of initial audit that is applied to an Applicant for Product Certification by BASEC before issue of Product Certificate(s) and a Product Marking Licence may be varied by BASEC in accordance with the risk rating.

1.5.12.3 Following initial audit visit(s), any necessary testing, and verified clearance of any relevant non-conformities, BASEC will review the risk assessment. Applicants for Product Certification with a revised risk rating at Raised level shall be subjected to one additional visit of duration to be decided by BASEC (but not less than one day) before a Product Certificate and Product Marking Licence is issued. The objective of this additional visit is to address the risk areas resulting in the Raised rating. Following this one additional visit BASEC will review the risk assessment again. If the risk rating has become Low or Normal the Product Certificate(s) and Product Marking Licence will be issued as normal and the new Licensee will commence at a normal level of surveillance. If the risk rating remains at Raised, the Product Certificate(s) and Product Marking Licence will be issued as normal but with an increased level of surveillance, to be decided by BASEC. If the risk rating has become High, the Product Certificate(s) and Product Marking Licence will not be issued, and the Applicant for Product Certification shall be subjected to additional audit activities, as below.

1.5.12.4 Applicants for Product Certification with a risk rating at High level shall be subjected to additional audit visits on a monthly basis, of duration to be decided by BASEC (but not less than one day). The objective of these additional visits is to address the risk areas resulting in the High rating. Following each monthly visit BASEC will review the risk assessment again. If the risk rating remains at High the monthly visits will continue as above. If the risk rating has become Raised, Normal or Low, then the Applicant for Product Certification will be subjected to one additional monthly visit before the Product Certificate(s) and Licence are issued, as set out above (Raised ratings will be subject to an increased level of surveillance). No new or revised Product Certificate or new Product Marking Licence will be issued while a risk rating remains at High level (this also applies at recertification.)

1.5.12.5 Once Product Certificate(s) and a Product Marking Licence have been issued the Licensee will be subjected to a level of surveillance (frequency and duration of visits, quantity and type of testing) determined in part by their risk rating. Under usual circumstances it is expected that all Licensees should maintain a risk rating of Low or Normal. Following each surveillance visit / batch of routine surveillance tests the Licensee's risk rating will be reviewed by BASEC. Licensees maintaining a risk rating at Low for 12 months or longer will be eligible for a reduced level of surveillance as decided by BASEC (see also Reduced Sampling). [Note: separate arrangements for reduced sampling apply under the HAR scheme.] Licensees whose risk rating is assessed as Normal (twice in succession), Raised (once) or High (once) will cease to be eligible for a reduced level of surveillance.

1.5.12.6 Licensees whose risk rating is assessed as Raised will be subjected to an additional surveillance visit of duration to be decided by BASEC (but not less than one day), with the objective of addressing the risk areas resulting in the Raised rating. This visit will occur within one month of the risk rating being communicated to the Licensee. Following the visit the Licensee's risk rating will be reviewed again by BASEC.

1.5.12.7 Licensees whose risk rating is assessed as High will be subjected to an additional surveillance visit of duration to be decided by BASEC (but not less than one day), with the objective of addressing the risk areas resulting in the High rating, and in

addition to this will be subjected to an additional surveillance sample pickup and test regime at the same time. This visit will occur within one month of the risk rating being communicated to the Licensee. Following the visit the Licensee's risk rating will be reviewed again by BASEC. Licensees whose risk rating is assessed as High twice in succession will be considered for suspension of one or more Product Certificates, or considered for suspension of their Product Marking Licence.

1.5.13 Fees Payable to BASEC

1.5.13.1 All fees and charges are due payable thirty days from date of invoice unless otherwise stated and are payable in advance at the discretion of BASEC.

a) An application fee.

b) A fixed annual fee for each Product Marking Licence issued.

c) Fees for certification audit, surveillance, re-issue or endorsement of the Product Certificate(s) and Product Marking Licence, and for administration such as shall from time to time be determined by BASEC to be fair and appropriate.

d) Fees for type testing, surveillance testing, witnessed testing and related costs, as shall from time to time be determined by BASEC.

e) Appropriate fees may be charged to cover travel, subsistence and administration.

f) A final audit fee upon termination of the certification if such audit is required by BASEC.

g) Any additional costs incurred by BASEC due to the Applicant for Product Certification or Licensee's non-compliance with these Regulations, or the particular rules, regulations and requirements of a particular Scheme, e.g. special visits, additional testing, costs of investigating complaints.

1.5.13.2 There shall be no discrimination in the rate of fees charged and all Applicants for Product Certification and Licensees shall be charged at an identical rate for a particular service, but the fees will be determined by the level of surveillance and testing, and additional fees will be charged arising from the costs of travel, subsistence and administration.

1.5.13.3 Any Applicant for Product Certification or Licensee which defaults in payment of its fees by the due date shall be given notice in writing by BASEC and unless payment in full shall have been made within fifteen days from the dispatch of such notice BASEC may cancel (i) any application or (ii) certification / Licence and in such cases shall give the Applicant for Product Certification or Licensee notice in writing of such cancellation.

1.5.14 Suspension

1.5.14.1 If BASEC at any time is satisfied that any of the following apply:

a) the Licensee is failing to comply with the particular rules and requirements of the relevant Scheme;

b) the Licensee no longer meets the requirements set out in these Regulations;

c) after evaluation and/or testing that a product or sample does not conform to the appropriate standard or specification for the time being laid down;

d) the Licensee's product is not manufactured so as to conform to the current Certificate of Assessed Design or the relevant standard;

e) the Licensee has failed to submit a sample for examining or testing by BASEC within the period set out in BASEC's request for such a sample;

f) the Licensee is failing to comply with the particular rules and technical requirements of the relevant Scheme;

g) the risk rating of the Licensee has been assessed as High on two or more successive occasions over a period of 90 days or more;

then BASEC may consider suspension of one or more Product Certificates or of the entire Product Marking Licence until compliance is again achieved.

1.5.14.2 Other conditions under which BASEC may suspend or withdraw certification are stated in BASEC's Terms and Conditions of Business.

1.5.14.3 If BASEC decides that the matter is not urgent or there in BASEC's view has not been a history of such failings, one month's written notice may be given of BASEC's intention to suspend certification unless appropriate action is taken by the Licensee to remedy the failing(s).

1.5.14.4 If after the elapse of a notice issued under these regulations BASEC is not satisfied that appropriate action has been taken to remedy the failing(s) written notice suspending certification may be given.

1.5.14.5 Where the scope, scale or severity of the failings are deemed by BASEC to be sufficiently serious to have significant implications for products, services, customers' interests, or BASEC's reputation, then BASEC may suspend certification immediately without notice.

1.5.14.6 On suspension of certification the relevant provisions with respect of the use of Registered Certification Trade Marks and logos during suspension as set out above must be implemented by the Licensee. BASEC will publish a notification of suspension on the BASEC website.

1.5.14.7 BASEC will investigate the circumstances of the suspension, and may choose to conduct additional visits, which may be at the next surveillance or separately, at BASEC's discretion. The Licensee will be liable for BASEC's charges for any such activities, and for other reasonable costs necessarily incurred by BASEC in association with the suspension.

1.5.14.8 Within 30 days of the start of a suspension BASEC shall conduct a review of the suspension, taking account of the actions by the Licensee and the findings of

BASEC's investigations. BASEC shall determine whether the suspension should be continued while further investigations are made, the suspension lifted, the scope of certification reduced or otherwise amended, or the certification withdrawn, and shall give notice of such decision. Suspension may not be continued beyond 60 days from the start of the suspension.

1.5.15 Lifting of Suspension and Reinstatement of Certification

1.5.15.1 If the decision of BASEC is to lift the suspension and to reinstate certification, BASEC will publish a notice to this effect on the BASEC website for a minimum of 90 days.

1.5.15.2 Following the lifting of suspension, BASEC will review and revise as necessary the risk-based assessment conducted for the Licensee. The outcome of this review will be communicated to the Licensee. The terms of BASEC's contract with the Licensee may be amended as a result of this review.

1.5.16 Withdrawal of Certification

1.5.16.1 The powers of withdrawal of certification given by these Regulations shall be exercised by BASEC giving notice to the Licensee that certification has been withdrawn. BASEC may also give notice withdrawing either one or more Product Certificates or the entire Product Marking Licence if the Licensee commits a breach of or ceases to comply with any other of these Regulations or if BASEC determines that a particular Scheme shall cease. In this latter circumstance the Licensee will be given not less than twelve months notice of the withdrawal of certification.

1.5.16.2 Withdrawal of certification may also be invoked where the Licensee becomes bankrupt or makes any arrangement or composition with its creditors, or, being a Company, is dissolved or enters into legal administration or liquidation, whether compulsory or voluntary, save for the purpose of amalgamation or reconstruction, or has a Receiver or equivalent person appointed of his business, or the equivalent of these in local law.

1.5.16.3 The Licensee will be liable for any reasonable costs necessarily incurred by BASEC in association with the withdrawal of certification.

1.5.16.4 Any Licensee which has one or more Product Certificates withdrawn will not be accepted for re-application for the same or similar product certification within six months of the date of that withdrawal. Any Licensee which has their Product Marking Licence withdrawn will not be accepted for re-application for product certification within twelve months of the date of that withdrawal. Following acceptance of any subsequent re-application, BASEC may impose additional requirements, in consultation with BASEC's Board and committees.

1.5.17 Appeals

1.5.17.1 An Applicant for Product Certification or Licensee may appeal to the BASEC Appeals Panel against any refusal by BASEC to process an application, the refusal to issue product certification, risk ratings, or the withdrawal of product certification or a Product Marking Licence. Such appeal shall be initiated by a notice in writing addressed to BASEC served within fourteen clear days after the date of service of the refusal or withdrawal notice issued by BASEC.

1.5.17.2 A meeting of the BASEC Appeals Panel shall be held within forty-five clear days after service of the notice of appeal and the Applicant for Product Certification or Licensee shall be given at least seven clear days' notice of the time and place of such meeting.

1.5.17.3 The decision of BASEC shall stand pending the decision of the BASEC Appeals Panel.

1.5.17.4 At the meeting of the BASEC Appeals Panel the Applicant for Product Certification or Licensee and BASEC shall be entitled to be heard in confidence.

1.5.17.5 The decision of the majority of the BASEC Appeals Panel as declared by its Chairman shall be final and shall be conveyed to the Applicant for Product Certification or Licensee within five days of the hearing.

1.5.18 Amendment of Regulations

1.5.18.1 These Regulations and associated rules may from time to time be altered by BASEC.

1.5.18.2 No such alteration shall affect the right of any Licensee to use the Registered Certification Trade Marks or logos or designations or claim to be certified under the relevant Scheme(s) unless or until it shall have been given notice in writing of such alterations by BASEC who will notify the Licensee of the date by which it must comply with the altered Regulations, which shall normally be within three to six months from the date of notification of the alterations.

1.5.19 Notices under the Regulations

1.5.19.1 Any notice under these Regulations shall be in writing and signed by or on behalf of the party giving it and may be served by leaving it or sending it by prepaid recorded delivery or registered post, in the case of BASEC or the Applicant for Product Certification / Licensee, at or to its address for the time being (registered office where applicable).

1.5.19.2 Any notice so served by post shall (unless the contrary is proved) be deemed to have been served forty-eight hours from the time of posting. In proving such notice it shall be sufficient to prove that notice was properly addressed and posted in accordance with this Regulation.

[Note: This section (BASEC Product Certification Scheme Regulations) is extracted from a controlled BASEC document, reference BSF337, available and updated separately; the text of BSF337 Issue 5 is included here for information. The current issue of the document should be used in all cases, which is available upon request from the BASEC office or can be downloaded via BASEC website.]

1.6 BASEC CERTIFICATION TRADE MARK REGULATIONS

Governing the use of its Certification Trade Marks in respect of Certifiable Goods. These regulations shall apply to the BASEC Product Certification and Licensing Schemes.

1.6.1 Definitions

"British Approvals Service for Cables" (or BASEC) means company number 1150237 incorporated in England and Wales on, 10 December 1973 and having its headquarters at Presley House, Presley Way, Crownhill, Milton Keynes, MK8 0ES, United Kingdom. [See Note 2]

"The Board of Management" means the Board of Management appointed in accordance with the Articles of BASEC.

"Appropriate Standard" means a standard or specification against which the Certification Committee has indicated the BASEC is prepared to certify.

"Certifiable Goods" means such goods or any other goods referred to in Regulation 1.4.8 which from time to time fall within the range covered by an Appropriate Standard.

"Certified Goods" means Certifiable Goods to which a Certification Trade Mark has been applied.

"Certificate" means a Licence issued by BASEC authorising the use of one or other of the Certification Trade Marks in accordance with these Regulations.

"The Certification Committee" is a Committee appointed by the Board of Management and consisting of not less than three persons appointed by the Board of Management who predominantly do not represent manufacturers of Certifiable Goods.

"Certification Trade Marks" means the certification trade marks of BASEC authorised by BASEC to be used by Holders of Certificates to depict the satisfaction of BASEC pursuant to these Regulations.

"Chief Executive" means the member of the permanent staff of BASEC appointed by the Board of Management to be in charge of the operations of BASEC or such other person to whom the powers of the Chief Executive may from time to time be delegated.

"Person" means an individual, firm, body corporate or unincorporated body.

"Supplier" means the authorised Holder of a Certificate

"The Appeals Panel" means a panel selected by the Chairman of the Board of Management for the purpose of hearing the appeal. It shall consist of at least three persons none of whom shall have any direct commercial interest in the subject of the appeal.

1.6.2 Board of Management

These Regulations shall be administered under the authority of the Board of Management.

1.6.3 Rights and Powers

No person may use a Certification Trade Mark and or logo except under and by virtue of a Certificate.

1.6.4 Issue of Certificates

BASEC shall be satisfied with regard to every Applicant for a Certificate:

1 that it carries on a bona fide business as a manufacturer of Certifiable Goods and is of good repute and sound financial standing;

2 that it understands and will abide by the rules for certification published by BASEC and any other such rules as may be from time to time approved by the Board of Management;

3 that it has executed the Undertaking set out in the Application for a Certificate and paid the prescribed fee;

4 that the specified samples of the Certifiable Goods comply with the Appropriate Standards.

5 that it is likely that the production and process procedures and system of quality control of the Applicant will be such that all Certified Goods will conform to the Appropriate Standards.

6 that it complies in full with the requirements of BASEC Product Certification Requirements section 2.6, supported by an ISO 9001 registration from a certification body accredited by UKAS or a body formally recognised by UKAS. A copy of ISO 9001 can be obtained from www.iso.org;

7 that it recognises that a condition of the issue of a Certificate will be that all Certifiable Goods constructed to the same standard or specification as the Certified Goods shall bear the Certification Trade Mark(s) for which application for a Certificate has been made;

8 that it keeps a record of all complaints and remedial actions relative to the products to be covered by the Certificate and to the services provided to its clients.

9 that it keeps clear and accessible records of the amount of production of certifiable and certified goods at all times.

10 that it has not previously been refused, or had a certificate cancelled by ASEC under circumstances which could prejudice the reputation of BASEC.

1.6.5 Certificates

1.6.5.1 Any Applicant which satisfies BASEC in regard to all the conditions set out, or referred to in Regulation 1.6.4, shall be entitled to a Certificate, this Certificate shall nevertheless remain the property of BASEC.

1.6.5.2 A Certificate shall, subject to these Regulations, continue in force from the date of issue for such time as may be prescribed by BASEC or until the Certified Goods are no longer marketed by the Supplier or the Certificate is withdrawn or cancelled under the provisions of Regulation 1.6.14.

1.6.5.3 A designation of the Certifiable Goods, in respect of which a Supplier is authorised to use the Certification Trade Marks, shall be endorsed, together with references to the current specification for the testing and approval of the Certifiable Goods as laid down by the Appropriate Standard, on a Certificate and/or Appendices/Schedules which shall not be transferable.

1.6.6 Record of Certificate Holders

BASEC shall keep records in which shall be entered the name, address and trade description of every Supplier; the date of issue, re-issue or cancellation of the Certificate; the special number allotted to the Supplier; the designation of the Certifiable Goods to which the Certificate relates, and the references to the current specifications for the testing and approval of the Certifiable Goods as laid down by the Appropriate Standard, and as endorsed upon the Certificate; and any other particulars which BASEC may from time to time deem necessary. The Records shall be kept at Presley House, Presley Way, Crownhill, Milton Keynes, MK8 0ES and can be viewed Monday to Friday from 9am to 5pm excluding public holidays. [See Note 2]

1.6.7 Change of Address

If a Supplier changes the name or address or the place of manufacture of the Certified Goods it shall forthwith notify BASEC.

1.6.8 Certifiable Goods

1.6.8.1 The Certification Trade Mark shall be applied only to Certifiable Goods after the issue of a Certificate unless there is a written authority from BASEC to mark the Certifiable Goods and to bond these until a Certificate is issued. The Chief Executive shall be the authority for the release of such Certifiable Goods from bond.

1.6.8.2 A Certification Trade Mark may be applied only to Certifiable Goods that conform to the same specification as that to which the sample tested by BASEC was produced and granted a Certificate by BASEC.

1.6.8.3 On each occasion on which the Appropriate Standard is amended or superseded by the publication of a new edition of the Appropriate Standard, BASEC shall allow the Supplier such time, as in the opinion of BASEC is reasonable in which to comply with such amended or new edition of the Appropriate Standard, and after such reasonable time the Certification Trade Mark may only be applied to the Certified Goods of a Supplier that have been produced to the same specification as that to which a sample tested and

approved by BASEC as conforming to the new edition of the Appropriate Standard was produced.

1.6.9 Examination of Goods

1.6.9.1 Every Supplier shall during normal business hours, with or without notice, permit entry to his premises by any person duly authorised by BASEC for the purpose of examining or testing any Certified Goods or Certifiable Goods and the methods of manufacture, and shall permit any such person to take samples of such goods or of any materials used in their manufacture for the purpose of testing, which may take place on the premises of the Supplier or elsewhere.

1.6.9.2 BASEC may require any Supplier to send to BASEC out of each or any delivery, in the course of trade, of any Certified Goods upon, or in relation to, which he uses the Certification Trade Mark, a sample or samples of the Certified Goods for examining and testing, or to make available records of internal testing.

1.6.9.3 BASEC shall require any person who applies for a Certificate to send to BASEC a sample or samples of the Certifiable Goods, in relation to which he is desirous of being granted a Certificate, for testing.

1.6.10 Use of Certification Trade Mark

1.6.10.1 A Supplier may use a Certification Trade Mark only in relation to Certifiable Goods conforming to the specification for the testing and approval of the Certified Goods as laid down by the Appropriate Standard and to which reference has been endorsed upon the Certificate, or (in the event of that Standard being amended or superseded) as BASEC may from time to time expressly authorise.

1.6.10.2 For UKAS accredited schemes the latest issue of rules set by UKAS and by the UK Government for the use of the UKAS accreditation symbols apply.

1.6.10.3 Subject to prior authority from BASEC, a Supplier may print, or otherwise reproduce, the Certification Trade Mark for which a Certificate is in force upon price lists, show cards or other trade literature, or in press advertisements or in any other mode sanctioned by BASEC, all being in relation only to the particular Certifiable Goods endorsed on his Certificate.

1.6.10.4 The Certification Trade Marks may only be used in correspondence, advertising and promotional material and must not be used except in connection with those goods or locations listed on the Certificate or appendix thereto. The Supplier must identify the goods to which the certification applies when using the logo in a context where the scope of the application is open to doubt.

1.6.10.5 It is a condition of use that Certification Trade Marks shall not be used in any advertisements or publicity matter, printed or otherwise reproduced, directed primarily to the market in the United Kingdom and in the Isle of Man or in retail point of sale display cards distributed by the Registered Proprietor for use within the United Kingdom and in the Isle of Man without an indication that it is a certification mark.

1.6.10.6 In making use of a Certification Trade Mark as aforesaid, a Supplier shall not alter it in any respect whatsoever or make any addition thereto, provided that nothing in these Regulations shall interfere with the separate use by a Supplier of his own trade mark, or brands upon or in relation to his goods.

1.6.10.7 A Supplier shall at all times give all such information regarding his use of a Certification Trade mark, as BASEC may from time to time require, and shall permit a duly authorised representative of BASEC to make any reasonable investigations upon his premises, including inspection of the relevant records and goods, as may be reasonably required by BASEC for the purpose of satisfying BASEC that the Certification Trade Mark has been properly used.

1.6.10.8 The Supplier shall discontinue any use of the logo and/or designation which is unacceptable to BASEC and any form of statement relating to the certification which, in the opinion of BASEC, might be misleading. In cases of blatant misuse the Certificate may be summarily cancelled at the discretion of BASEC.

1.6.11 Fees Payable to BASEC

1.6.11.1 All fees are due payable thirty days from date of invoice unless otherwise stated and are payable in advance at the discretion of BASEC.

1.6.11.2 BASEC shall be entitled to charge fees at a level to be determined from time to time by BASEC. A Supplier or an Applicant as the case may be shall pay:

a) a fixed annual fee for each Certificate granted, which fee shall apply similarly to all Suppliers relating to Certified Goods of the same designated type, and which fee shall not in any circumstances be returnable;

b) additional fees for surveillance, inspection, testing, supervision, Certificate re-issue, administration and the verification of the standard or specification, as shall from time to time be determined by BASEC to be fair and appropriate to the Appropriate Standard.

1.6.11.3 In the event of additional test work being carried out, due to non-compliance with the Appropriate Standard or retesting at the supplier's instance, BASEC shall charge an additional fee appropriate to the amount of testing undertaken.

1.6.11.4 There shall be no discrimination in the level of fees charged and all Applicants and all Suppliers shall be charged at an identical rate for a particular service, but additional fees arising from travel, subsistence and administration will be charged.

1.6.11.5 Any Supplier which defaults in payment of its fees shall be given notice in writing by BASEC and unless payment in full shall have been made within fifteen days from the despatch of such notice BASEC may at its discretion take action to either suspend or cancel the Certificate in accordance with Regulations 1.6.13 and 1.6.14.

1.6.11.6 A list of current Fees is available on request from BASEC.

1.6.12 Duplicate Certificates

1.6.12.1 If a Certificate is lost or inadvertently destroyed the Supplier shall be entitled to a duplicate thereof on his furnishing BASEC with a Statutory Declaration satisfactory to BASEC evidencing the circumstances of such loss or destruction and on payment of such a fee as is set from time to time.

1.6.12.2 Copy Certificates may be given if the Supplier makes a written application detailing the use of these copy Certificates.

1.6.12.3 A charge will be made for these services.

1.6.13 Suspension of Certificates

1.6.13.1 If the Chief Executive at any time is satisfied:

a) after evaluation and/or testing that a sample or samples does not conform to the Appropriate Standard; or,

b) that the Supplier's product is not manufactured so as to conform to the current Appropriate Standard; or,

c) that the Supplier has failed to submit a sample for examining or testing by BASEC within the period set out in BASEC's request for such a sample; or,

d) that the Supplier is failing to comply with the particular rules and technical requirements of the relevant Scheme; or,

e) that the Supplier no longer meets the requirements set out in Regulation 1.6.4 above; or,

f) that the Supplier has defaulted in payment of fees as required under Regulation 1.6.11,

but that the matter is not urgent or there in his view has not been a history of such failings, he may give one month's written notice of his intention to suspend a Certificate unless appropriate action is taken by the Supplier to remedy the failing.

1.6.13.2 If after the elapse of a notice issued under regulation 1.6.13 the Chief Executive is not satisfied that appropriate action has been taken to remedy the failing he may give written notice suspending a Certificate.

1.6.13.3 Where the Chief Executive at any time considers that a Supplier's failing to comply with the particular rules and technical requirements of the Scheme is part of a history of such failings or where the failing is such that he considers that it is urgent that there is an immediate suspension the Chief Executive may suspend a Certificate immediately without notice.

1.6.13.4 Within one month of a suspension the Chief Executive shall review any suspension, he shall determine whether the suspension should be lifted or the Certificate cancelled, and shall give notice of his decision.

1.6.14 Cancellation or Non-Renewal of Certificates

1.6.14.1 BASEC may cancel and withdraw the Certificate of any Supplier:

a) in any of the circumstances referred to in Regulation 1.6.13.1 (a) to (f) above; or,

b) where the Supplier makes any unauthorised or improper use of the Certification Trade Mark or commits a breach of, or ceases to comply with, any of these Regulations;

c) where the Supplier becomes bankrupt or makes any arrangement or composition with its creditors, or, being a Company, is dissolved or enters into liquidation whether compulsory or voluntary save for the purpose of amalgamation or reconstruction, or has a Receiver appointed of his business; or,

d) where the Supplier informs BASEC that it no longer markets the goods in respect of which the Certificate was issued;

e) where the Supplier fails to pay, in full, costs or fees due to BASEC in the performance or provision of its services.

1.6.14.2 A Supplier may surrender a Certificate at any time by notice in writing to BASEC, and shall forthwith cease to use, print or otherwise reproduce the Certification Trade Marks.

1.6.14.3 On cancellation of a Certificate BASEC shall forthwith give to the Supplier notice in writing of such cancellation, and such cancellation shall be effective from the day following the despatch of such notice.

1.6.14.4 If BASEC shall cancel a Certificate, or upon the determination against the Supplier of an appeal with regard to such cancellation under Regulation 1.4.15, the Supplier shall return the Certificate and shall forthwith cease to use, print, or otherwise reproduce a Certification Trade Mark.

1.6.14.5 On the cancellation or surrender of a Certificate, Certified Goods of a Supplier which are then unsold shall, if BASEC so require, be so treated as to erase or remove a Certification Trade Mark.

1.6.15 Appeals

1.6.15.1 A supplier may appeal to the Appeals Panel against any cancellation or refusal of a Certificate or Licence. Such appeal shall be initiated by notice in writing addressed to the Chief Executive served within fourteen clear days after the date of service of the notice cancelling or refusing a Certificate.

1.6.15.2 A meeting of the Appeals Panel shall be held within forty-five clear days after service of the notice of appeal and the Supplier shall be given at least seven clear days' notice of the time and place of such meeting.

1.6.15.3 The decision of the Chief Executive under Regulation 1.6.13 shall stand pending the decision of the Appeals Panel.

1.6.15.4 At the meeting of the Appeals Panel both the Supplier and the Chief Executive shall be entitled to be heard in confidence.

1.6.15.5 The decision of the majority of the Appeal Panel as declared by its Chairman shall be final and shall be conveyed to the supplier within five days of the hearing.

1.6.15.6 An Applicant or a Supplier respectively may also appeal by notice in writing addressed to the Chief Executive against any test results relating to Certifiable Goods or Certified Goods within fourteen clear days after the posting of the Test Report or the despatch of a facsimile thereof to the Applicant or the Supplier relating to the Certifiable Goods or Certified Goods as the case may be.

1.6.15.7 An appeal against any test results pursuant to Regulation 1.6.15.6 shall be determined by the Chief Executive, or, if he shall consider that there are exceptional circumstances warranting such a determination, by the Chief Executive and the Chairman of the Certification Committee jointly, within fourteen days of the receipt of the notice of appeal.

1.6.15.8 There shall be no further appeal against a determination made pursuant to Regulation 1.6.15.7.

1.6.16 Alteration of regulations, rules and certification requirements

These Regulations, BASEC's rules and regulations for certification, and any associated rules agreed by the Board of Management may, from time to time, be altered but no such alterations shall affect the right of any Supplier to use the Certification Trade Mark unless, or until, three months' notice in writing of such alteration shall have been given to him by BASEC [See Note 3].

1.6.17 Delegation of Powers

The Board of Management may from time to time authorise amendments, deletions and additions to the list of Certifiable Goods and Appropriate Standards and may delegate its powers or any of them to Committees, Sub-Committees or to the Chief Executive, and appoint and remove officers or representatives as it may deem necessary for any purpose under these Regulations.

1.6.18 Notices

1.6.18.1 Any notice under these Regulations shall be in writing and signed by or on behalf of the party giving it and may be served by leaving it or sending it by prepaid recorded delivery or registered post, in the case of BASEC or the Supplier, at or to its address for the time being (registered office where applicable).

1.6.18.2 Any notice so served by post shall (unless the contrary is proved) be deemed to have been served forty-eight hours from the time of posting. In proving such notice it shall be sufficient to prove that notice was properly addressed and posted in accordance with this Regulation.

1.6.19 Governing Law

These Regulations shall be governed by and construed in accordance with English Law and the parties hereby submit to the exclusive jurisdiction of the English courts.

[Note: This section (BASEC Certification Trade Mark Regulations) is extracted from a controlled BASEC document, reference BSF067, available and updated separately; the text of BSF067 Issue 4 is included here for information. The current issue of the document should be used in all cases, which is available upon request from the BASEC office or can be downloaded via BASEC website.]

Notes:

1. Previously known as BA 2250.

2. BASEC was previously located at 23 Presley Way. BASEC's register of certifications can be accessed at any time at www.basec.org.uk.

3. Licence holders will be provided with notice of any changes to rules and regulations.

4. The Certification Trade Mark Regulations listed here are those applicable for the United Kingdom. Where the Trade Marks are registered elsewhere, such as the Republic of Ireland, different Regulations will apply. These can be found on the BASEC website.

1.7 TERMS AND CONDITIONS

This document forms part of the BASEC Product Certification Requirements. This section sets out BASEC's commercial Terms and Conditions of business for BASEC Services.

TERMS & CONDITIONS OF BUSINESS

1.7.1 Interpretation

1.7.1.1 In these Terms & Conditions

'BASEC' means British Approvals Service for Cables whose registered office is at Presley House, Presley Way, Crownhill, Milton Keynes, MK8 0ES. Registered in England, No 1150237.

'Client' means the person, company, firm or other body seeking the 'Services'

'Agreement' means the contract for the provision of the Services which will consist of some or all of the following documents, dependent on the Services to be provided: BASEC quotation, BASEC Certification Agreement, Client's order, these Terms and Conditions, BASEC PCR, Certification Scheme Regulations documents, Rules for Use of Certification Marks, as specified by BASEC.

'Services' means the provision of certification, listing (publication), testing, investigatory works, training or other services as set out in a BASEC quotation, Client purchase order, or BASEC invoice. The Services may also comprise or include the provision of a Report.

'Report' means the report(s) relating to the Services and is intended only for the Client's internal use and benefit.

'Consumer' means the person, firm, company or other body that uses the Client's product, process, system or service being Certified or tested by the Services.

'Certification' means BASEC's conformity assessment, approval, registration, initial or annual listing or recognition of products, processes, systems or services and 'Certification Services', 'Certificate' and 'Certified' shall be construed accordingly.

1.7.1.2 The headings in these Terms & Conditions are for convenience only and shall not affect their interpretation.

1.7.1.3 Reference to any statute or statutory provision includes a reference to the statute or statutory provisions as from time to time amended, extended or re-enacted.

1.7.1.4 The revision status of these Terms & Conditions is stated at the bottom of each page. This revision supersedes all previous revisions, and upon issue to Clients is deemed to be the prevailing Terms & Conditions for all new and existing Agreements.

1.7.1.5 These Terms apply to the Agreement to the exclusion of any other terms that the Client seeks to impose or incorporate, or which are implied by trade, custom, practice or course of dealing.

1.7.1.6 Any quotation given by BASEC shall not constitute an offer, and is only valid for a period of 30 business days from its date of issue, or as specified in the quotation.

1.7.1.7 An Agreement shall come into existence when both BASEC and the Client sign a BASEC Certification or Testing Agreement or BASEC issues a written acknowledgement of a Client's order for the Services. The continued instruction by the Client shall also be deemed acceptance of these Terms.

1.7.1.8 A Certification Agreement shall last for 4 years subject to termination pursuant to clause 1.7.8. An Agreement for Services other than Certification Services shall remain in force until the Services have been provided when it shall automatically terminate, subject to earlier termination in accordance with clause 1.7.8.

1.7.2 Responsibilities of the Client – Common to all Services

1.7.2.1 The Client shall, at their own expense, supply BASEC in a timely manner with copies of all documents, materials, information, data and samples necessary to perform the Services, translated into English if necessary. The Client shall ensure the accuracy of all this material. BASEC shall have no liability for any loss or damage to such documentation, however caused.

1.7.2.2 The Client shall fully cooperate with BASEC's representative and any UKAS representative and give access at all times to the premises, data and other facilities as are required by BASEC to carry out the Services. The Client shall give BASEC at least fourteen clear days' written notice in the event that the Client wishes to postpone or cancel any service. The Client agrees to be responsible for all reasonable costs, charges or losses sustained by BASEC because of any cancellation or postponement. If less than 14 clear days' notice are given, the client agrees to pay the full fees for the assessment or testing.

1.7.2.3 If BASEC's performance of its obligations is prevented or delayed by any act or omission of the Client, its agents, subcontractors, consultants or employees, BASEC shall not be liable for any costs, charges or losses sustained or incurred by the Client that arise directly or indirectly from such prevention or delay.

1.7.2.4 The Client shall ensure that BASEC representatives are accompanied at all times by a Client representative. The Client's representative shall operate any equipment or machinery including computer terminals to access information, except as required by BASEC and agreed in writing by BASEC.

1.7.2.5 The Client shall notify BASEC of any changes to its contact details or legal entity status, including ownership, within 7 days of the change (subject to clause 1.7.11 below). Certification is only transferrable with the written agreement of BASEC.

For product, process and system Certification schemes

1.7.2.6 Unless otherwise required in the Agreement the Client shall:

(a) provide the Consumer with adequate instructions for the proper siting, installation, maintenance, and operation and, where required by law, disposal of the product (or system);

(b) provide BASEC with samples, or access to samples, of Certified product (or system) which are representative of current production methods for re-examination or re-assessment, and will be responsible at its own expense for delivering the products or materials to such premises as BASEC directs.

(c) keep adequate records to permit the Consumer to trace product and to allow a product, (process or system) recall to be effected.

1.7.2.7 The Client shall manufacture the product or provide the process, system or service as Certified by BASEC and no changes which may affect the quality or performance of the product, process, system or service shall be made unless notice of the proposed change has been given and written authorisation obtained from BASEC.

1.7.2.8 Should the Client become aware of any shortfall in the performance of the product, process, system or service, howsoever caused, the Client shall inform BASEC immediately and shall take all steps - including, for the avoidance of doubt, a product recall - that BASEC shall reasonably require to rectify such shortfall in performance as soon as reasonably practicable.

1.7.2.9 Where required by the Agreement the Client shall permit periodic audits, as specified by BASEC, and provide access to the facilities identified on certificates issued by BASEC for the maintenance of any Certification.

1.7.2.10 Where required by the Agreement audits shall also be undertaken at service and/or installation locations identified by the Client.

1.7.2.11 The Client shall maintain a record of complaints, failures and remedial actions taken.

1.7.2.12 The Client may only use the BASEC Certification marks and/or notified body number and/or claim Certification for the manufacture of product or for the provision of the process, system, or service identified on valid certificates issued by BASEC and as set out in the BASEC document “Rules for the Use of Marks”.

1.7.2.13 If the product, process, system, or service ceases to be certified and or listed by BASEC, then the Client shall cease using and will remove or obliterate any mark and/or notified body number from the product, service and/or from any promotional material.

1.7.2.14 The Client shall not supply any product, process or system which does not conform to the requirements set out in the Agreement.

1.7.2.15 The Client shall not, without BASEC’s written permission, alter, modify, deface or destroy the Certificate.

1.7.2.16 The Client may publicise the fact that Certification has been granted and use the Certificate as evidence of Certification. The Client may copy the Certificate provided that each copy is clearly identified as a copy.

1.7.2.17 The original and any copies of the Certificate remain the property of BASEC and must be returned immediately on termination of the Agreement or if requested by BASEC.

1.7.2.18 The Client may appeal any decision by BASEC not to issue, to reduce or to withdraw Certification, using the procedure set out by BASEC.

For testing (not related to Certification)

1.7.2.19 The Client shall be responsible at its own expense for delivering the products or materials to such premises as BASEC directs. The Client acknowledges that products and materials may be tested to destruction and BASEC shall have no liability to the Client in this respect. Unless agreed otherwise in writing, samples submitted for testing shall become the property of BASEC on delivery to BASEC.

1.7.2.20 The Client shall be responsible for any delays in testing resulting from any material, products, documentation and/or instructions supplied by the Client which are incomplete, incorrect, inaccurate, illegible, out of sequence or in the wrong form or arising from their late arrival or non-arrival or any fault of the Client that results in extended occupation of a test rig or equipment or significant delays to other Client's projects. The Client shall be responsible for all reasonable costs, charges or losses sustained by BASEC by reason of such delays.

1.7.2.21 The Customer shall not identify the product as Certified or approved by or use the name of BASEC or make any reference to any test or Report or Service for any advertising, sales or promotional purpose or through any use whatsoever that could imply certification by BASEC.

1.7.2.22 Unless required by law, or with BASEC's written permission, the Client shall not reproduce or distribute any Report to any external third party and when permitted only in its entirety and without any change, deletion or addition to it.

1.7.2.23 The Client must notify BASEC immediately if it becomes aware of any unauthorised use of the whole or any part of the Report.

1.7.3 Rights and responsibilities of BASEC

1.7.3.1 BASEC will only grant Certification when the Client has demonstrated compliance with all requirements. BASEC may at any time make changes to the Certification requirements which are necessary to comply with any applicable safety or other statutory requirements, or which are necessary to comply with the relevant standards or which are necessary to meet the requirements of the relevant accreditation authority and the Client shall comply with such changes as soon as reasonably practicable after notification of such changes.

1.7.3.2 BASEC reserves the right in its sole judgement to change or revise its standards, criteria, methods or procedures, however, reasonable notice will be given to the Client such that continued conformance with BASEC's requirements is practicable.

1.7.3.3 BASEC, its employees and agents agree to maintain as confidential and not to use or disclose to any third party any confidential information obtained from the Client in connection with the Services without the consent of the Client except where it is

necessary to enable BASEC to perform the Services, except as required by law, or as specified in clause 1.7.3.4.

The following shall not be subject to such restrictions:

(a) Information already in the possession of BASEC prior to its disclosure by the Client or which subsequently comes into its possession free from any obligation of confidentiality; or

(b) Information which is public knowledge (otherwise than as a breach of these Terms); or

(c) Information which is necessary to enable BASEC to achieve or maintain approval and / or accreditation; or

(d) Information which is required by an accreditation body or notification authority to be disclosed.

1.7.3.4 BASEC reserves the right in its sole judgement to disclose confidential information to appropriate parties where, in BASEC's view, public safety may become at risk or where the reputation of BASEC may be materially prejudiced.

1.7.4 Fees

1.7.4.1 The Client shall pay to BASEC the fees set out in the Agreement.

1.7.4.2 All fees quoted to the Client for the provision of the Services are exclusive of any value added tax, for which the Client shall be additionally liable at the applicable rate.

1.7.4.3 The Client agrees that it will reimburse BASEC for any expenses incurred by BASEC relating to the provision of the Services and that it is wholly responsible for any freight, customs duty or customs clearance fees relating to any test samples.

1.7.4.4 All sums payable to BASEC shall be paid by the Client (together with any applicable value added tax, and without any set-off or other deduction) within 30 days of the date of BASEC's invoice unless a shorter period has been agreed in writing. If payment is not received by the due date, BASEC may suspend or withdraw Certification and any associated listing. If payment is not made by the due date, BASEC may exercise its statutory right to claim interest and compensation for debt recovery under the Late Payment of Commercial Debts (Interest) Act 1998 (as amended).

1.7.4.5 Initial assessments and testing will not be conducted until payment has been received in full. The initial audit for Product or Management Systems Certification is carried out in two parts (stage 1 and 2), usually back to back. If during the stage 1 audit the auditor identifies potential major NC's, then the stage 2 audit may be postponed and any resulting costs may be invoiced or quoted separately.

1.7.4.6 Investigatory works and training will not be conducted until payment has been received in full.

1.7.4.7 The Client agrees that, should they not meet their obligations under a Certification Agreement, e.g. non-provision of samples for testing, then BASEC has the right to retain monies pre-paid and/or charge an administration fee.

1.7.4.8 The Client agrees that, should they cancel an order for advisory, training or other services not relevant to a Certification Agreement, or for non-provision of samples, then the following fees apply: if cancellation is made between 1 and 14 days prior to commencement of the Services 100% of the fee is payable; if cancellation is made between 15 and 27 days prior to commencement then 50% of fee is payable; for Services cancelled 28 or more days prior to commencement then an administration charge of 10% shall apply.

1.7.4.9 All sums payable to BASEC under an Agreement shall become due immediately on its termination, despite any other provision.

1.7.5 Health & Safety

1.7.5.1 Where BASEC is required to access the property of the Client or Consumer for the purposes of carrying out the Services then the Client and/or consumer shall provide unhindered access to all relevant working facilities required by BASEC and shall provide safe access and a safe working environment which complies with all health and safety law requirements.

1.7.5.2 The Client agrees to make full and immediate written disclosure to BASEC of all relevant information concerning any defect or any potential hazard of the product or material being handled or tested when submitting it for testing or as soon as they become aware of it.

1.7.6 Warranties and liabilities

1.7.6.1 BASEC shall provide the Services with reasonable care and skill.

1.7.6.2 BASEC shall have no liability to the Client for any loss, damage, costs, expenses or other claims for compensation arising from any material or instructions supplied by the Client which are incomplete, incorrect, inaccurate, illegible, out of sequence or in the wrong form, or arising from their late arrival or non-arrival, or any other fault of the Client.

1.7.6.3 Nothing in these Terms limits or excludes BASEC's liability for death or personal injury caused by its negligence, fraud or fraudulent misrepresentation, or any other liability which cannot be limited or excluded by applicable law.

1.7.6.4 Subject to clause 1.7.6.3, BASEC shall not be liable to the Client, whether in contract, tort (including negligence), for breach of statutory duty, or otherwise, arising under or in connection with the Agreement for: loss of profits; loss of sales or business; loss of agreements or contracts; loss of anticipated savings; loss of or damage to reputation or goodwill; loss of use or corruption of software, data or information; or any indirect or consequential loss.

1.7.6.5 Subject to clauses 1.7.6.3 and 1.7.6.4, BASEC's total liability to the Client, whether in contract, tort (including negligence), for breach of statutory duty, or otherwise, arising under or in connection with an Agreement shall be limited to the

amount which has actually been paid by the Client to BASEC for the provision of the Services under that Agreement.

1.7.6.6 Except in respect of death or personal injury, the Client will look only to BASEC (and not to any individual engaged by BASEC, including any directors of BASEC) for redress if the Client considers that there has been any breach of this Agreement. The Client agrees not to pursue any claims in contract, tort (including negligence) or for breach of statutory duty against any individuals working for and on behalf of BASEC in carrying out its obligation under the Agreement at any time, whether named expressly in the Agreement or not.

1.7.6.7 The terms implied by sections 3 to 5 of the Supply of Goods and Services Act 1982 are, to the fullest extent permitted by law, excluded from this agreement.

1.7.6.8 BASEC shall use reasonable endeavours to meet the timescales set out in the Agreement but time shall not be of the essence and BASEC shall not be liable for any losses arising from any delay.

1.7.6.9 The Client acknowledges that Certification does not imply or express any warranty of any kind with respect to the Client's product or service. The Client acknowledges that it is solely responsible for the suitability of any Certified product or service for any purpose, for defects or for failure in service. In addition, BASEC shall not be liable for any claim that the Client's product or service infringes the intellectual property rights of any third party.

1.7.6.10 The Client agrees to indemnify BASEC against any losses suffered by or claims made against BASEC as a result of any breach by the Client of the Agreement including, but not limited to, misuse by the Client of any Certification granted by BASEC under this Agreement.

1.7.7 Force Majeure

1.7.7.1 Neither party shall be liable to the other for any delay in performing or failure to perform any obligation under this Agreement to the extent that such delay or failure to perform is a result of war, acts of terrorism, civil disorder, riots, natural disasters, strikes or labour disputes or failure of utilities.

1.7.7.2 A party whose performance is affected by such a Force Majeure event shall promptly notify the other party in writing of the events and likely duration.

1.7.7.3 If the Force Majeure Event continues for sixty (60) days then either party may terminate this Agreement by giving at least ten (10) days' written notice to the other party.

1.7.8 Suspension and/or termination

1.7.8.1 At the date of suspension or termination of this Agreement for whatever reason any Certification granted under this Agreement shall immediately cease to be valid.

1.7.8.2 Either party may terminate a Certification Services Agreement by giving 90 days' notice in writing to the other.

1.7.8.3 Without prejudice to any other rights, BASEC may immediately suspend or withdraw any Certification due to unsatisfactory performance, unsatisfactory results in meeting requirements of re-examination, unsatisfactory quality system or non-conformance with any part of this Agreement (including non-payment of any fees due).

1.7.8.4 Without prejudice to any other rights, either party may terminate the Agreement immediately by notice in writing to the other if the other:

(a) commits a breach of the Agreement which, in the case of a breach capable of remedy, has not been remedied within 14 days of being notified in writing to do so;

(b) is unable to pay its debts or enters into compulsory or voluntary liquidation (other than for the purpose of effecting a reconstruction or amalgamation in such manner that the company resulting from such reconstruction or amalgamation if a different legal entity shall agree to be bound by and assume the obligations of the relevant party under the Agreement) or compounds with or convenes a meeting of its creditors or has a receiver or manager or an administrator appointed or ceases for any reason to carry on business or takes or suffers any similar action which in the opinion of the party giving notice means that the other may be unable to pay its debts.

1.7.8.5 Once an Agreement comes into existence, the Client will be liable for costs incurred until the date of termination or expiry.

1.7.8.6 Suspension or termination of the Agreement for whatever reason shall not affect the accrued rights of the parties arising in any way out of the Agreement as at the date of suspension or termination and, in particular, but without limitation, the right to recover damages against the other.

1.7.8.7 On termination or expiry of the Agreement:

(a) the Client shall immediately pay to BASEC all of the outstanding unpaid fees and interest and, in respect of Services supplied but for which no invoice has been submitted, BASEC may submit an invoice, which shall be payable immediately on receipt;

(b) all clauses which are expressed or implied to continue shall continue in force.

1.7.8.8 Termination or expiry of the Agreement shall not affect any rights, remedies, obligations or liabilities of the parties that have accrued up to the date of termination or expiry, including the right to claim damages in respect of any breach of the agreement which existed at or before the date of termination or expiry.

1.7.9 Variation

No variation of the Agreement shall be effective unless it is in writing and signed by the parties (or their authorised representatives).

1.7.10 No partnership of agency

1.7.10.1 Nothing in the Agreement is intended to, or shall be deemed to, establish any partnership or joint venture between any of the parties, constitute any party the agent of another party, or authorise any party to make or enter into any commitments for or on behalf of any other party.

1.7.10.2 Each party confirms it is acting on its own behalf and not for the benefit of any other person.

1.7.11 Assignment

Neither party shall assign, transfer, sub-contract or in any other manner make over to any third party the benefit of the Agreement, without the prior written consent of the other. The burden under the Agreement shall only be transferred under a novation agreement.

1.7.12 Third parties

Save as expressly provided in this agreement, no term shall be enforceable under the Contracts (Rights of Third Parties) Act 1999 by a third party (being any person other than the parties, their permitted successors and assignees).

1.7.13 Entire agreement

The Agreement embodies and sets out the entire agreement and understanding of the parties and supersedes all prior oral or written agreements understandings or arrangements relating to the subject matter of the Agreement. Neither party shall be entitled to rely on any understanding or arrangement, which is not expressly set out in the Agreement.

1.7.14 Waiver

No failure or delay on the part of either party to exercise any right or remedy under the Agreement shall be construed as or operate as a waiver nor shall any single or partial exercise of any right or remedy, as the case may be. The rights and remedies provided in these Terms are cumulative and are not exclusive of any rights or remedies provided by law.

1.7.15 Notices

1.7.15.1 A notice to be given in relation to the Agreement shall be in writing and may be delivered personally or by sending it by pre-paid first class post or fax to the intended recipient's address as set out in the Agreement or to any other address notified in writing by that party or via email to an appointed email address. A notice delivered personally shall be deemed to have been served on delivery. A notice sent by post shall be deemed to have been served at an address within the United Kingdom at the expiry of 48 hours from the date of posting and at an address outside the United Kingdom at the expiry of 72 hours from the date of posting. Where any notice is given by fax service of the same shall be deemed to be effected upon receipt of the normal confirmation of receipt. Notice given via email will be deemed to have been served when a confirmation receipt email is received.

1.7.15.2 This clause does not apply to the service of any proceedings or other documents in any legal action or, where applicable, any arbitration or other method of dispute resolution.

1.7.16 Arbitration

Any dispute or difference, other than non-payment of fees set out in clause 1.7.4, arising out of or in connection with this Agreement shall be determined by the appointment of a single arbitrator to be agreed between the parties, or failing agreement within fourteen days, after either party has given to the other a written request to concur in the appointment of an arbitrator, by an arbitrator to be appointed by the President or a Vice President of the Chartered Institute of Arbitrators.

1.7.17 Severability

If any provision of the Agreement is held to be invalid or unenforceable such provision shall be deemed to be severed from the Agreement and the remaining provisions shall remain in force.

1.7.18 Governing law

This Agreement shall be governed by and construed in accordance with English Law and the parties hereby submit to the exclusive jurisdiction of the English courts.

[Note: This section (Terms & Conditions) is extracted from a controlled BASEC document, reference CF013, available and updated separately; the text of CF013 Issue ~~1~~ ~~2~~ 3 is included here for information. The current issue of the document should be used in all cases, which is available upon request from the BASEC office or can be downloaded via BASEC website.]

2 MANAGEMENT SYSTEM CERTIFICATION

2.1 INTRODUCTION

BASEC offers Management System Certification to BS EN ISO 9001, BS EN ISO 14001 and BS OHSAS 18001. The following flow charts demonstrate the process involved for gaining certification to each of the aforementioned standards, BASEC can also offer integrated audits to any two or more of these standards.

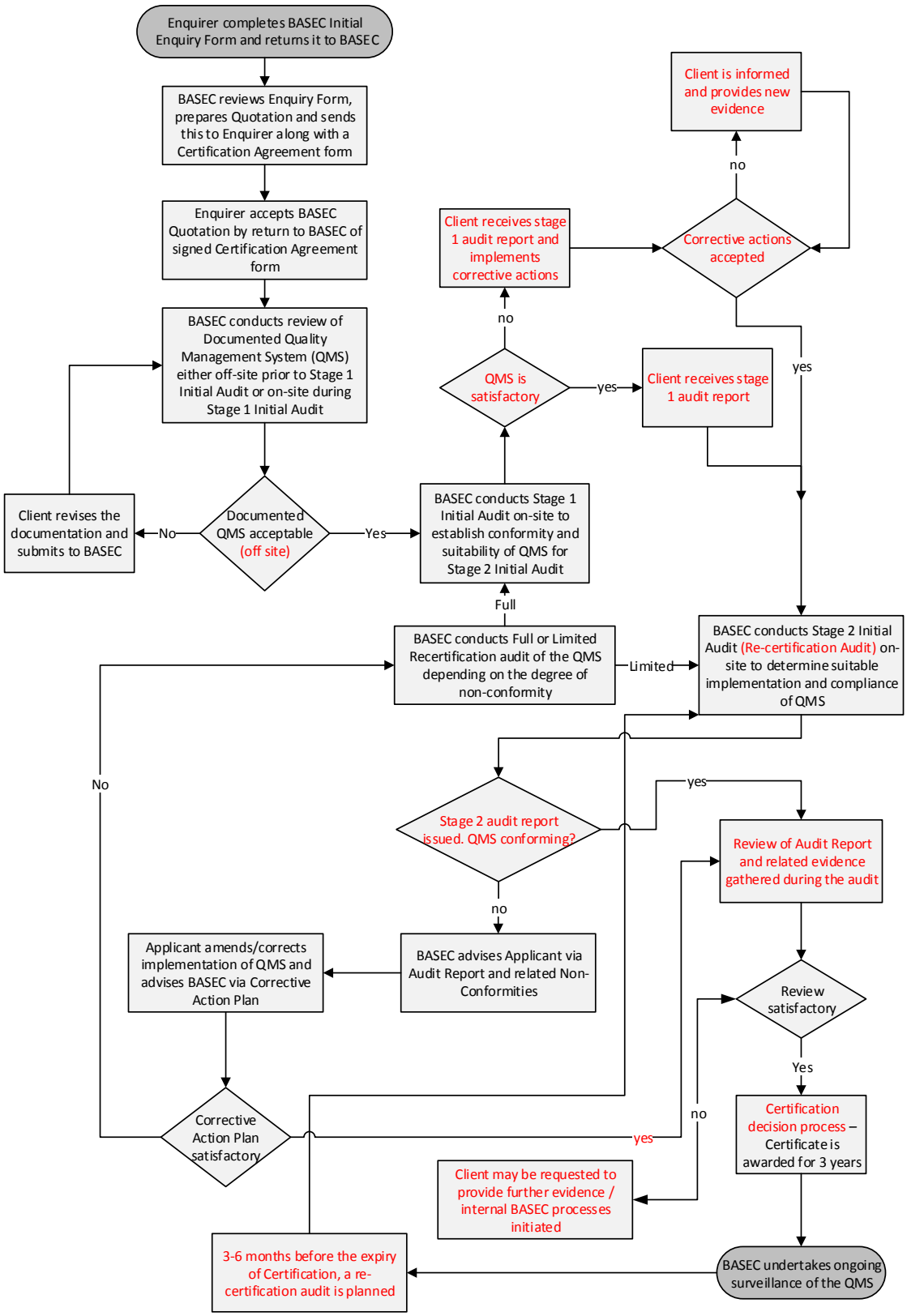
ISO 9001 (BS EN ISO 9001) [Note: UKAS accredited]

ISO 14001 (BS EN ISO 14001) [Note: UKAS accredited]

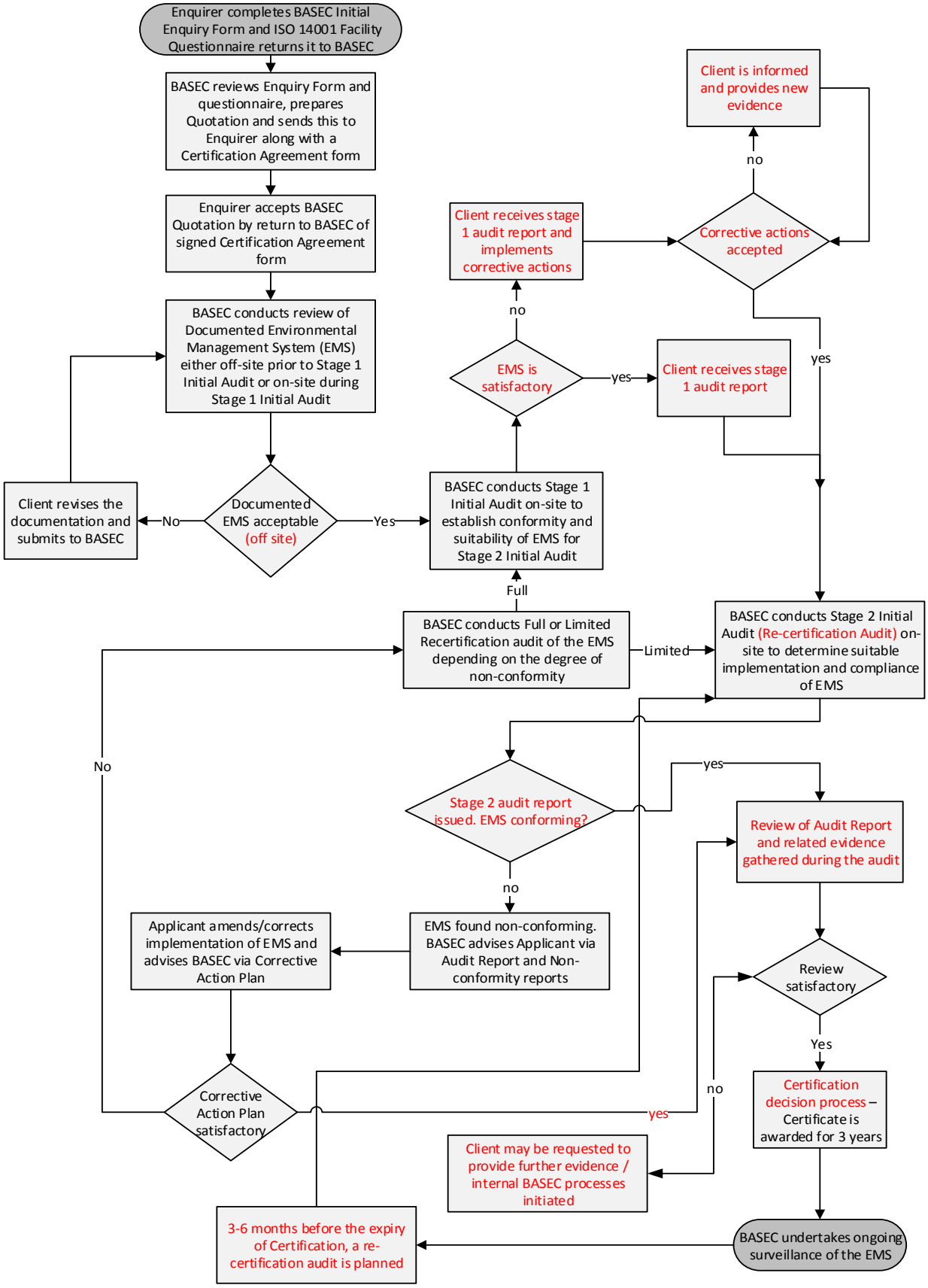
BS OHSAS 18001

BASEC PCR Section 2.6

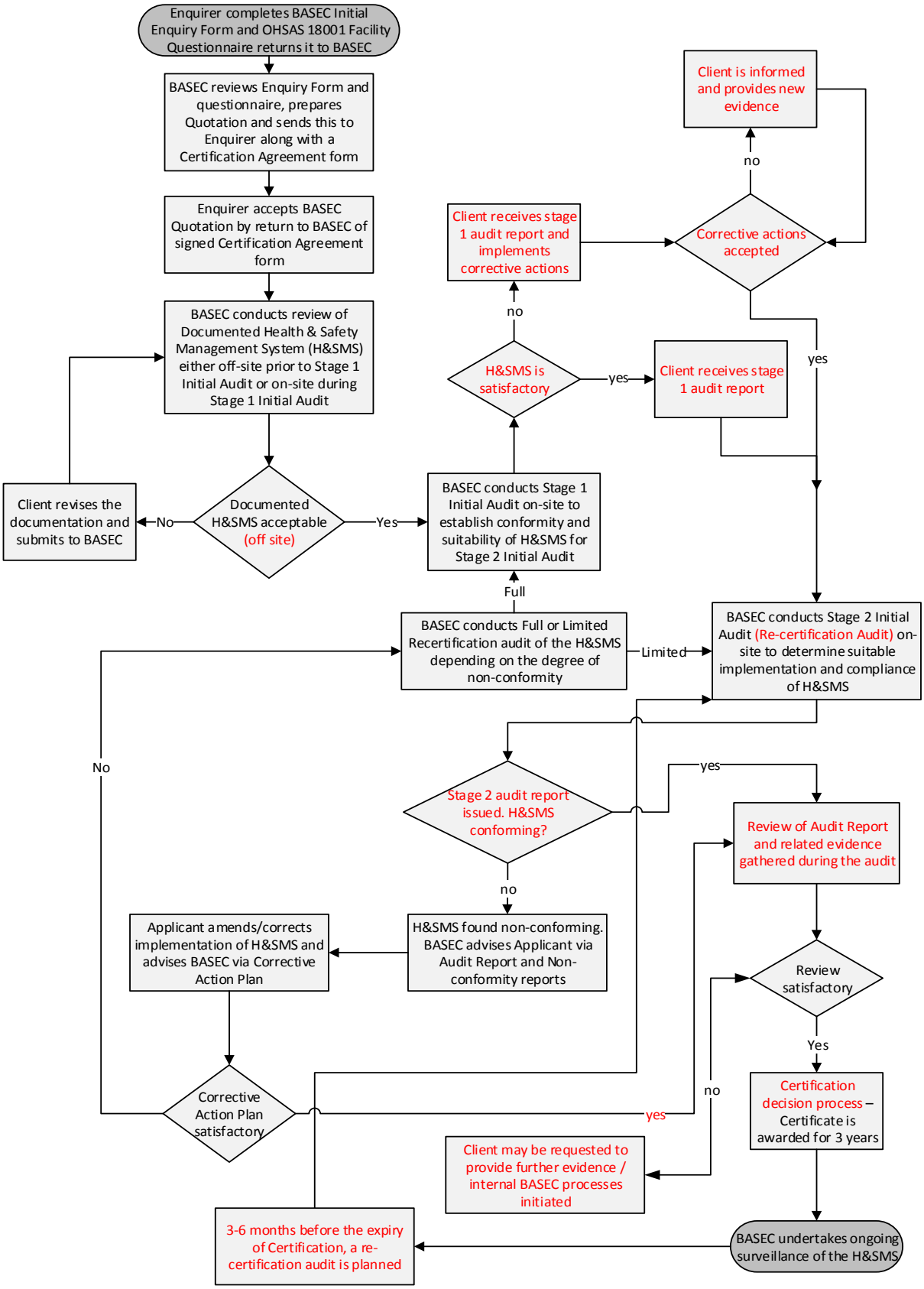
2.2 BS EN ISO 9001



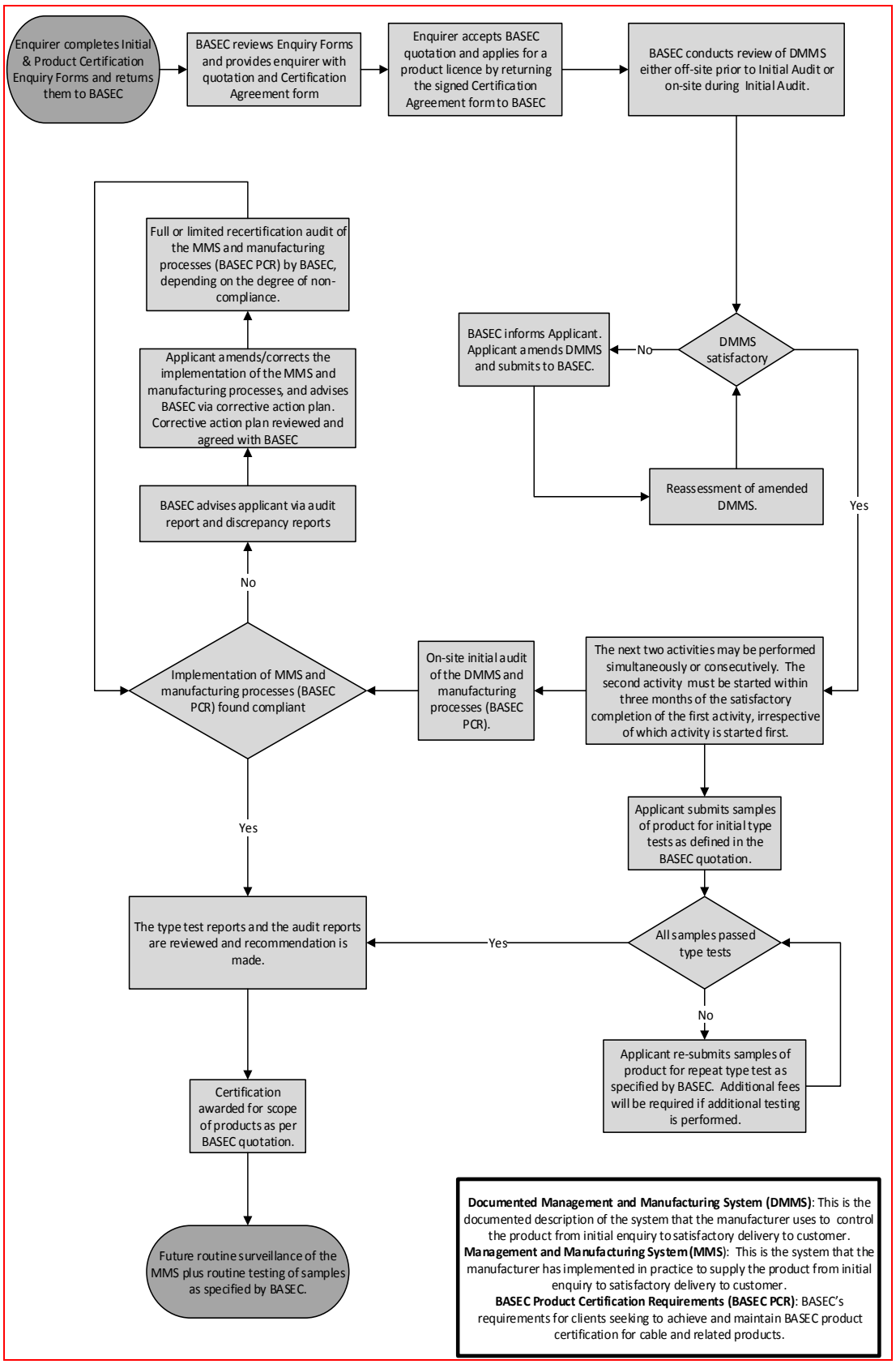
2.3 BS EN ISO 14001



2.4 BS OHSAS 18001



2.5 PRODUCT CERTIFICATION



2.6 PRODUCT CERTIFICATION REQUIREMENTS (PCR Section 2.6)

The Product Certification Requirements (PCR Section 2.6) details the assessment and certification requirements for any potential or existing holder of a BASEC Product Certification Licence.

Before such a Licence can be awarded the Supplier must have a Quality Management System which has been verified by BASEC as meeting with all applicable requirements of the BASEC Product Scheme Requirements.

This Section 2.6 covers product certification related requirements and includes all individual relevant clauses of ISO 9001:2008, plus additional requirements of BASEC as set out in each sub-section. All such requirements will be individually subject to audit by BASEC.

Suppliers audited against Section 2.6 will by definition have been audited to ISO 9001:2008 and hence may be awarded BASEC certification to ISO 9001:2008.

[Note: ISO 9001:2015 is expected to be published during the validity of this issue of the PCR. BASEC will make separate arrangements for transition to ISO 9001:2015. The detailed requirements of ISO 9001:2015 will be included in the next issue of the PCR.]

BASEC permits no restrictions of scope or exclusions of sub-sections from Section 2.6. All relevant aspects of the Supplier's Quality Management System must conform to all sub-sections.

2.6.1 Reference Standards & Relevant Documents

BS EN ISO 9001:2008 (referred to herein as ISO 9001:2008)

ISO 9004:2009

ISO/IEC 17025:2005

Product Standards as listed in the BASEC Product Certification Requirements

BASEC Terms and Conditions

2.6.2 Definitions

Conformal Product: Cable which meets the requirements of the appropriate standard or specification

Contract: Any agreement to deliver product and/or services.

Design: For the purposes of Section 2.6 of the PCR (and therefore by definition for ISO 9001), BASEC takes a broad definition of 'design', to include dimensional design, selection of materials, and process design including machine setup and settings.

2.6.3 Management Responsibility

The Supplier's organisation structure shall demonstrate a clear functional relationship and responsibility chain for and within each section of that organisation.

The identity of the nominated representative responsible for the organisation's compliance with the required quality and product systems/standard, together with their defined responsibilities and authority, must be given. One or more deputies shall also be nominated.

The Supplier's top management shall review the effectiveness of its implementation of the Quality and Product Systems at least twice per year.

The Supplier shall have a quality policy and quality objectives and demonstrate to BASEC compliance with clauses 5.3 (Quality Policy) and 5.4.1 (Quality Objectives) of ISO 9001:2008.

The Supplier shall demonstrate to BASEC compliance with clauses 4.1 (QMS General Requirements), 5.1 (Management Commitment), 5.5.1 (Responsibility and Authority), 5.5.2 (Management Representative), 5.6.1 (Management Review – General), 5.6.2 (Management Review - Input) and 5.6.3 (Management Review - Output) of ISO 9001:2008.

2.6.4 Quality Plans

The Supplier shall ensure that a quality plan is available for all licensed product. The quality plan shall include information to ensure that conformance to cable or component specifications can be demonstrated. As a minimum this shall include:

- Identification of each and every activity involved in the manufacture of the cable from the delivery of raw materials to the dispatch of the cable to the purchaser.
- Definition of each inspection and test or process control activity and its position in the manufacturing process.
- The sampling plans used and/or the inspection frequency, and test frequency for each relevant test.
- Any intermediate operation in the manufacturing process, which cannot be checked at a later stage, shall be detailed in the quality plan.

The Supplier shall demonstrate to BASEC compliance with clauses 4.2.1 (Documentation Requirements – General), 4.2.2 (Quality Manual) and 5.4.2 (Quality Management System Planning) of ISO 9001:2008.

2.6.5 Contract Review

There shall be a record of the precise agreements between Customer and Supplier taking account of HQ and Trading Unit activities etc.

NB: This shall not be taken to mean that any aspect of the pricing strategy / tactics shall be called into question.

There shall be precise records of what is required and supplied, including any details of deviations and / or concessions inside or outside the Supplier's organisation.

Verbal orders or amendments shall be treated as contracts and appropriate records made.

In considering the ability of the Supplier to deliver the required product(s) at the required time, process capability and capacity shall be taken into account.

The Supplier shall demonstrate to BASEC compliance with clauses 5.2 (Customer Focus), 7.1 (Planning of Product Realisation), 7.2.1 (Determination of Requirements Related to the Product) and 7.2.2 (Review of Requirements Related to the Product) of ISO 9001:2008.

2.6.6 Design Control

The functional and hierarchal interfaces between Customer, Sales, Design, Manufacturing, etc. shall be specifically detailed.

There shall be a detailed plan for each project.

Design Output shall always be reviewed against the Customer Requirements and Design Input, any differences being referred to the Customer for agreement as necessary.

Design verification and validation shall always ensure the product can be manufactured in conformance with the appropriate standard or specification.

The Supplier shall demonstrate to BASEC compliance with clauses 7.3.1 (Design and Development Planning), 7.3.2 (Design and Development Inputs), 7.3.3 (Design and Development Outputs), 7.3.4 (Design and Development Review), 7.3.5 (Design and Development Verification), 7.3.6 (Design and Development Validation) and 7.3.7 (Control of Design and Development Changes) of ISO 9001:2008.

2.6.7 Document Control

The supplier shall ensure that:

- The management systems required under this scheme are fully documented, and that these documents are "controlled", e.g. drawings, specifications, job descriptions, procedures, work instructions, health and safety regulations, environmental regulations, etc.

- There shall be a master list of all controlled documents including external documents which shall contain:

  a) alpha-numeric identity of document;
  b) issue level;
  c) authorisation signature;
  d) date.

- There shall be a controlled distribution list showing where all the controlled documents are held.

The Supplier shall demonstrate to BASEC compliance with clause 4.2.3 (Control of Documents) of ISO 9001:2008.

2.6.8 Purchasing

There shall be a controlled list of suppliers which have been evaluated and continue to be evaluated, in a systematic way against objective criteria.

The assessment of suppliers shall apply to the provision of material, software and services.

Purchase Orders shall be definitive in all respects.

The Supplier shall demonstrate to BASEC compliance with clauses 7.4.1 (Purchasing Process) and 7.4.2 (Purchasing Information) of ISO 9001:2008.

2.6.9 Customer Supplied Product

Such products or material shall be controlled in a manner consistent with the control of the Supplier's own materials. If there is any loss or damage to customer supplied product the customer shall be notified.

The Supplier shall demonstrate to BASEC compliance with clause 7.5.4 (Customer Property) of ISO 9001:2008.

2.6.10 Product Identification and Traceability

There shall be positive identification of material and product at all stages of receipt, storage, manufacture and despatch.

The Supplier shall demonstrate to BASEC compliance with clause 7.5.3 (Identification and Traceability) of ISO 9001:2008.

2.6.11 Process Control

There shall be planning schedules based on known and proven machine/process capacities.

Preferred and alternative machine/process routing cards shall be issued for each cable on which planning schedules are based.

There shall be machine/process set up and running parameters for each cable.

There shall be procedures for the care and maintenance of all tools, aids and machines.

The plant and process capability to manufacture any product within the range for which a Licence applies shall be defined.

All instruments/controllers, test/inspection equipment and software which are used to ensure conformance of machinery, test/measurement equipment, or product shall be calibrated or otherwise verified as appropriate.

All employees shall be trained to ensure competence in the performance of their assigned tasks; this shall include all relevant aspects of health, safety, pollution and environmental aspects.

The Supplier shall be able to demonstrate the competence of all operators and supervisors to run the specific production lines throughout all shifts.

Training and competence shall be recorded and these records shall be available to all operators' immediate supervisor on each shift.

There shall be no significant change to material, process or machinery used in the manufacture of the BASEC licensed product unless such a change has been notified to and approved by BASEC.

Examples of significant material changes are:
Insulation material
Bedding material
Sheathing material
Fire resistant barriers (e.g. Mica, Glass woven tapes)

The Supplier shall demonstrate to BASEC compliance with clause 7.5.1 (Control of Production and Service Provision) and 7.5.2 (Validation of Processes for Production and Service Provision), 8.1 (Measurement, Analysis and Improvement – General) and 8.2.3 (Monitoring and Measurement of Processes) of ISO 9001:2008.

2.6.12 Inspection and Testing

Inspection and test status shall cover incoming raw material, in-process production, goods or services received from sub-contractors, the finished product and spares.

There shall be a positive means for the identification of the inspection and test status of all the above material at relevant control points.

Inspection and test status may not be applicable where the sample of developed or tested product is part of a design or development project, but there must be a method of identifying any samples to ensure that there can be no confusion regarding the identity of the samples or items and the accompanying measurements.

There shall be documented identification of the characteristics to be inspected, tested or examined, including subjective criteria.

There shall be adequate instructions for the inspection, test or process control and the definition of acceptance/rejection criteria.

Defects in product found during routine product sampling tests, or identified from production failure reporting, shall be considered as indicating a failure of the ISO 9001:2008 Quality Management System, and appropriate action documented/taken.

The statistical method used to confirm finished cable confidence levels must be defined and evidence of use available.

Any sampling must have a statistical confidence level of at least 95%.

Any application to, or acceptance of, the client of “below specification” product shall be fully authorised and documented.

The test and measurement records must be clear and easy to access.

The Supplier shall demonstrate to BASEC compliance with clauses 7.4.3 (Verification of Purchased Product) and 8.2.4 (Monitoring and Measurement of Product) of ISO 9001:2008.

2.6.13 Test and Measurement

There shall be a system of control of inspection, measuring and test equipment to meet the requirements of ISO 9001:2008 and ISO/IEC 17025:2005. Any measurement equipment from which a reading is taken or required shall be calibrated, with traceability to national or international references.

“Indication only” equipment does not require calibration, but there does need to be some check or preventative maintenance to ensure that it is working correctly and it should be labelled accordingly.

The equipment must be adequate for tests and measurements at the electrical, dimensional and physical properties limits.

There shall be a definition of the measurement accuracy required, the equipment and method to be used in the measurement, and the measurement uncertainty associated with the defined equipment and method.

Reference standards of measurement held by the laboratory shall be used for calibration only, normally in the laboratory environment.

Where relevant, testing equipment including test software shall be subject to in-service checks between routine calibrations.

The Supplier shall demonstrate to BASEC compliance with clause 7.6 (Control of Monitoring and Measuring Equipment) of ISO 9001:2008.

2.6.14 Inspection and Test Status

The test and inspection status of all material and product shall be positively marked on that material and product.

The Supplier shall demonstrate to BASEC compliance with clause 7.5.3 (Identification and Traceability) of ISO 9001:2008.

2.6.15 Control of Non-conforming Product, Rework and Repair

Rework before final inspection shall be governed by the requirements defined in ISO 9001:2008 and which for cable made under a BASEC license shall conform to the

requirements of clause 6.1 of this document. The procedures governing any repair or rework shall be documented.

If required by the contract, rework or repair after final inspection shall be the subject of a concession signed by both the Supplier and the Customer.

For these purposes the following definitions shall apply: Rework; the repeat of a normal manufacturing process or operation, e.g. strip and resheath. Repair: an operation different from a production operation, which incorporates the making good of a non-conforming feature, e.g. the repair of pinholes.

The Supplier shall demonstrate to BASEC compliance with clause 8.3 (Control of Non-Conforming Product) of ISO 9001:2008.

2.6.16 Corrective Action & Preventive Action

The supplier shall demonstrate to BASEC compliance with clauses 8.5.2 (Corrective Action) and 8.5.3 (Preventive Action) of ISO 9001:2008.

2.6.17 Packaging and Marking

All product must be packed in a manner or style commensurate with the destination and method of delivery.

Delivery, where not an in-house function, shall be performed by approved suppliers with a good delivery record.

The Supplier, when the goods are not picked up by the customer, shall ensure that the product is received in good condition.

The product or its drum/reel shall in addition to any requirement of the detailed specification include:

- cable type and specification number; and,
- unique identifier (for traceability); and,
- length of cable including the unit of measurement; and,
- name of manufacturer.

The Supplier shall demonstrate to BASEC compliance with clause 7.5.5 (Preservation of Product) of ISO 9001:2008.

2.6.18 Control of Records

The supplier shall demonstrate to BASEC compliance with clause 4.2.4 (Control of Records) of ISO 9001:2008.

2.6.19 Internal Audits

There shall be a formal and documented system of internal audit and management review to evaluate performance and effectiveness in all areas in the quality and product management systems. An audit schedule shall be planned and implemented, taking into consideration the status and importance of the problems and areas to be audited.

There shall be documented evidence of appropriate and effective corrective and preventative action in all cases of non-conformity wherever and however found.

The auditor shall be objective, impartial and suitably trained/qualified.

The Supplier shall demonstrate to BASEC compliance with clause 8.2.2 (Internal Audit) of ISO 9001:2008.

2.6.20 Training and Human Resources

The supplier shall demonstrate to BASEC compliance with clauses 6.2.1 (Human Resources – General) and 6.2.2 (Human Resources – Competence, Training and Awareness) of ISO 9001:2008.

2.6.21 Servicing

Servicing of cable products shall include on-site and in-factory activities as well as all aspects of spare and “return and repair” parts, as well as the support literature for the activity.

2.6.22 Customer Communication

The supplier shall demonstrate to BASEC compliance with clause 7.2.3 (Customer Communication) of ISO 9001:2008.

The Supplier shall demonstrate to BASEC compliance with clause 8.2.1 (Customer Satisfaction) of ISO 9001:2008.

2.6.23 Continual Improvement

The supplier shall demonstrate to BASEC a commitment to continual improvement of the Quality Management System, Quality of Products, Services and customer satisfaction.

These improvements shall be measurable and records of improvement shall be maintained.

The Supplier shall demonstrate to BASEC compliance with clauses 8.4 (Analysis of Data) and 8.5.1 (Continual Improvement) of ISO 9001:2008.

2.6.24 Protection of Personnel and Users

The supplier shall demonstrate to BASEC:

- A working environment consistent with the safety of all personnel.

- Personal protection wear, equipment or apparatus as appropriate.
- Guards to machinery or equipment as appropriate to ensure safe working.
- Equipment for the safe and appropriate handling of product and material.

The Supplier shall demonstrate to BASEC compliance with clause 6.4 (Work Environment) of ISO 9001:2008.

Areas to be checked under this clause may include:
Forklift truck / pedestrian movements;
Emergency provision; First aid;
Fire extinguishers / fire exits / fire doors / fire marshals;
Personal protective equipment;
Guarding/interlocking on production and testing equipment;
Secure storage of gas cylinders;
Work environment; slips / trips / falls;
Noise levels; lighting levels;
Lifting and manual handling.

2.6.25 General Safety and Product Liability

The supplier shall demonstrate to BASEC the control of all aspects of product safety and product liability so as to facilitate the safety of people, machinery and buildings during the manufacture, handling and use of the product.

Areas to be checked under this clause may include:
Product liability insurance;
Mandatory information / notices.

2.6.26 Control of Product Related Environmental Effects

The supplier shall demonstrate to BASEC the identification, isolation and containment of all hazardous waste to ensure the protection of all potentially affected people.

Waste handling and transportation, on and off-site, shall be in a safe manner by trained and approved persons.

Waste disposal shall be in a manner consistent with the pertaining environmental guidelines, regulations and laws.

2.6.27 Control of Product Related Pollution

The supplier shall demonstrate to BASEC the control of potentially polluting materials, such that they are not to be used in a manner that could pollute the workplace or the general factory environment.

Areas to be checked under this clause may include:
Evidence of spills;
Emergency provision; spill kits / trained personnel;
Waste control and disposal;
Work environment; housekeeping.

2.6.28 Control of Product Related Emissions

The supplier shall demonstrate to BASEC methods to identify, evaluate and periodically review, the potential effects of all emissions from the activities under its control.

There shall be methods for the elimination of any dangerous emissions.

Design and manufacturing activities shall comply with the relevant international agreements and local regulations.

2.6.29 Control of Product Scrap and Waste

The supplier shall demonstrate to BASEC the optimal recycling of materials consistent with determined cost/benefit ratios and environmental impacts.

2.6.30 Provision of Samples

The supplier shall have a procedure for the provision of the number and variety of samples required under any BASEC Product Marking Licence and in conformance with the requirements contained in the Product Certification Requirements.

The Supplier shall also extend the procedure to cover:

- Safe storage and bonding of “Put-by” samples or “Reserved Stock”.
- Safe storage and bonding of selected samples until shipping to the designated Test Laboratory or Laboratories.
- Timely and safe delivery to the Test Laboratory or Laboratories.

2.6.31 Action on Notification of Product Defects

The designated Test Laboratory will notify BASEC immediately of any serious product failures, following which BASEC will notify the Supplier.

The Supplier shall have a procedure detailing the action to be taken following notification from BASEC that the sample product does not conform to standard.

The Supplier shall have an emergency action procedure for use on notification of a failure requiring product recall; this procedure shall essentially detail the actions required to recover and bond all delivered product from the same batch, or batches using the same material.

The procedure shall also cover the means of notification of all possible buyers should it not prove possible to locate all the delivered faulty product.

2.6.32 Test Results

The Supplier shall record Test Results in such a manner that they are clear and easily verifiable.

If full tests are not done on all product, the basis for the sampling regime shall be stated.

2.6.33 Test Equipment, Calibration and Testing

The Supplier shall have the full range of calibrated or verified (as appropriate) test and measurement equipment required as defined in the relevant BASEC Scheme for on-site testing. The Supplier shall establish and implement appropriate test plans.

Calibration / verification shall be conducted against standards traceable to national or international measurement standards. Where no such standards exist the basis for calibration shall be recorded. Equipment shall be maintained in good order within the calibration system, identified in order to determine status, and safeguarded from adjustments, damage or deterioration that would invalidate calibration status or subsequent measurements.

Off-site testing, where allowed by the BASEC Scheme, shall be conducted in accordance with ISO/IEC 17025:2005 and subject to control by the Supplier.

Test methods shall be defined and agreed with the service provider.

NB: As appropriate, off-site testing may be performed either (a) at the laboratory of another factory in the Supplier's group, or (b) at a laboratory approved by BASEC.

All test results shall be verified and formally accepted by the Supplier.

The Supplier shall demonstrate to BASEC compliance with clause 7.6 (Control of Monitoring and Measuring Equipment) of ISO 9001:2008.

2.6.34 Process Equipment

Process manufacturing and control equipment shall be maintained and used in such a way that a conforming product is produced consistently.

Process (operating) sheets/cards, or their equivalent, shall be available for the use of set-up personnel and operators.

In-process monitoring and control equipment shall be appropriately calibrated.

The Supplier shall demonstrate to BASEC compliance with clause 6.3 (Infrastructure) of ISO 9001:2008.

3 SAMPLES

3.1 GENERAL

BASEC shall select random samples of completed and tested licensed product either during the factory surveillance or from the Licensee's/importer's stores or from the market place.

The number of samples to be selected during any one certification year is determined by BASEC, according to the total quantity (km) of all cables made under Licence (Annual Samples). Consideration is also given to the past performance record of the licensed product in testing.

The Licensee shall inform BASEC of the amount of licensed product manufactured since the previous routine surveillance visit. BASEC shall be afforded the right to verify the amounts. BASEC will use this information to determine if the number of routine samples selected is at the correct level and reserves the right to adjust the number of samples as necessary.

If there is a planned BASEC surveillance visit to collect samples, but the samples are not made available, the Licensee will be charged for the aborted visit. In addition, BASEC may choose to buy cable from the market place for testing, the cost of which is recoverable from the Licensee.

BASEC may undertake an unannounced visit at any time for the purposes of selecting samples for routine or special testing.

3.2 SUBMISSION OF AND DISPOSAL OF TEST SAMPLES

Samples must only be submitted for type approval testing when advised by BASEC. A delivery address and BASEC reference/job number are essential in order to initiate testing of your product. Type test samples shall be clearly labelled with the job number.

Samples from Routine Surveillance Visits shall normally be delivered so that they are received at the testing laboratory within ten working days of selection. The delivery must be identified on the external packaging with the name and address of the sender and must be accompanied by a copy of the sample selection sheet supplied by the BASEC representative.

Unless return of the samples is specifically requested by the manufacturer they will be confidentially disposed of after testing.

3.3 SAMPLE LENGTHS – TYPE TEST

The following sample lengths will be required for type testing in respect of electrical and mechanical properties of cables and cords. Other sample requirements are specified in the relevant Scheme Description:

- Scheme A 30m (other than below)
- Scheme A 35m (BS 6500, BS 7919, BS EN 50525 series)

- Scheme A – extensible leads 10 extensible leads
- Scheme A – mineral insulated 20m
- Scheme B 30m
- Scheme D 10 extensible leads
- Scheme E 30m

Additional samples of different lengths will be required for type testing in respect of the following tests:

Smoke and gas emission properties:

- BS 6724 5m
- BS 7211 50m
- BS EN 60702-1 5m
- BS 7629-1 5m
- BS 7846 5m

Resistance to fire BS 6387 Categories C, W & Z:

- BS 7629-1 20m

BS 7846 Resistance to Fire Categories F1, F2 & F3:

- BS 7846 F1 20m
- BS 7846 F2 20m
- BS 7846 F3 20m

BS 7846 Resistance to Fire (BS 8491) F30, F60, F120, in addition to the above:

- BS 7846 6m per Category

3.3 SAMPLE LENGTHS – TYPE TEST

Flame propagation testing to BS EN 60332-3-24:

The length listed in table below is for 3 tests i.e. original and two retests if required (see note below).

Standard	No. Cores	CSA (sqmm)	Length (m)
BS 6724	1	50 -120	120

BS 6724	1	150 -1000	60
BS 6724/7846	2 & 3	1.5 - 4.0	240
BS 6724/7846	2 & 3	6.0 -16.0	150
BS 6724/7846	2 & 3	35.0 - 120	75
BS 6724/7846	2 & 3	150 - 400	30
BS 6724/7846	4	1.5 - 4.0	210
BS 6724/7846	4	6.0 - 16.0	120
BS 6724/7846	4	35 - 70	60
BS 6724/7846	4	95 - 400	30
BS 6724/7846	5	1.5 - 4.0	180
BS 6724/7846	5	6.0 - 16.0	120
BS 6724/7846	5	25 - 70	60
BS 6724/7846	7 - 12	1.5 - 4.0	150
BS 6724/7846	19 - 27	1.5 - 4.0	75
BS 6724/7846	37 - 48	1.5 - 4.0	45

BS 5839 -1 Standard Requirement to BS EN 50200 & BS EN 50200 Annex E 30m

BS 5839-1 Enhanced Requirement to BS EN 50200 & BS 8434-2 30m

Note: Manufacturers are to provide sufficient cable length, in one continuous length, for one test and 2 retests, i.e. sufficient for 3 tests. If insufficient length of cable is provided, a fail on one test will be reported and treated as a test failure, as there would be no opportunity to conduct the 2 retests.

Nail Penetration Test

- BS 8436 5 Metres minimum

3.4 SAMPLE LENGTHS – ROUTINE

The following sample lengths are required for routine sample testing in respect of electrical and mechanical properties:

- Scheme A 30m
- Scheme A - mineral insulated 15m
- Scheme B non-power cables 30m
- Scheme B power cables 11m (client may chose to supply 15m to allow enough cable for possible dispute retest)

The following additional sample lengths will be required for routine sample testing in respect of smoke and gas emission properties:

When a fire test to BS EN 60332-3-24 is NOT conducted:

- BS 6724 5m

- BS 7211 50m
- BS EN 60702-1 5m
- BS 7629-1 5m
- BS 7846 5m

When a fire test to BS 6387 Categories C, W & Z or BS 7846 Resistance to Fire Categories F1, F2 & F3 is conducted:

- BS 7629-1/BS7846 25m

BS 7846 Resistance to Fire (BS 8491) F30, F60, F120, in addition to the above:

- BS 7846 6m per Category

3.4 SAMPLE LENGTHS – ROUTINE

Flame propagation testing to BS EN 60332-3-24:

The length listed in table below is for 3 tests i.e. original and two retests if required (see note below).

Standard	No. Cores	CSA (sqmm)	Length (m)
BS 6724	1	50 -120	120
BS 6724	1	150 -1000	60
BS 6724/7846	2 & 3	1.5 - 4.0	240
BS 6724/7846	2 & 3	6.0 -16.0	150
BS 6724/7846	2 & 3	35.0 - 120	75
BS 6724/7846	2 & 3	150 - 400	30
BS 6724/7846	4	1.5 - 4.0	210
BS 6724/7846	4	6.0 - 16.0	120
BS 6724/7846	4	35 - 70	60
BS 6724/7846	4	95 - 400	30
BS 6724/7846	5	1.5 - 4.0	180
BS 6724/7846	5	6.0 - 16.0	120
BS 6724/7846	5	25 - 70	60
BS 6724/7846	7 - 12	1.5 - 4.0	150
BS 6724/7846	19 - 27	1.5 - 4.0	75
BS 6724/7846	37 - 48	1.5 - 4.0	45

BS 5839 -1 Standard Requirement to BS EN 50200 & BS EN 50200 Annex E 30m

BS 5839-1 Enhanced Requirement to BS EN 50200 & BS 8434-2 30m

Note: Manufacturers are to provide sufficient cable length, in one continuous length, for one test and 2 retests, i.e. sufficient for 3 tests. If insufficient length of cable is provided, a fail on one test will be reported and treated as a test failure, as there would be no opportunity to conduct the 2 retests.

Nail Penetration Test

- BS 8436 5 Metres minimum

3.5 SAMPLE SELECTION SCHEMES A, B, C & E

3.5.1 Representative Samples

The BASEC auditor may select “representative” samples which demonstrate capability to manufacture the cable type not available. In some instances the representative samples may differ in core colour combinations, however, such samples must not be intended for sale into the UK market place. Such samples must be declared as being "representative only" at the time of selection by the Licensee’s representative. Such samples will only be accepted on the understanding that the BASEC rules for traceability and recall are applicable and that the Licensee accepts any deviations awarded against product failures.

3.5.2 Stock Samples

Where the client holds stocks of cable that represent production made since the last BASEC pick up, then part or all of the selection samples may be taken directly from the clients stock.

3.5.3 Put-by Samples

An agreement to take sample selections from “put-by” stock may be made between the Licensee and BASEC. The circumstances under which such an agreement may be made are:

- If the Licensee operates a “make to order” or “just-in-time” system, i.e. the whole of a manufacturing run is despatched from the place of manufacture immediately after manufacture.
- If the Licensee distributes all stock to widely-spread warehouses immediately after manufacture.
- If the types of cable to be selected are manufactured very infrequently.
- In the case of “put-by” samples the Licensee shall place into a secure area twice the number of samples that will be required at the surveillance visit. The Licensee’s representative shall ensure that such samples are selected from cable production at least 5km apart and preferably from a different batch.
- The proportion of “put-by” samples shall not exceed 50% of the total number of samples required per annum or 50% of those required per visit, the remaining 50% to be taken directly from stock.
- Where a “put-by” agreement is in place between the Licensee and BASEC, the Licensee shall provide to BASEC at each audit and on request a detailed list of all batches of the relevant cables produced since the last selection, with information as set out in section 1.4.10.9.

3.5.4 Reserved Stock

Where an agreement has been made between the Licensee and BASEC, the requisite number of samples may be provided from “reserved stock”.

Such samples shall be placed in a secure area by the Licensee. Samples shall be selected from cable production at least 5km apart and preferably from a different batch.

The proportion of “reserved stock” samples shall be as follows:

Schemes A, B non-power, C and E, where production is very high - a single sample from each batch to give a total of three times the number of samples required. In this case the maximum number of samples selected from “reserved stock” shall be 33% of those provided.

Schemes A, B non-power, C and E, where production is very low - triple samples from each batch to give a total of three times the number of samples required. In this case the maximum number of samples selected from “reserved stock” shall be 33% of those provided.

Scheme B power - samples to be reserved as follows:

Number of samples required	Minimum number of samples reserved
4	5
6	7
9	11
12	14

In the case of "market place" purchases, the cost shall be borne by the Licensee.

Where a “reserved stock” agreement is in place between the Licensee and BASEC, the Licensee shall provide to BASEC at each audit and on request a detailed list of all batches of the relevant cables produced since the last selection, with information as set out in section 1.4.10.9.

3.6 ANNUAL SAMPLES REQUIRED

3.6.1 Annual Samples Scheme A

This is applicable to all the cables in the standards covered by this scheme considered together excluding BS EN 50525-2-12.

Production Category (km per year)	**Number of samples tested by BASEC per annum**
Up to 1200km and up to 3 types	50
Up to 1200km and over 3 types	75
From 1201km to 3200km	75
From 3201km to 8000km	115
Above 8000km	150

BS EN 50525-2-12 only

Production Category (km per year)	Number of samples tested by BASEC per annum
Up to 8000km	50
Above 8000km	75

For extensible leads covered by BS EN 50525-2-12, the production category shall be determined on the length of the pre-coiled cable.

The sample requirements for BS EN 50525-2-12 should be considered separately from other scheme A cables.

If the types of cables concerned are manufactured in more than one place, a minimum of 25 samples per year will be taken as representative of the production of each place of manufacture, whether or not the Licensee is on reduced sampling.

3.6.2 Annual Samples Scheme B

This is applicable to all the cables in the standards covered by this scheme considered together.

Production Category (km per year)	Number of samples tested by BASEC per annum
Up to 1600km	16
From 1601km to 3200km	25
From 3201km to 8000km	38
Above 8000km	50

If the types of cables concerned are manufactured in more than one place, minimum of 8 samples per year will be taken as representative of the production of each place of manufacture.

3.6.3 Annual Samples Scheme C

This is applicable to all the cables in the standards covered by this scheme considered together.

Production Category (km per year)	Number of samples tested by BASEC per annum
Up to 1600km	16
From 1601km to 3200km	25
From 3201km to 8000km	38
Above 8000km	50

If the cables concerned are manufactured in more than one place, a minimum of 8 samples per year will be taken as representative of the production of each place of manufacture.

3.6.4 Annual Samples Scheme D

This is applicable to all the cables in the standards covered by this scheme considered together.

Production Category (km per year)	Number of samples tested by BASEC per annum
Please contact BASEC	

3.6.5 Annual Samples Scheme E

This is applicable to all the cables in the standards covered by this scheme considered together.

Production Category (km per year)	Number of samples tested by BASEC per annum
Up to 1600km	16
From 1601km to 3200km	25
From 3201km to 8000km	38
Above 8000km	50

If the types of cables concerned are manufactured in more than one place, a minimum of 8 samples per year will be taken as representative of the production of each place of manufacture.

3.6.6 Annual Samples Scheme F

This is applicable to all the cables in the standards covered by this scheme considered together.

Production (km/year)	Number of Samples	Sample Lengths	
1 - 10	1	1 x 7	
>10 - 20	2	2 x 7	
>20 - 30	3	3 x 7	
>30 - 40	4	3 x 7	1 x 12
>50 - 60	5	4 x 7	1 x 12
>60 - 70	6	5 x 7	1 x 12
>70 - 80	7	6 x 7	1 x 12
>80 - 90	8	6 x 7	2 x 12
>90 - 100	9	7 x 7	2 x 12
>100-110	10	8 x 7	2 x 12
>110-120	11	9 x 7	2 x 12

A representative range of samples across the range of production shall be tested.

3.7 SAMPLES REPRESENTING THE APPROVED RANGE

In cases where a Licensee fails to submit samples within the following requirements, BASEC may amend a Product Certificate to reflect the manufactured range.

3.7.1 Scheme A - Except mineral insulated cables and extensible leads

One sample within two conductor sizes of the bottom of the approved range, and of approximately the maximum number of conductors, to be submitted at least once every two years.

In ADDITION one sample within two conductor sizes of the top of the approved range, and of approximately the minimum number of conductors, shall be submitted:

- At least once every two years where the upper range of approval is below 35sqmm
- At least once every two years where the upper range of approval is between 35sqmm and 120sqmm.
- At least once every three years where the upper range of approval is over 120sqmm.

Similar types of cables manufactured to other Licences may be considered as meeting the requirements at the discretion of BASEC.

3.7.2 Scheme A - Mineral insulated cables

One sample within two conductor sizes of the bottom of the approved range, and of approximately the maximum number of conductors, to be submitted at least once annually.

In ADDITION one sample within two conductor sizes of the top of the approved range, AND of approximately the minimum number of conductors, shall be submitted

- At least once every two years where the upper range of approval is below 25sqmm.
- At least once every two years where the upper range of approval is between 25sqmm and 95sqmm.
- At least once every three years where the upper range of approval is above 95sqmm.

3.7.3 Scheme A - Extensible leads

All sizes to be submitted annually.

3.7.4 Scheme B - 2-core, 3-core, 4-core and 5-core cables

One sample within two conductor sizes of the bottom of the approved range, in a 2-core or 3-core, to be submitted at least once every two years.

In ADDITION one sample within two conductor sizes of the top of the approved range, in a 3-core or 4-core or 5-core, shall be submitted:

- At least once every two years where the upper range of approval is below 35sqmm.
- At least once every two years where the upper range of approval is between 35sqmm and 120sqmm.
- At least once every three years where the upper range of approval is above 120sqmm.

Similar types of cables manufactured to other Licences may be considered as meeting the requirements at the discretion of BASEC.

3.7.5 Scheme B - Auxiliary cables

One sample of minimum conductor size, and approximately the maximum number of conductors, to be submitted at least once every two years.

In ADDITION, one sample of maximum conductor size, and approximately the minimum number of conductors, shall be submitted once every two years.

Similar types of cables manufactured to other Licences may be considered as meeting the requirements at the discretion of BASEC.

3.7.6 Scheme E

Refer to similar type of cable in Schemes A or B.

3.8 UNANNOUNCED SAMPLE SELECTION VISITS

BASEC may at its discretion undertake on an annual basis one or more unannounced sample selection visits for the purposes of monitoring cable production for specific properties such as conductor resistance. These visits will be charged at the specified fee, including any travel and testing costs.

4 EXTENSION OF SCOPE OF PRODUCT APPROVALS

4.1 ELIGIBILITY

Licensees may apply at any time for variations or extensions to the scope of their approvals, once a certificate detailing the relevant cable type has been issued and as long as it remains valid. In order to be eligible for the reduced level of testing set out in section 4.3, Licensees must have continued to provide surveillance samples of the relevant cable type, at a level at least in accordance with the minimum requirements set out in section 3.7.

4.2 APPLICATION PROCESS

Applications for an extension to the scope of the approved product range of a Licensee shall be made on the appropriate BASEC form BSF131, *Application to Extension of a Product Approval Licence* (available from the Client Area of the BASEC website). BASEC will determine the necessary testing and inspection requirements, taking into account Licensee performance as appropriate, and will issue a quotation for the work.

4.3 TESTING REQUIREMENTS

The procedure to extend the scope of approval is the same process as for original applicants but the sample requirements will be less onerous if an approval is held for the same type of cable in different sizes or constructions or if the cable types are similar to those already approved.

If a Licensee applies for an extension and their current range of approved products already covers products of a similar construction, a limited Type Test may be conducted. This shall examine the parts of the product that differ from those that are already approved, e.g. differences in materials, size of conductors or basic construction, etc.

If a new extension to scope is required a new application and sample is to be submitted.

The conductor size and core number of samples shall be selected as set out in the relevant standard or specification, or the minimum conductor size/maximum number of cores, and maximum conductor size/minimum number of cores, for which approval is sought. These samples shall be tested to F5 frequency.

It is not permitted to apply for a further extension until samples of the first extension have been approved as meeting the relevant Standard or Specification.

Limited type tests may be conducted or BASEC auditors may witness the tests, in the following circumstances:

4.3.1 Where the Licensee already holds approval for the same insulation and/or sheath compound or cables/cords with a similar construction and approval is sought for a range of conductor sizes exceeding ± 2 sizes of the original type approval conductor sizes and the Licensee has supplied the required routine surveillance samples. Certificates will not be issued until such testing has been positively completed.

4.3.2 Where the Licensee already holds an approval for the same range of conductor sizes and extension of approval is sought for an alternative insulation or sheath material listed within the specification for the same cable type, then limited Type Testing shall cover all relevant tests relating to the alternative materials used. Certificates will not be issued until such testing has been positively completed.

4.3.3 Where the Licensee already holds an approval for the same cable or cord, and extension of approval is sought for a range of conductor sizes within ± 2 conductor sizes of the original range of approval and the same number of cores, then the approval may be granted and certificates issued, subject to samples of the new conductor sizes being provided at the next routine surveillance visit. If the sample is not provided then the certificate will revert to the previous scope, and certificates will be revised as appropriate.

If the sample provided passes the applicable tests the extension to scope will be confirmed.

If the sample fails at actionable or major level the certification scope will revert to the previous scope, and certificates will be revised as appropriate.

If the sample fails at minor or irregularity level then a new sample must be submitted for retesting at the manufacturer's expense within 4 weeks of the original testing, to cover all the tests which failed. If the second sample passes, then the extension to scope will be confirmed, if the second sample fails, the scope will revert to the previous scope, and certificates will be revised as appropriate.

5 MANUFACTURING ARRANGEMENTS

5.1 CROSS-LICENCE AGREEMENTS

In certain circumstances it is possible for two or more BASEC Licensees to enter into a contractual agreement where one manufactures cable(s) for another. The cable(s) is then marked with an agreed mark of origin referring to the Licensee that markets the product(s) but does not manufacture the cable(s). Cable(s) produced under such agreements may be marked "BASEC" under a BASEC Cross-Licence Agreement, subject to the following conditions:-

- BASEC must be notified in advance of the intention to form an agreement, and an application must be made to BASEC by the intended marketing party. An annual fee will be charged. NB: BSF387-BASEC Cross-Licence Application Form can be requested from BASEC office.

- The intended actual manufacturer of the product(s) must hold Product Certificate(s) and a Product Marking Licence for the cable(s) intended to be subject to the agreement and the Licensee who markets the product(s) must hold a Product Marking Licence and have the technical capability to manufacture the product(s) for which the Cross-Licence is sought.

- The cable marking includes a means of identifying the actual manufacturer. Normally, BASEC will issue a special Cross-Licence number which must form part of the origin marking.

- A time limit for the arrangement is established and agreed by BASEC. This will normally be one year, or the date of expiry of either party's Product Certification Licence, at BASEC's discretion.

- The BASEC product Licence will indicate all Licensees involved and identify which Licensee will market the product(s).

- The Licensee who markets the product(s) will hold the Cross-Licence.

- Samples must be made available by the manufacturer for inclusion during any routine sample selection.

5.2 SUBCONTRACTING MANUFACTURE

In certain circumstances it is possible for two or more BASEC Licence holders to enter into a contractual agreement to allow for certain processes to be subcontracted from one BASEC Licensee to one or more other BASEC Licensee(s), or to work in collaboration with one or more other BASEC Licensee(s).

The following conditions shall apply:

- Parties must notify BASEC of the intention to form an agreement. Details of the proposed arrangements (such as the product type(s) and size ranges) must be agreed by BASEC in advance.

- Licensees involved must be capable of the same processes and product types, although not necessarily the full range.
- BASEC must be notified and accept which Licensee will market the final product(s).
- The Licensee who markets the product(s) must hold and continue to hold a BASEC Licence for the product(s) subject to the agreement.
- The Licensee who markets the product(s) shall be responsible for demonstrating to BASEC full traceability on a batch-by-batch basis.
- Samples of the product(s) must be made available by the manufacturer for inclusion of any routine surveillance selection.
- A time limit for the arrangement is established and agreed by BASEC.

6 TECHNICAL RULES

This section contains rules on specific technical aspects of cable production, testing and assessment

6.1 CABLE REPAIRS UNDERTAKEN DURING MANUFACTURING

6.1.1 Scope and Applicability

This subsection sets out BASEC's rules and procedures for the repair of cable during the manufacturing process before final packaging has occurred. Repair of finished cable in its final packaging, in the possession of a manufacturer or a distributor, is outside the scope of these rules and procedures.

By default, no cable that has been subject to repair during manufacturing shall be supplied as BASEC approved or BASEC marked. Such cable must be treated as non-conforming product and handled accordance with the manufacturer's normal procedures. Only if BASEC has given specific permission for a manufacturer to conduct repairs shall such cable be described as BASEC approved and BASEC marked.

Manufacturers seeking BASEC's permission to conduct repairs, in accordance with these rules and procedures, shall (1) hold and continue to hold a valid BASEC Product Marking License and valid Product Certificate(s) for the relevant product(s), (2) apply to BASEC with information (as set out below), and (3) be subject to an inspection and audit of their repair procedures (as set out below).

Customer specifications concerning presence of repairs, and/or the absence of repairs, shall override any permission for repairs given by BASEC.

6.1.2 Permission to Undertake Repairs

The manufacturer shall prepare and make available to BASEC for inspection and audit:

- Manufacturer's repair protocol(s) and procedure(s), which shall define the size and frequency of permitted repairs (see 6.1.3 below), the types of cable, cable materials and repair materials to be used, the competency and training requirements of repairers, the authorisations required, post-repair testing requirements, and record keeping.

- Manufacturer's staff competency requirements, competency assessments and training records for staff authorised to conduct repairs.

The manufacturer must have a written procedure defining the maximum number of repairs permissible on any one drum, batch or length, and the maximum dimensions of any one repair (see 6.1.3 below).

The procedure shall define the permitted types of cable (see 6.1.3 below) including the materials used (extruded insulation materials, extruded bedding materials, extruded sheathing materials, tapes, armouring).

All repaired cable must be tested in accordance with the requirements of the appropriate standard to demonstrate conformity.

As part of a regular audit, BASEC will check the information provided and will also witness a repair undertaken and post-repair testing. Satisfactory completion of this process will result in permission to undertake repairs, within the scope allowed by the manufacturer's procedures. Regular checks will be made during further surveillance audits, including records of repairs and test results.

6.1.3 Applicable Cable Types

In accordance with the Permission procedure in section 6.1.2 above, BASEC will only permit repairs to the following types of cable (this list may be revised from time to time):

- BS 6346
- BS 5467
- BS 6724
- BS 7889
- BS 8573
- IEC 60502-1

6.1.4 Limits to Repairs

Repair is limited to insulation materials only.

The maximum permitted dimensions of any repair are:

- Twice the circumference of the insulated conductor, measured in a direction along the conductor.
- Half the circumference of the insulated conductor, measured in a direction across the conductor.

Permitted maximum frequency of repairs:

- One repair per km of insulated core; and,
- The number of repairs per km of completed cable shall not exceed the number of conductors in the cable.

6.2 JOINTS IN CONDUCTORS AND CORES

6.2.1 Practice

During manufacture it is acceptable for manufacturers to make <u>temporary</u> joints in conductors for the purposes of joining multiple lengths of conductors or insulated cores, to facilitate production. All temporary joint numbers and positions shall be marked, logged or otherwise tracked during production. Any and all such temporary joints must be removed before drumming, reeling or packaging of the product and all temporary joints shall be accounted for. Under no circumstances shall a length of cable containing such a temporary joint be delivered to a customer. Where cable standards explicitly permit certain joints, such as for armour wires, the provisions of the standard will apply.

6.2.2 Sanctions Applicable to Approved Products

If cable selected for BASEC sampling or from the market is found to contain such a non-permitted joint this will result in an actionable deviation being awarded. If a second or subsequent example of the same practice is found relating to the same cable type, any BASEC certificate will be suspended prior to investigation. Further examples found will result in the withdrawal of the certificate. Attempts to provide a level of insulation over the conductor joint, using tape or other non-extruded material, will result in immediate suspension of the certificate.

6.3 STRIPPABILITY OF CABLES

6.3.1 Requirement and Sanction

Cable standards require that sheathing and other outer layers are removable without damage to the insulation of cores within. Manufacturers shall ensure that they have adequate technical provisions in place to ensure that this criterion is satisfied.

The purpose of this requirement is to ensure that insulation and hence safety is not compromised during the termination of cables. Contravention of this requirement, as assessed by BASEC, may result in an actionable deviation being awarded. In most cases this is because the sheathing and insulation are mechanically bonded, cannot be separated by manual action and the insulation is found to be damaged during stripping, in any way.

6.3.2 Additional Guidance

Cable standards in general do not specify methods of test for strippability and do not specify the ease of stripping, the length to be stripped, the time necessary to be taken, the methods by which stripping may take place or the tools that may be used.

If customers have specific requirements for ease of strippability etc., these should form an additional commercial specification that is outside the scope of the specifications set out in cable standards. Such additional commercial specifications should be captured by the manufacturer during the contract review process.

6.3.3 Enhanced Strippability

BASEC may award an additional grading of appropriate cables for enhanced strippability based on an additional tensile test. This will be repeated annually.

6.4 SPARK TESTING OF INSULATED CORES

The insulated cores of all BASEC marked cables shall be continuously checked for the absence of faults on insulation, by sparking testing on the insulation production line, even if the cable standard does not specify this test as a requirement. Spark testing may also be conducted during packaging of the final product, but this does not replace the need for spark testing after extrusion of insulation.

The methods and test voltages used to spark test the core shall be those specified in BS EN 62230:2007+A1:2014, with the exception that the option to use a pulsed waveform high voltage source is not permitted.

7 TESTING

7.1 GENERAL

The samples selected by BASEC will be tested in accordance with the relevant Standard or Specification. However in some cases BASEC may adopt an approved short test method. Any Licensee choosing to opt out of this method should make a request to BASEC in writing, BASEC will advise on additional costs. The frequency of individual tests shall be in accordance with the specific requirements of the appropriate Product Marking Scheme

- F100 Tests conducted on 100% of samples
- F50 Tests conducted on 50% of samples
- F25 Tests conducted on 25% of samples
- F5 Tests carried out on 5% of samples

Additional tests may be conducted on an annual basis, or otherwise, as listed in the relevant section of this document.

The results of the tests on all samples will be assessed by BASEC and a report issued. Any points of non-compliance with the standard shall be brought to the Licensee's attention. The Licensee will be required to take immediate corrective/preventive action and advise BASEC accordingly

7.2 DISPUTE RETESTS

If a BASEC Licensee disputes the test results contained within a laboratory test report, then a retest may only be conducted under the following guidelines:

The Licensee must be given the option to witness the retest. This may, at the discretion of BASEC, also be witnessed by a BASEC member of staff.

The number of replacement test samples required for a dispute retest will be as follows:

- Tensile ageing: the test to be conducted using five samples.
- Conductor resistance: a 1m sample will be used wherever this is possible.
- All other tests: one further test as per the relevant standard.

Replacement test samples will not be allowed in cases where the results can be confirmed on the original sample, e.g. dimensional and resistance measurements.
For surveillance testing, dispute retests may only be conducted on samples which have been duly authenticated by a BASEC representative i.e. the Licensee will not be allowed to submit “the other 50m reel”.
For surveillance testing, if any failures potentially affected by curing of the product are disputed by the client, the dispute retest must be requested within two weeks of the client receiving notification of the failure.

For type approval testing: dispute retests may only be conducted on the sample originally delivered by the Licensee, and has been held by the test laboratory, i.e. the Licensee will not be allowed to submit ”the other 50m reel”.

If the retest confirms the original results reported by the test laboratory then the Licensee may, at the discretion of BASEC, be liable for any costs incurred by BASEC. When the retest has been witnessed by a BASEC member of staff the Licensee may also, at the discretion of BASEC, be charged at the normal BASEC daily rate.

7.3 GUIDE TO DEVIATIONS

Where failures are recorded against routine surveillance samples deviation scores shall be applied. The level of deviation score will depend on the severity of the failure. If a particular sample has more than one deviation, only the deviation value corresponding to the most serious deviation shall be taken into consideration, and in any case only one deviation per sample shall be recorded. Each and every failure (not just the ones awarded deviation scores) shall become a non-conformity which shall be followed up during audit, with the necessary corrective and preventive actions.

Deviations shall be awarded as indicated in relevant section of the Product Certification Scheme.

The total number of deviations allowable per Scheme shall be as in Tables 1.

The number of deviations allowable for BS EN 60702-1 shall be considered separately from the remainder of Scheme A and shall be as per Tables 2

TABLE 1 - ALLOWABLE DEVIATIONS PER YEAR/PER VISIT

Number of samples tested per year	Total deviations allowed per year	Total deviations allowed per visit
10	4	6
15	5	7.5
20	6	9
25	7	10.5
30	8	12
35	9	13
38	9.5	13.5
40	10	14
45	11	15
50	12	16
75	16	-
115	22	-
150	28	-

For intermediate numbers of tested samples, the corresponding total of the deviation values allowed is obtained by interpolation.

The total number of deviations allowable for BS EN 60702-1 shall be as in Tables 2

Table 2 - Allowable Deviations Per Year/Visit For BS EN 60702-1

Number of samples tested per year	Total deviations allowed per year	Total deviations allowed per visit
10	2.0	3.0
15	2.5	3.5
20	3.0	4.0
25	3.5	5.0
30	4.0	6.0
35	4.5	6.5
40	5.0	7.0
45	5.5	7.5
50	6.0	8.0

For intermediate numbers of tested samples, the corresponding total of the deviation values allowed is obtained by interpolation.

7.4 ASSESSMENT OF TEST RESULTS – SCHEME A

Note: HAR scheme cables are subject to failure deviations set out in HAR Document PD D

Construction, Marking and Dimensions

Bi-colour combinations

Fail criteria	**Classification**	**Award**
Between 71/29% and 76/24%	Irregularity	1.0
Between 77/23% and 80/20%	Minor	2.0
Over 80/20%	Major	3.0

Copper sheath thickness (mineral insulated cables)

Fail criteria	**Classification**	**Award**
<100% and =>85% of the specification value	Irregularity	1.0
<85% and =>70% of the specification value	Minor	2.0
<70% of the specification value	Major	3.0

Circuit Protective Conductor

Fail criteria	**Classification**	**Award**
Misplaced CPC	Irregularity	0.5
Missing CPC	Actionable	3.0

Conductor Class

Criteria Fail	**Classification**	**Award**
Incorrect conductor class	Irregularity	0.5

Construction & Dimensions

Criteria Fail	**Classification**	**Award**
Any failure of a provision of the standard which which is not listed	Irregularity	0.5

Continuity of Conductor Tin Coating (PV cables BS EN 50618)

Criteria Fail	**Classification**	**Award**
Not complying	Irregularity	1.0

Core Sequence

Fail criteria	**Classification**	**Award**
Incorrect core sequence	Irregularity	0.5

Diameter over copper sheath (mineral insulated cables)

Fail criteria	**Classification**	**Award**
<-0.5mm to =>0.7mm of the specification value	Irregularity	1.0
<-0.7mm to =>-1.0mm of the specification value	Minor	2.0
<-1.0mm of the specification value	Major	3.0

Insulation thickness

Fail criteria	**Classification**	**Award**
Refer to appendix 1		
Uninsulated conductor	Actionable	3.0
Uninsulated conductor (repeat finding)	Suspend	3.0

7.4 ASSESSMENT OF TEST RESULTS - SCHEME A Continued

Construction, Marking and Dimensions

Insulation thickness of mineral insulated cables

Fail criteria	Classification	Award
<100% and =>90% of the specification value	Irregularity	1.0
<90% to =>80% of the specification value	Minor	2.0
<80% of the specification value	Major	3.0

Length of lay of cores

Fail criteria	Classification	Award
Not complying	Irregularity	1.0

Marking

Fail criteria	Classification	Award
Any provision of the standard which is not listed	Irregularity	0.5
Cable not “BASEC” marked	Irregularity	0.5
Presence of incorrect marking element	Irregularity	0.5
Lack of <HAR> mark when label states HAR	Irregularity	0.5
Durability of printed marks fails	Irregularity	0.5
Repeat interval between one legend and the next	Irregularity	0.5
Lack of code designation or identification of origin	Irregularity	1.0
Lack of tail marking on extensible leads	Irregularity	1.0
Marks, threads or tapes can not be deciphered	Irregularity	1.0
Core scheme incorrect	Major	3.0
Sheath/insulation marks incorrect, e.g., wrong temp rating	Major	3.0
Lack of identification of origin when the trade mark on the cable does not belong to the Manufacturer	Major	3.0

Marking - mineral insulated cables

Fail criteria	Classification	Award
Presence of incorrect marking element	Irregularity	0.5
Durability of markings	Irregularity	0.5
Repeat interval between on legend and the next	Irregularity	0.5
Lack of HAR marking*	Irregularity	0.5
Any other provision not complying with the standard	Irregularity	0.5
Lack of code designation or identification of origin*	Irregularity	1.0
Legibility of marking*	Irregularity	1.0
Lack of identification of origin when the trade mark on the cable does not belong to the Manufacturer*	Major	3.0

* Only applicable to cable with optional outer covering, bare copper sheathed cable is identified by label

Outer covering thickness for mineral insulated cables

Fail criteria	Classification	Award
<100% and =>85% of the specification value	Irregularity	1.0
<85% and =>70% of the specification value	Minor	2.0
<70% of the specification value	Major	3.0

7.4 ASSESSMENT OF TEST RESULTS - SCHEME A Continued

Construction, Marking and Dimensions

Ovality

Fail criteria	**Classification**	**Award**
Exceeding the specification value	Irregularity	1.0

Overall dimensions

Fail criteria	**Classification**	**Award**
>0% and =<10% of the specification value	Irregularity	0.5
>10% of the specification value	Irregularity	1.0

Percentage cover of braid

Fail criteria	**Classification**	**Award**
Not complying	Major	3.0

Sheath thickness

Fail criteria

Refer to Appendix 2

Thickness of metallic covering

Fail Criteria	**Classification**	**Award**
Not complying	Major	3.0

7.4 ASSESSMENT OF TEST RESULTS - SCHEME A Continued

Electrical

Conductor resistance

Fail criteria	Classification	Award
>100% and =<101% of the specification value	Irregularity	0.5
>101% and =<103% of the specification value	Minor	2.0
>103% and =<105% of the specification value	Major	3.0
>105% of the specification value	Actionable	3.0

Copper sheath resistance

Fail criteria	Classification	Award
>100% and =<101% of the specification value	Irregularity	0.5
>101% and =<103% of the specification value	Minor	2.0
>103% and =<105% of the specification value	Major	3.0
>105% of the specification value	Actionable	3.0

Insulation resistance

Fail criteria	Classification	Award
<100% and =>80% of the specification value	Irregularity	0.5
<80% and =>60% of the specification value	Irregularity	1.0
<60% and =>40% of the specification value	Minor	2.0
<40% and =>10% of the specification value	Major	3.0
<10% of the specification value	Actionable	3.0

Insulation resistance constant

Fail criteria	Classification	Award
<100% and =>80% of the specification value	Irregularity	0.5
<80% and =>60% of the specification value	Irregularity	1.0
<60% and =>40% of the specification value	Minor	2.0
<40% of the specification value	Major	3.0

Integrity of sheath for mineral insulated cables

Fail criteria	Classification	Award
Not complying	Major	3.0

Long term resistance of insulation to dc

Fail criteria	Classification	Award
Not complying	Major	3.0
Repeat failure	Actionable	3.0

Surface resistance

Fail criteria	Classification	Award
Not complying	Major	3.0

Transfer impedance

Fail criteria	Classification	Award
Not complying	Major	3.0

7.4 ASSESSMENT OF TEST RESULTS - SCHEME A Continued

Electrical

Voltage test (extensible leads)

Fail criteria	Classification	Award
Not complying	Major	3.0
Repeat failure	Actionable	3.0

Voltage test on complete cable (sheathed cables)

Fail criteria	Classification	Award
Not complying	Major	3.0
Repeat failure	Actionable	3.0

Voltage test on complete cable (unsheathed cables)

Fail criteria	Classification	Award
Not complying	Major	3.0
Repeat failure	Actionable	3.0

Voltage test on complete cable for mineral insulated cables

Fail criteria	Classification	Award
Not complying	Major	3.0
Repeat failure	Actionable	3.0

Voltage test on cores

Fail criteria	Classification	Award
Not complying	Major	3.0
Repeat failure	Actionable	3.0

Water resistance test

Fail criteria	Classification	Award
Not complying	Major	3.0

7.4 ASSESSMENT OF TEST RESULTS - SCHEME A Continued

Mechanical

Bending test for tinsel cables

Fail criteria	**Classification**	**Award**
After 60,000 cycles (by voltage test)	Irregularity	1.0
Between 60,000 and 40,000 cycles	Minor	2.0
Before 40,000 cycles	Major	3.0

Bending test of mineral insulated cables

Fail criteria	**Classification**	**Award**
Not complying	Irregularity	1.0

Cold bend

Fail criteria	**Classification**	**Award**
Not complying (insulation)	Major	3.0
Not complying (sheath)	Minor	1.0

Cold elongation

Fail criteria	**Classification**	**Award**
Not complying	Irregularity	1.0

Cold impact

Fail criteria	**Classification**	**Award**
Not complying	Irregularity	1.0

Compatibility (Insulation/Sheath)

Fail criteria	**Classification**	**Award**
Staining of blotting paper	Irregularity	0.5
Absolute: <100% and =>90% of the spec. value	Irregularity	0.5
Absolute: <90% and =>80% of the spec. value	Minor	2.0
Absolute: <80% of the specification value	Major	3.0
Variation: >0% and =<5% additional to the spec.	Irregularity	0.5
Variation: >5% and =<10% additional to the spec.	Minor	2.0
Variation: >10% additional to the specification	Major	3.0

Endurance test (Extensible leads)

Fail criteria	**Classification**	**Award**
By voltage test after 30 000 cycles	Irregularity	1.0
Between 30 000 and 20 000 cycles	Minor	2.0
Before 20 000 cycles	Major	3.0
Before 1000 cycles	Actionable	3.0

Flattening test (mineral insulated cables)

Fail criteria	**Classification**	**Award**
Not complying	Irregularity	1.0

Heat shock (Insulation/Sheath)

Fail criteria	**Classification**	**Award**
Not complying	Irregularity	1.0

7.4 ASSESSMENT OF TEST RESULTS - SCHEME A Continued

Mechanical

Hot deformation

Fail criteria	**Classification**	**Award**
>100% and =<110% of the specification value	Irregularity	1.0
>110% and =<120% of the specification value	Minor	2.0
>120% and =<150% of the specification value	Major	3.0
>150% of the specification value	Actionable	3.0

Hot pressure

Fail criteria	**Classification**	**Award**
>100% and =<110% of the specification value	Irregularity	1.0
>110% and =<120% of the specification value	Minor	2.0
>120% of the specification value	Major	3.0
Fully cut through	Actionable	3.0

Hot set

Fail criteria	**Classification**	**Award**
Not complying, due to :		
-vulcanised material insufficiently cured	Irregularity	1.0
-unvulcanised material	Major	3.0

Loss of mass

Fail criteria	**Classification**	**Award**
>100% and =<110% of the specification value	Irregularity	1.0
>110% and =<120% of the specification value	Minor	2.0
>120% of the specification value	Major	3.0
Variation:>12.5% additional to the spec. value	Major	3.0

Mechanical strength of strain-bearing member (BS EN 50525-2-11 and BS EN 50525-2-83)

Fail criteria	**Classification**	**Award**
Not complying	Major	3.0

Optional Clashing test on PVC insulation

Fail criteria	**Classification**	**Award**
Not complying	Major	3.0

Separation of cores

Fail criteria	**Classification**	**Award**
Defects other than the insulation being torn open	Irregularity	1.0
If insulation is torn open and conductor is visible	Minor	2.0

7.4 ASSESSMENT OF TEST RESULTS - SCHEME A Continued

Mechanical

Shrinkage (for insulation BS EN 50525-3-11)

Fail criteria	**Classification**	**Award**
Not complying	Major	3.0

Shrinkage (for sheath PV cables BS EN 50618)

Fail criteria	**Classification**	**Award**
Not complying	Major	3.0

Snatch test for tinsel cords

Fail criteria	**Classification**	**Award**
Not complying	Minor	2.0

Static flexibility

Fail criteria	**Classification**	**Award**
Not complying	Minor	2.0

Tear resistance (for TPU sheath BS EN 50525-2-21)

Fail criteria	**Classification**	**Award**
Not complying	Irregularity	1.0

Tensile strength & %EL - after immersion in oil (oil immersion test)

Fail criteria	**Classification**	**Award**
Not complying	Major	3.0

Tensile strength & %EL - before & after ageing in air & before and after ageing in air bomb

Fail criteria	**Classification**	**Award**
Absolute: <100% and =>90% of the spec. value	Irregularity	0.5
Absolute: <90% and =>80% of the spec. value	Minor	2.0
Absolute: <80% of the specification value	Major	3.0
Variation: >0% and =<5% additional to the spec.	Irregularity	0.5
Variation: >5% and =<10% additional to the spec	Minor	2.0
Variation: >10% additional to the spec value.	Major	3.0

Tensile strength for cable with strain-bearing member

Fail criteria	**Classification**	**Award**
Not complying	Irregularity	1.0

7.4 ASSESSMENT OF TEST RESULTS - SCHEME A Continued

Mechancial

Unrolling test at low temperature

Fail criteria	**Classification**	**Award**
Not complying	Irregularity	1.0

Water absorption test for EPR covering

Fail criteria	**Classification**	**Award**
Not complying	Major	3.0

Water absorption

Fail criteria	**Classification**	**Award**
>100% =<120% of the specification value	Irregularity	0.5
>120% =<140% of the specification value	Minor	2.0
>140% of the specification value	Major	3.0

Water resistance test on sheath (BS EN 50525-3-11)

Fail criteria	**Classification**	**Award**
Not complying	Major	3.0

Water resistance test, mechanical properties of sheath after water immersion (BS EN 50525-2-21, 5.1 & 5.2)

Fail criteria	**Classification**	**Award**
Not complying	Major	3.0

Water resistance for TPU sheath (BS EN 50525-2-21)

Fail criteria	**Classification**	**Award**
Not complying	Major	3.0

Wear resistance

Fail criteria	**Classification**	**Award**
<20 000 runs and =>12 000 runs	Irregularity	1.0
<12 000 runs and =>6 000 runs	Minor	2.0
<6 000 runs and => 1000 runs	Major	3.0
<1000 runs	Actionable	3.0

Weathering/UV resistance test on sheath (PV cables BS EN 50618) Allowed variation of tensile strength and Elongation at Break after Weathering exceeding:

Fail criteria	**Classification**	**Award**
Additional 5%	Irregularity	1.0
5% to 10%	Minor	2.0
> 10%	Major	3.0

7.4 ASSESSMENT OF TEST RESULTS - SCHEME A Continued

Miscellaneous

Adherence between cores and sheath and strain member

Fail criteria	Classification	Award
Exceeds specification limit, but no damage to cores	Irregularity	1.0
Exceeds specification limit, but causes damage to cores	Major	3.0

Adhesion of Insulation/Sheath

Fail criteria	Classification	Award
Unable to remove insulation/sheath without damage to conductor/insulation/sheath	Actionable	3.0

Assessment of Halogens

Failure Criteria	Classification	Award
Not Complying	Major	3.0

Carbon Black Content

Failure criteria	Classification	Award
Not complying	Major	3.0

Colour of Insulation/Sheath

Fail Criteria	Classification	Award
Fading of colour	Irregularity	0.5

Corrosive and acid gas emissions

Fail criteria	Classification	Award
4.3> pH = >4.2	Irregularity	1.0
4.2> pH	Major	3.0
10µs/mm < σ =<12.5µs/mm	Irregularity	1.0
12.5µs/mm < σ =<15µs/mm	Minor	2.0
15µs/mm < σ	Major	3.0

Corrosive and acid gas emissions for LSF covered mineral insulated

Fail criteria	Classification	Award
4.3> pH =>4.2	Irregularity	1.0
4.2> pH	Major	3.0
10µs/mm < σ =<12.5µs/mm	Irregularity	1.0
12.5µs/mm < σ =<15µs/mm	Minor	2.0
15µs/mm < σ	Major	3.0

Damp Heat Test (PV cables BS EN 50618)

Failure criteria	Classification	Award
Not complying	Major	3.0

Dynamic Penetration (PV cables BS EN 50618)

Failure criteria	Classification	Award
Not complying	Minor	2.0

7.4 ASSESSMENT OF TEST RESULTS - SCHEME A Continued

Miscellaneous

Extension test for extensible leads before and after ageing

Fail criteria	Classification	Award
Unaged: =>150% and <165% of the spec. value	Irregularity	1.0
Aged: =>170% and <185% of the spec. value	Irregularity	1.0
Aged: =>185% and <200% of the spec. value	Minor	2.0
Unaged: =>165% and <180% of the spec. value	Minor	2.0
Aged: =>200% of the specification value	Major	3.0
Unaged: =>180% of the specification value	Major	3.0

Flexing for cords and extensible leads
(Two-pulley flex test)

Fail criteria	Classification	Award
By voltage test after 30 000 cycles	Irregularity	1.0
Between 30 000 and 20 000 cycles	Minor	2.0
Between 20 000 cycles and 1000 cycles	Major	3.0
Before 1000 cycles	Actionable	3.0

Three-pulley flex test)

Fail criteria	Classification	Award
By voltage test after 2 000 cycles	Minor	2.0
Before 2 000 cycles completed	Major	3.0

Flexing for tinsel cords (bending test)

Fail criteria	Classification	Award
By voltage test after 60 000 cycles	Irregularity	1.0
Between 60 000 and 40 000 cycles	Minor	2.0
Between 40 000 cycles and 1000 cycles	Major	3.0
Before 1000 cycles	Actionable	3.0

Flexing test with copper or aluminium conductor

Fail criteria	Classification	Award
By voltage test before 30 000 cycles	Irregularity	1.0
Between 30 000 and 20 000 cycles	Minor	2.0
Before 20 000 cycles	Major	3.0

Insulation Surface Colour

Fail criteria	Classification	Award
Separation of surface colour from base insulation	Major	3.0

Kink test

Fail criteria	Classification	Award
By voltage test after 1500 cycles	Minor	2.0
Before 1500 cycles completed	Major	3.0

7.4 ASSESSMENT OF TEST RESULTS - SCHEME A Continued

Miscellaneous

Ozone resistance

Fail criteria	**Classification**	**Award**
Not complying	Major	3.0

Resistance to heat of textile braid

Fail criteria	**Classification**	**Award**
Not complying	Minor	2.0

Resistance to hot particles

Fail criteria	**Classification**	**Award**
Not complying	Minor	2.0

Smoke emission single test for surveillance

Fail criteria	**Classification**	**Award**
Between 100% and >90% of the specified value	Irregularity	1.0
Between <=90% and >80% of the specified value	Minor	2.0
Between <=80% and >70% of the specified value	Major	3.0
=<70% of the specified value	Actionable	3.0

Smoke emission of LSF covered mineral insulated cable

Fail criteria	**Classification**	**Award**
<100% to =>90% of the specified value	Irregularity	1.0
<90% to =>80% of the specified value	Minor	2.0
Between <=80% and >70% of the specified value	Major	3.0
=<70% of the specified value	Actionable	3.0

Saponification for TPU sheath (BS EN 50525-2-21)

Fail criteria	**Classification**	**Award**
Not complying	Major	3.0

Solderability of untinned conductors

Fail criteria	**Classification**	**Award**
Not complying	Irregularity	1.0

Flame retardance mineral insulated cables
(BS EN 60332-1-2)

Fail criteria	**Classification**	**Award**
Not complying	Actionable	3.0

Flame propagation on single cable
(BS EN 60332-1-2)

Fail criteria	**Classification**	**Award**
Not complying	Actionable	3.0

Sheath resistance against acid and alkaline solution (PV cables BS EN 50618)

Fail criteria	**Classification**	**Award**
Not complying	Major	3.0

7.4 ASSESSMENT OF TEST RESULTS - SCHEME A Continued

Miscellaneous

Test under fire conditions (BS EN 60332-3-24)

Fail criteria	**Classification**	**Award**
Not complying	Actionable	3.0

Fire resistance - whole of mineral insulated cables (IEC 60331-1 & IEC 60331-2)

Fail criteria	**Classification**	**Award**
Not complying	Actionable	3.0

Thermal stability

Fail criteria	**Classification**	**Award**
Not complying	Major	3.0

Thermal endurance on insulation & sheath (PV cables BS EN 50618)
Thermal Index after 20,000 hours

Fail criteria	**Classification**	**Award**
120 > TI >/= 118	Irregularity	1.0
118 > TI >/= 115	Minor	2.0
TI < 115	Major	3.0

7.5 ASSESSMENT OF TEST RESULTS - SCHEME B (NON-POWER)

Construction, Marking and Dimensions

Armour wire diameter or strip wire dimensions

Fail criteria	**Classification**	**Award**
=>95% of the minimum specification value	Irregularity	0.5
=>90% and <95% of the minimum specification value	Minor	2.0
<90% of the minimum specification value	Major	3.0
=<105% of the maximum specification value	Irregularity	0.5
>105% and =<115% of the maximum specification value	Minor	2.0
>115% of the maximum specification value	Major	3.0

Armour Wire Joints

Fail criteria	**Classification**	**Award**
Surface irregularity on joint	Irregularity	0.5
Joint less than 1m from joint in adjacent wire	Irregularity	0.5

Assembled cores lay direction

Fail criteria	**Classification**	**Award**
Incorrect direction	Irregularity	1.0

Assembled cores lay length

Fail criteria	**Classification**	**Award**
Not complying	Minor	2.0

Bedding thickness - minimum value

Fail criteria	**Classification**	**Award**
<100% and =>80% of the specification value	Irregularity	0.5
<80% and =>50% of the specification value	Minor	2.0
<50% and =>10% of the specification value	Major	3.0
<10% of the specification value	Actionable	3.0

Bi-colour combinations

Fail criteria	**Classification**	**Award**
Between 71/29% and 76/24%	Irregularity	1.0
Between 77/23% and 80/20%	Minor	2.0
Over 80/20%	Major	3.0

Conductor & Drain Wire Construction

Fail criteria	**Classification**	**Award**
Incorrect class of conductor	Minor	2.0

Insulation thickness	**Classification**	**Award**
Fail criteria		
Refer to appendix 1		
Uninsulated conductor	Actionable	3.0
Uninsulated conductor (repeat finding)	Suspend	3.0

7.5 ASSESSMENT OF TEST RESULTS - SCHEME B (NON-POWER) Cont'd

Construction, Marking and Dimensions

Marking

Fail criteria	**Classification**	**Award**
Cable not "BASEC" marked	Irregularity	0.5
Presence of incorrect marking element	Irregularity	0.5
Durability of printed marks	Irregularity	0.5
Any provision of the standard not listed	Irregularity	0.5
Repeat interval between on legend and the next	Irregularity	0.5
Marks, threads or tapes can not be deciphered	Irregularity	1.0
Lack of indication of origin	Irregularity	1.0
Core scheme incorrect (incorrect core colours or numbers)	Major	3.0
Lack of identification of origin when the trade mark on the cable does not belong to the Manufacturer	Major	3.0

Ovality

Fail criteria	**Classification**	**Award**
Exceeding the specification value	Irregularity	1.0

Overall dimensions

Fail criteria	**Classification**	**Award**
>0% and =<10% of the specification value	Irregularity	0.5
>10% of the specification value	Irregularity	1.0

Pair assembly

Fail criteria	**Classification**	**Award**
Not complying	Major	3.0

Presence of screen, shield or metallic tape(s)

Fail criteria	**Classification**	**Award**
Not present when required	Actionable	3.0
Metallic tape(s) not in contact with uninsulated CPC or drain conductor	Actionable	3.0
Overlap <20% =>15% (helical)	Irregularity	1.0
Overlap <15% =>10% (helical)	Minor	2.0
Overlap <10% (helical)	Major	3.0
Overlap <1mm (longitudinal)	Major	3.0
Screen not complying with minimum thickness	Major	3.0

Sheath thickness

Fail criteria

Refer to appendix 2

Core Sequence

Fail criteria	**Classification**	**Award**
Incorrect Sequence	Irregularity	0.5

7.5 ASSESSMENT OF TEST RESULTS - SCHEME B (NON-POWER) Cont'd

Electrical

Conductor resistance (including drain wire resistance)

Fail criteria	**Classification**	**Award**
>100% and =<101% of the specification value	Irregularity	0.5
>101% and =<103% of the specification value	Minor	2.0
>103% and =<105% of the specification value	Major	3.0
>105% of the specification value	Actionable	3.0

Insulation resistance

Fail criteria	**Classification**	**Award**
<100% and =>80% of the specification value	Irregularity	0.5
<80% and =>60% of the specification value	Irregularity	1.0
<60% and =>40% of the specification value	Minor	2.0
<40% of the specification value	Actionable	3.0

Insulation resistance constant

Fail criteria	**Classification**	**Award**
<100% and =>80% of the specification value	Irregularity	0.5
<80% and =>60% of the specification value	Irregularity	1.0
<60% and =>40% of the specification value	Minor	2.0
<40% and =>10% of the specification value	Major	3.0
<10% of the specification value	Actionable	3.0

Long term resistance of insulation to dc

Fail criteria	**Classification**	**Award**
Not complying	Major	3.0
Repeat failure	Actionable	3.0

Surface resistance

Fail criteria	**Classification**	**Award**
Not complying	Major	3.0

Voltage test on complete cable (sheathed cables)
& Voltage withstand test (sheathed cables)

Fail criteria	**Classification**	**Award**
Not complying	Major	3.0
Repeat failure	Actionable	3.0

Voltage test on complete cable (unsheathed cables)

Fail criteria	**Classification**	**Award**
Not complying	Major	3.0
Repeat failure	Actionable	3.0

Voltage test on cores

Fail criteria	**Classification**	**Award**
Not complying	Major	3.0
Repeat failure	Actionable	3.0

7.5 ASSESSMENT OF TEST RESULTS - SCHEME B (NON-POWER) Cont'd

Mechanical

Bending test (complete cable)

Fail criteria	**Classification**	**Award**
Not complying	Irregularity	1.0

Cold bend

Fail criteria	**Classification**	**Award**
Not complying	Irregularity	1.0

Cold elongation

Fail criteria	**Classification**	**Award**
Not complying	Irregularity	1.0

Cold impact

Fail criteria	**Classification**	**Award**
Not complying	Irregularity	1.0

Heat shock

Fail criteria	**Classification**	**Award**
Not complying	Irregularity	1.0

Hot deformation

Fail criteria	**Classification**	**Award**
>100% and =<110% of the specification value	Irregularity	1.0
>110% and =<120% of the specification value	Minor	2.0
>120% and =<150% of the specification value	Major	3.0
>150% of the specification value	Actionable	3.0

Hot pressure

Fail criteria	**Classification**	**Award**
>100% and =<110% of the specification value	Irregularity	1.0
>110% and =<120% of the specification value	Minor	2.0
>120% of the specification value	Major	3.0
Fully cut through	Actionable	3.0

Hot set

Fail criteria	**Classification**	**Award**
Not complying, due to		
-vulcanised material insufficiently cured	Irregularity	1.0
-unvulcanised material (samples snap during test)	Actionable	3.0

Impact test (complete cable)

Fail criteria	**Classification**	**Award**
Not complying	Irregularity	1.0

7.5 ASSESSMENT OF TEST RESULTS - SCHEME B (NON-POWER) Cont'd

Mechanical

Loss of mass

Fail criteria	**Classification**	**Award**
>100% and =<110% of the specification value	Irregularity	1.0
>110% and =<120% of the specification value	Minor	2.0
>120% of the specification value	Major	3.0

Shrinkage of insulation & sheath

Fail criteria	**Classification**	**Award**
>100% and =<110% of specified value	Irregularity	0.5
>100% and =<130% of specified value	Irregularity	1.0
>130% and =<150% of specified value	Minor	2.0
>150% of specified value	Major	3.0

Static flexibility

Fail criteria	**Classification**	**Award**
Not complying	Major	3.0

Tear resistance

Fail criteria	**Classification**	**Award**
Not complying	Irregularity	0.5

Tensile stress at yield

Fail criteria	**Classification**	**Award**
<100% and =>90% of the specification value	Irregularity	0.5
<90% and =>80% of the specification value	Minor	2.0
<80% and =>75% of the specification value	Major	3.0

Tensile strength & %EL - after immersion in oil (oil immersion test)

Fail criteria	**Classification**	**Award**
Not complying	Major	3.0

Tensile strength & %EL - before & after ageing in air

Fail criteria	**Classification**	**Award**
Absolute: <100% and =>90% of the spec. value	Irregularity	0.5
Absolute: <90% and =>80% of the spec. value	Minor	2.0
Absolute: <80% of the specification value	Major	3.0
Variation: >0% and =<5% additional to the spec.	Irregularity	0.5
Variation: >5% and =<10% additional to the spec.	Minor	2.0
Variation: >10% additional to the spec.value	Major	3.0

7.5 ASSESSMENT OF TEST RESULTS - SCHEME B (NON-POWER) Cont'd

Mechanical

Tensile strength & %EL - before & after ageing in air bomb

Fail criteria	Classification	Award
Absolute: <100% and =>90% of the spec.value	Irregularity	0.5
Absolute: <90% and =>80% of the spec. value	Minor	2.0
Absolute: <80% of the specification value	Major	3.0
Variation: >0% and =<5% additional to the spec.	Irregularity	0.5
Variation: >5% and =<10% additional to the spec.	Minor	2.0
Variation: >10% additional to the spec.value	Major	3.0

Tensile strength & %EL - before & after ageing in oxygen

Fail criteria	Classification	Award
Absolute: <100% and =>90% of the spec. value	Irregularity	0.5
Absolute: <90% and =>80% of the spec. value	Minor	2.0
Absolute: <80% of the specification value	Major	3.0
Variation: >0% and =<5% additional to the spec.	Irregularity	0.5
Variation: >5% and =<10% additional to the spec.	Minor	2.0
Variation: >10% additional to the spec.value	Major	3.0

Tensile strength & %EL of bedding

Fail criteria	Classification	Award
Absolute: <100% and =>75% of the spec. value	Irregularity	0.5
Absolute: <75% of the specification value	Major	3.0
Variation: >0% and =<10% additional to the spec	Irregularity	0.5
Variation: >10% additional to the specification value	Major	3.0

Tensile strength and Elongation (filling compound absorption)

Fail criteria	Classification	Award
Absolute: <100% and =>90% of the spec. value	Irregularity	0.5
Absolute: <90% and =>80% of the spec. value	Minor	2.0
Absolute: <80% of the specification value	Major	3.0
Variation: >5% and =<10% additional to the spec.	Minor	2.0
Variation: >10% additional to the spec.value	Major	3.0

Tensile strength of strain bearing member

Fail criteria	Classification	Award
Not complying	Major	3.0

Water absorption

Fail criteria	Classification	Award
>100% =<120% of the specification value	Irregularity	0.5
>120% =<140% of the specification value	Minor	2.0
>140% of the specification value	Major	3.0

Water immersion

Fail criteria	Classification	Award
>0% and =<5% additional to the specification value	Irregularity	0.5
>5% and =<10% additional to the specification value	Minor	2.0
>10% additional to the spec. value	Major	3.0

7.5 ASSESSMENT OF TEST RESULTS - SCHEME B (NON-POWER) Cont'd

Miscellaneous

Adhesion of Insulation/Bedding/Sheath

Fail criteria	**Classification**	**Award**
Unable to remove without damage to conductor/ insulation/armour	Actionable	3.0

Carbon black content

Fail criteria	**Classification**	**Award**
Not complying	Irregularity	0.5

Carbon black dispersion

Fail criteria	**Classification**	**Award**
Not complying	Irregularity	0.5

Collective screens and drain wire

Fail criteria	**Classification**	**Award**
Dimensional failure	Major	3.0

Colour of Insulation/Sheath

Fail Criteria	**Classification**	**Award**
Fading of colour	Irregularity	0.5

Core identification clarity & durability

Fail criteria	**Classification**	**Award**
Clarity not conforming	Minor	2.0
Durability not conforming	Minor	2.0

Corrosive and acid gas emissions

Fail criteria	**Classification**	**Award**
>0.5% and =<1%	Irregularity	1.0
>1.0%	Major	3.0

Environmental stress cracking

Fail criteria	**Classification**	**Award**
Not complying	Major	3.0

Hardness

Fail criteria	**Classification**	**Award**
>0% and =<5% of the specification limit	Irregularity	1.0
>5% and =<10% of the specification limit	Minor	2.0
>10% of the specification limit	Major	3.0

Insulation Surface Colour

Fail criteria	**Classification**	**Award**
Separation of surface colour from base insulation	Major	3.0

7.5 ASSESSMENT OF TEST RESULTS - SCHEME B (NON-POWER) Cont'd

Miscellaneuous

L/R ratio

Fail criteria	**Classification**	**Award**
>0% and =<10% of the specification value	Irregularity	1.0
>10% and =<15% of the specification value	Minor	2.0
>15% of the specification value	Major	3.0

Nail Penetration Test (BS 8436)	**Classification**	**Award**
Not complying	Actionable	3.0

Ozone resistance

Fail criteria	**Classification**	**Award**
Not complying	Major	3.0

Resistance to fire with shock (IEC 60331-3)

Fail criteria	**Classification**	**Award**
Not complying	Actionable	3.0

Resistance to fire (BS 6387)

Fail criteria	**Classification**	**Award**
Not complying	Actionable	3.0

Resistance to fire with mechanical shock (BS 6387)

Fail criteria	**Classification**	**Award**
Not complying	Actionable	3.0

Resistance to fire with water (BS 6387)

Fail criteria	**Classification**	**Award**
Not complying	Actionable	3.0

Smoke emission-single test for surveillance

Fail criteria	**Classification**	**Award**
Between 100% and >90% of specification value	Irregularity	1.0
Between <=90% and >80% of specification value	Minor	2.0
Between <=80% and >70% of specification value	Major	3.0
<=70% of specification value	Actionable	3.0

Test under fire conditions (BS EN 60332-1-2)

Fail criteria	**Classification**	**Award**
Not complying	Actionable	3.0

Test under fire conditions (BS EN 50200)

Fail Criteria	**Classification**	**Award**
Not complying	Actionable	3.0

7.5 ASSESSMENT OF TEST RESULTS - SCHEME B (NON-POWER) Cont'd

Miscellaneuous

Test under fire conditions (BS EN 50200 Annex E)

Fail criteria	**Classification**	**Award**
Not complying	Actionable	3.0

Test under fire conditions (BS 8434-2)

Fail Criteria	**Classification**	**Award**
Not complying	Actionable	3.0

Thermal endurance

Fail criteria	**Classification**	**Award**
During voltage test after cooling	Irregularity	1.0
During heating test after 600 hours	Minor	2.0
During heating test before 600 hours	Major	3.0

Thermal stability

Fail criteria	**Classification**	**Award**
Not complying	Major	3.0

Tin Coated Wires

Fail criteria	**Classification**	**Award**
Tin coating non-continuous	Minor	1.0

Uniformity of appearance

Fail criteria	**Classification**	**Award**
Not complying	Irregularity	0.5

Transmission

Capacitance unbalance

Fail criteria	**Classification**	**Award**
>0% and =<10% of the specification value	Irregularity	1.0
>20% and =<15% of the specification value	Minor	2.0
>15% of the specification value	Major	3.0

Mutual capacitance

Fail criteria	**Classification**	**Award**
>0% and =<10% of the specification value	Irregularity	1.0
>10% and =<15% of the specification value	Minor	2.0
>15%of the specification value	Major	3.0

7.6 ASSESSMENT OF TEST RESULTS - SCHEME B (POWER)

Construction, Marking and Dimensions

Armour wire diameter or strip wire dimensions

Fail criteria	**Classification**	**Award**
=>95% of the minimum specification value	Irregularity	0.25
=>90% and <95% of the minimum specification value	Minor	1.0
<90% of the minimum specification value	Major	1.5
=<105% of the maximum specification value	Irregularity	0.25
>105% and =<115% of the maximum specification value	Minor	1.0
>115% of the maximum specification value	Major	1.5

Armour Wire Direction of Lay

Fail criteria	**Classification**	**Award**
Wrong lay direction	Major	1.5

Armour Wire Lay Length

Fail criteria	**Classification**	**Award**
Not complying	Minor	1.0

Armour Wire Joints

Fail criteria	**Classification**	**Award**
Surface irregularity on joint	Irregularity	0.5
Joint less than 1m from joint in adjacent wire	Irregularity	0.5

Bedding thickness - minimum value

Fail criteria	**Classification**	**Award**
<100% and =>90% of the specification value	Irregularity	0.25
<90% and =>80% of the specification value	Irregularity	0.5
<80% and =>70% of the specification value	Minor	1.0
<70% and =>10% of the specification value	Major	1.5
<10% of the specification value	Actionable	1.5

Bi-colour combinations

Fail criteria	**Classification**	**Award**
Between 71/29% and 76/24%	Irregularity	0.5
Between 77/23% and 80/20%	Minor	1.0
Over 80/20%	Major	1.5

Conductor Construction

Fail criteria	**Classification**	**Award**
Incorrect class of conductor	Minor	1.0

Conductor screen

Fail criteria	**Classification**	**Award**
Conductor screen does not comply	Irregularity	0.25
Conductor screen not present when claimed	Major	1.5

7.6 ASSESSMENT OF TEST RESULTS - SCHEME B (POWER) Cont'd

Construction, Marking and Dimensions

Diameter over armour

Fail criteria	**Classification**	**Award**
>0% and =<10% of the specification value	Irregularity	0.5
>10% of the specification value	Irregularity	1.0

Diameter over bedding

Fail criteria	**Classification**	**Award**
>0% and =<10% of the specification value	Irregularity	0.5
>10% of the specification value	Irregularity	1.0

Diameter over lead sheath

Fail criteria	**Classification**	**Award**
>0% and =<10% of the specification value	Irregularity	0.5
>10% of the specification value	Irregularity	1.0

Diameter over sheath/bedding

Fail criteria	**Classification**	**Award**
>0% and =<10% of the specification value	Irregularity	0.5
>10% of the specification value	Irregularity	1.0

Insulation and oversheath thickness

Fail criteria	**Classification**	**Award**
<100% and =>95% of the specification value	Irregularity	0.25
<95% and =>90% of the specification value	Irregularity	0.5
<90% and =>80% of the specification value	Minor	1.0
<80% of the specification value (MEAN value)	Major	1.5
<80% of the specification value (MINIMUM value)	Major	1.5
Uninsulated conductor	Actionable	1.5
Uninsulated conductor (repeat finding)	Actionable	1.5

Insulation screen

Fail criteria	**Classification**	**Award**
Metallic screen gap too wide	Minor	1.0
Not present when claimed as part of the construction	Major	1.5

Assembled cores direction of lay

Fail criteria	**Classification**	**Award**
Not complying	Irregularity	0.25

Assembled cores lay length

Fail criteria	**Classification**	**Award**
Not complying	Minor	1.0

7.6 ASSESSMENT OF TEST RESULTS - SCHEME B (POWER) Cont'd

Construction, Marking and Dimensions

Marking

Fail criteria	**Classification**	**Award**
Any provision of the standard not listed	Irregularity	0.25
Cable not "BASEC" marked	Irregularity	0.25
Presence of incorrect marking element	Irregularity	0.25
Durability of printed markings	Irregularity	0.25
Repeat interval between one legend and the next	Irregularity	0.25
Lack of indication of origin	Irregularity	0.5
Legibility of legends	Irregularity	0.5
Incorrect voltage markings	Actionable	1.5
Core scheme incorrect	Actionable	1.5
Mixed conductor sizes	Actionable	1.5

Ovality of complete cable

Fail criteria	**Classification**	**Award**
Exceeding the specification value	Irregularity	0.5

Separation layer thickness

Fail criteria	**Classification**	**Award**
<100% and =>80% of the specification value	Irregularity	0.25
<80% and =>50% of the specification value	Minor	1.0
<50% of the specification value	Major	1.5

Taped bedding - gap

Fail criteria	**Classification**	**Award**
Not complying	Irregularity	0.25

Core Sequence

Fail criteria	**Classification**	**Award**
Incorrect Sequence	Minor	1.0

Conductor Diameter

Fail criteria	**Classification**	**Award**
Not complying	Irregularity	0.25

Core Outside Diameter

Fail criteria	**Classification**	**Award**
Not complying	Irregularity	0.25

Rib Geometry & Spacing

Fail criteria	**Classification**	**Award**
Not complying	Irregularity	0.25

7.6 ASSESSMENT OF TEST RESULTS - SCHEME B (POWER) Cont'd

Electrical

Armour resistance

Fail criteria	Classification	Award
>100% and =<103% of the specification value	Irregularity	0.25
>103% and =<106% of the specification value	Irregularity	0.5
>106% and =<110% of the specification value	Minor	1.0
>110% and =<150% of the specification value	Major	1.5
>150% of the specification value	Actionable	1.5

Bending test

Fail criteria	Classification	Award
Not complying	Major	1.5
Repeat failure	Actionable	1.5

Conductor resistance

Fail criteria	Classification	Award
>100% and =<101% of the specification value	Irregularity	0.25
>101% and =<103% of the specification value	Minor	1.0
>103% and =<105% of the specification value	Major	1.5
>105% of the specification value	Actionable	1.5

Copper wire screen resistance

Fail criteria	Classification	Award
>100% and =<101% of the specification value	Irregularity	0.25
>101% and =<103% of the specification value	Minor	1.0
>103% and =<105% of the specification value	Major	1.5
>105% of the specification value	Actionable	1.5

d.c. Voltage test on oversheath

Fail criteria	Classification	Award
Not complying	Major	1.5
Repeat failure	Actionable	1.5

Four hour voltage test

Fail criteria	Classification	Award
Not complying	Major	1.5
Repeat failure	Actionable	1.5

Impulse voltage test

Fail criteria	Classification	Award
Does not comply	Major	1.5
Repeat failure on same sample	Actionable	1.5

7.6 ASSESSMENT OF TEST RESULTS - SCHEME B (POWER) Cont'd

Electrical

Insulation resistance

Fail criteria	Classification	Award
<100% and =>80% of the specification value	Irregularity	0.25
<80% and =>60% of the specification value	Irregularity	0.5
<60% and =>40% of the specification value	Minor	1.0
<40% and =>10% of the specification value	Major	1.5
<10% of the specification value	Actionable	1.5

Insulation resistance constant

Fail criteria	Classification	Award
<100% and =>80% of the specification value	Irregularity	0.25
<80% and =>60% of the specification value	Irregularity	0.5
<60% and =>40% of the specification value	Minor	1.0
<40% of the specification value	Major	1.5

Partial discharge

Fail criteria	Classification	Award
Not complying	Actionable	1.5

Resistivity of screen

Fail criteria	Classification	Award
>100% and =<101% of the specification value	Irregularity	0.25
>101% and =<103% of the specification value	Minor	1.0
>103% and =<110% of the specification value	Major	1.5
>110% of the specification value	Actionable	1.5

Tan Delta

Fail criteria	Classification	Award
Not complying	Actionable	1.5

Voltage test on complete cable

Fail criteria	Classification	Award
Not complying	Major	1.5
Repeat failure	Actionable	1.5

7.6 ASSESSMENT OF TEST RESULTS - SCHEME B (POWER) Cont'd

Mechanical

Abrasion resistance

Fail criteria	**Classification**	**Award**
Not complying	Major	1.5

Adherence of screens during short circuit

Fail criteria	**Classification**	**Award**
Not complying	Actionable	1.5

Cold bend

Fail criteria	**Classification**	**Award**
Not complying	Minor	1.0

Cold elongation

Fail criteria	**Classification**	**Award**
Not complying	Minor	1.0

Cold impact

Fail criteria	**Classification**	**Award**
Not complying	Minor	1.0

Cold stripability of extruded screen

Fail criteria	**Classification**	**Award**
Not complying	Major	1.5

Compatibility

Fail criteria	**Classification**	**Award**
Staining of blotting paper	Irregularity	0.25
Absolute: <100% and =>90% of the spec. value	Irregularity	0.25
Absolute: <90% and =>80% of the spec. value	Minor	1.0
Absolute: <80% of the specification value	Major	1.5
Variation: >0% and =<5% additional to the spec.	Irregularity	0.25
Variation: >5% and =<10% additional to the spec.	Minor	1.0
Variation: >10% additional to the spec. value	Major	1.5

Heat shock - oversheath and insulation

Fail criteria	**Classification**	**Award**
Not complying	Irregularity	0.5

Hot deformation

Fail criteria	**Classification**	**Award**
>100% and =<110% of the specification value	Irregularity	0.5
>110% and =<120% of the specification value	Minor	1.0
>120% of the specification value	Major	1.5

7.6 ASSESSMENT OF TEST RESULTS - SCHEME B (POWER) Cont'd

Mechanical

Hot pressure - oversheath and insulation

Fail criteria	Classification	Award
>100% and =<110% of the specification value	Irregularity	0.5
>110% and =<120% of the specification value	Minor	1.0
>120% of the specification value	Major	1.5
Sample fully cut through	Actionable	1.5

Hot set

Fail criteria	Classification	Award
Permanent: >15% and =<20% of the spec. value	Irregularity	0.5
Elongation: >175% and =<250% of the spec.value	Irregularity	0.5
Elongation: >250% and =<350% of the spec. value	Minor	1.0
Permanent: >20% and =<30% of the spec. value	Minor	1.0
Permanent: >30% of the specification value	Major	1.5
Elongation: >350% of the specification value	Major	1.5
Unvulcanised material (samples snap during test)	Actionable	1.5

Loss of mass - oversheath and insulation

Fail criteria	Classification	Award
>100% and =<110% of the specification value	Irregularity	0.5
>110% and =<120% of the specification value	Minor	1.0
>120% of the specification value	Major	1.5

Mass of zinc coating on steel wire armour

Fail criteria	Classification	Award
<100% and =>90% of the specification value	Irregularity	0.25
<90% and =>70% of the specification value	Irregularity	0.5
<70% and =>50% of the specification value	Minor	1.0
<50% of the specification value	Major	1.5

Sequential type tests

Fail criteria	Classification	Award
Not complying	Actionable	1.5

Shrinkage

Fail criteria	Classification	Award
>100% and =<110% of the specification value	Irregularity	0.25
>110% and =<130% of the specification value	Irregularity	0.5
>130% and =<150% of the specification value	Minor	1.0
>150% of the specification value	Major	1.5

Tear resistance

Fail criteria	Classification	Award
Not complying	Irregularity	0.5

7.6 ASSESSMENT OF TEST RESULTS - SCHEME B (POWER) Cont'd

Mechanical

Tensile strength & %EL - before & after ageing in air

Fail criteria	Classification	Award
Absolute: <100% and =>90% of the spec. value	Irregularity	0.25
Absolute: <90% and =>80% of the spec. value	Minor	1.0
Absolute: <80% of the specification value	Major	1.5
Variation: >0% and =<5% additional to the spec.	Irregularity	0.25
Variation: >5% and =<10% additional to the spec.	Minor	1.0
Variation: >10% additional to the spec. value	Major	1.5

Tensile strength & %EL - before & after ageing in air bomb

Fail criteria	Classification	Award
Absolute: <100% and =>90% of the spec. value	Irregularity	0.25
Absolute: <90% and =>80% of the spec. value	Minor	1.0
Absolute: <80% of the specification value	Major	1.5
Variation: >0% and =<5% additional to the spec.	Irregularity	0.25
Variation: >5% and =<10% additional to the spec.	Minor	1.0
Variation: >10% additional to the spec.	Major	1.5

Tensile strength & %EL of bedding

Fail criteria	Classification	Award
Absolute: <100% and =>75% of the spec. value	Irregularity	0.25
Absolute: <75% of the specification value	Major	1.5
Variation: >0% and =<10% additional to the spec.	Irregularity	0.25
Variation: >10% additional to the spec. value	Major	1.5

Tensile strength & %EL of neutral conductor covering

Fail criteria	Classification	Award
Absolute: <100% and =>90% of the spec. value	Irregularity	0.25
Absolute: <90% and =>80% of the spec. value	Minor	1.0
Absolute: <80% of the specification value	Major	1.5

Tensile test on aluminium wire

Fail criteria	Classification	Award
<100% and =>98% of the specification value	Irregularity	0.25
<98% and =>94% of the specification value	Irregularity	0.5
<94% and =>90% of the specification value	Minor	1.0
<90% of the specification value	Major	1.5

Water absorption

Fail criteria	Classification	Award
>100% =<120% of the specification value	Irregularity	0.5
>120% =<140% of the specification value	Minor	1.0
>140% of the specification value	Major	1.5

7.6 ASSESSMENT OF TEST RESULTS - SCHEME B (POWER) Cont'd

Mechanical

Water immersion

Fail criteria	**Classification**	**Award**
>0% and =<5% additional to the specification value	Irregularity	0.5
>5% and =<10% additional to the specification value	Minor	1.0
>10% additional to the specification value	Major	1.5

Wrapping test on steel wire armour

Fail criteria	**Classification**	**Award**
Not complying	Irregularity	0.5

7.6 ASSESSMENT OF TEST RESULTS - SCHEME B (POWER) Cont'd

Miscellaneous

Adhesion of Insulation/Bedding/Sheath/Fillers & Binders

Fail criteria	Classification	Award
Unable to remove without damage to conductor/ insulation/armour	Actionable	3.0

Carbon black content

Fail criteria	Classification	Award
Does not comply	Irregularity	0.25

Colour of Insulation/Sheath

Fail Criteria	Classification	Award
Fading of colour	Irregularity	0.5

Core identification durability

Fail criteria	Classification	Award
Does not comply	Minor	1.0

Corrosive and acid gas emissions

Fail criteria	Classification	Award
>0.5% and =<1%	Irregularity	0.5
>1.0%	Major	1.5

Hardness

Fail criteria	Classification	Award
Does not comply	Irregularity	0.5

Heat Cycling

Fail criteria	Classification	Award
Does not comply	Actionable	1.5

Insulation Surface Colour

Fail criteria	Classification	Award
Separation of surface colour from base insulation	Major	3.0

Ozone resistance

Fail criteria	Classification	Award
Not complying	Major	1.5

Resistance to fire Categories F1, F2 & F3

Fail criteria	Classification	Award
Not complying	Actionable	1.5

Slippage Test

Fail criteria	Classification	Award
Not complying	Irregularity	0.25

7.6 ASSESSMENT OF TEST RESULTS - SCHEME B (POWER) Cont'd

Miscellaneous

Smoke emission - single test for surveillance

Fail criteria	Classification	Award
Between 100% and >90% of specification value	Irregularity	0.5
Between <=90% and >80% of specification value	Minor	1.0
Between <=80% and >70% of specification value	Major	1.5
<=70% of specification value	Actionable	1.5

Test under fire conditions – flame propagation on single cable (BS EN 60331-1-2)

Fail criteria	Classification	Award
Not complying	Actionable	1.5

Test under fire conditions – flame propagation on multiple cables (BS EN 60332-2-24)

Fail criteria	Classification	Award
Not complying	Actionable	1.5

Test under fire conditions (BS EN 50200)

Fail Criteria	Classification	Award
Not complying	Actionable	1.5

Test under fire conditions (BS EN 50200 Annex E)

Fail criteria	Classification	Award
Not complying	Actionable	1.5

Test under fire conditions (BS 8434-2)

Fail Criteria	Classification	Award
Not complying	Actionable	1.5

Test under fire conditions (BS 8491)

Fail Criteria	Classification	Award
Not complying	Actionable	1.5

UV Exposure

Fail criteria	Classification	Award
Does not comply	Major	1.5

7.7 ASSESSMENT OF TEST RESULTS - SCHEME C

Construction, Marking and Dimensions

Cable diameter

Fail criteria	**Classification**	**Award**
Not complying	Actionable	1.5

Colour codes

Fail criteria	**Classification**	**Award**
Wrong colours but no two pairs the same	Minor	1.0
Wrong colours and two pairs the same	Major	1.5

Insulated conductor diameter

Fail criteria	**Classification**	**Award**
Not complying	Actionable	1.5

Marking

Fail criteria	**Classification**	**Award**
Durability of printed marks fails	Irregularity	0.5
Repeat interval between one legend and the next	Irregularity	0.5
Presence of incorrect marking element	Irregularity	0.5
Cable not “BASEC” marked	Irregularity	0.5
Any provision of the standard which is not listed	Irregularity	0.5

Overall diameter

Fail criteria	**Classification**	**Award**
>0% and =<10% of the specification value	Irregularity	0.5
>10% of the specification value	Minor	1.0

Pair assembly

Fail criteria	**Classification**	**Award**
Not complying	Actionable	1.5

Presence of screen or shield

Fail criteria	**Classification**	**Award**
Not present when required	Actionable	1.5

7.7 ASSESSMENT OF TEST RESULTS - SCHEME C Cont'd

Electrical

Dielectric strength

Fail criteria	**Classification**	**Award**
Not complying	Major	1.5
Repeat failure	Actionable	1.5

Insulation resistance

Fail criteria	**Classification**	**Award**
<100% and =>80% of the specification value	Irregularity	0.5
<80% and =>60% of the specification limit	Minor	1.0
<60% and =>40% of the specification limit	Major	1.5
<40% of the specification limit	Actionable	1.5

Mechanical

Breaking strength

Fail criteria	**Classification**	**Award**
>0% and =<10% of the specification value	Irregularity	0.5
>10% and =<15% of the specification value	Minor	1.0
>15% and =<20% of the specification value	Major	1.5
>20% of the specification value	Actionable	1.5

Pulling strength

Fail criteria	**Classification**	**Award**
>0% and =<10% of the specification value	Irregularity	0.5
>10% and =<15% of the specification value	Minor	1.0
>15% and =<20% of the specification value	Major	1.5
>20% of the specification value	Actionable	1.5

Miscellaneous

Bending radius of glass braided cables

Fail criteria	**Classification**	**Award**
Not complying	Major	1.5

Colour of Insulation/Sheath

Fail Criteria	**Classification**	**Award**
Fading of colour	Irregularity	0.5

Insulation Surface Colour

Fail criteria	**Classification**	**Award**
Separation of surface colour from base insulation	Major	3.0

7.7 ASSESSMENT OF TEST RESULTS - SCHEME C Cont'd

Transmission

Attenuation

Fail criteria	Classification	Award
>1% and =<2% of the specification value	Irregularity	0.5
>2% and =<3% of the specification value	Minor	1.0
>3% and =<5% of the specification value	Major	1.5
>5% of the specification value	Actionable	1.5

Capacitance unbalance

Fail criteria	Classification	Award
>0% and =<10% of the specification value	Irregularity	0.5
>20% and =<15% of the specification value	Minor	1.0
>15% and =< 20% of the specification value	Major	1.5
>20% of the specification value	Actionable	1.5

Characteristic impedance

Fail criteria	Classification	Award
>15% and =<20% of the specification value	Irregularity	0.5
>20% and =<25% of the specification value	Minor	1.0
>25% and =<30% of the specification value	Major	1.5
>30% of the specification value	Actionable	1.5

dc resistance

Fail criteria	Classification	Award
>0% and =<3% of the specification value	Irregularity	0.5
>3% and =<10% of the specification value	Minor	1.0
>10% and =<15% of the specification value	Major	1.5
>15% of the specification value	Actionable	1.5

dc resistance unbalance

Fail criteria	Classification	Award
>0% and =<10% of the specification value	Irregularity	0.5
>10% and =<15% of the specification value	Minor	1.0
>15% and =<20% of the specification value	Major	1.5
>20% of the specification value	Actionable	1.5

Mutual capacitance

Fail criteria	Classification	Award
>0% and =<10% of the specification value	Irregularity	0.5
>10% and =<15% of the specification value	Minor	1.0
>15% and =<20% of the specification value	Major	1.5
>20% of the specification value	Actionable	1.5

7.7 ASSESSMENT OF TEST RESULTS - SCHEME C Cont'd

Transmission

Near end cross talk

Fail criteria	**Classification**	**Award**
>0% and =<5% of the specification value	Irregularity	0.5
>5% and =<10% of the specification value	Minor	1.0
>10% and =<15% of the specification value	Major	1.5
>15% of the specification value	Actionable	1.5

Structural return loss

Fail criteria	**Classification**	**Award**
>0% and =<5% of the specification value	Irregularity	0.5
>5% and =<10% of the specification value	Minor	1.0
>10% and =<15% of the specification value	Major	1.5
>15% of the specification value	Actionable	1.5

Transfer impedance

Fail criteria	**Classification**	**Award**
>0% and =<5% of the specification value	Irregularity	0.5
>5% and =<10% of the specification value	Minor	1.0
>10% and =<15% of the specification value	Major	1.5
>15% of the specification value	Actionable	1.5

Velocity of propagation

Fail criteria	**Classification**	**Award**
>0% and =<5% of the specification value	Irregularity	0.5
>5% and =<10% of the specification value	Minor	1.0
>10% and =<15% of the specification value	Major	1.5
>15% of the specification value	Actionable	1.5

7.8 ASSESSMENT OF TEST RESULTS - SCHEME D

Please contact BASEC.

7.9 ASSESSMENT OF TEST RESULTS - SCHEME E

Construction, Marking and Dimensions

Bi-colour combinations

Fail criteria	**Classification**	**Award**
Between 71/29% and 76/24%	Irregularity	1.0
Between 77/23% and 80/20%	Minor	2.0
Over 80/20%	Actionable	3.0

Copper sheath thickness (mineral insulated cables)

Fail criteria	**Classification**	**Award**
<100% and =>85% of the specification value	Irregularity	1.0
<85% and =>70% of the specification value	Minor	2.0
<70% of the specification value	Major	3.0

Diameter over copper sheath (mineral insulated cables)

Fail criteria	**Classification**	**Award**
<-0.5mm to =>0.7mm of the specification value	Irregularity	1.0
<-0.7mm to =>-1.0mm of the specification value	Minor	2.0
<-1.0mm of the specification value	Major	3.0

Diameter over covering (mineral insulated cables)

Fail criteria	**Classification**	**Award**
<-0.5mm to =>0.7mm of the specification value	Irregularity	1.0
<-0.7mm to =>-1.0mm of the specification value	Minor	2.0
<-1.0mm of the specification value	Major	3.0

Insulation thickness

Refer to Appendix 1

Insulation thickness of mineral insulated cables

Fail criteria	**Classification**	**Award**
<100% and =>85% of the specification value	Irregularity	1.0
<85% to 70% of the specification value	Minor	2.0
<70% of the specification value	Actionable	3.0

Marking

Fail criteria	**Classification**	**Award**
Durability of printed marks fails	Irregularity	0.5
Repeat interval between one legend and the next	Irregularity	0.5
Presence of incorrect marking element	Irregularity	0.5
Cable not “BASEC” marked	Irregularity	0.5
Any provision of the standard not listed	Irregularity	0.5
Lack of indication of origin	Irregularity	1.0
Marks, threads or tapes can nor be deciphered	Irregularity	1.0
Sheath/insulation marks incorrect, e.g. wrong temp rating	Major	3.0
Core scheme incorrect	Major	3.0

7.9 ASSESSMENT OF TEST RESULTS - SCHEME E Cont'd

Construction, Marking and Dimensions

Outer covering thickness for mineral insulated cables

Fail criteria	**Classification**	**Award**
<100% and =>90% of the specification value	Irregularity	1.0
<90% and =>80% of the specification value	Minor	2.0
<80% of the specification value	Major	3.0

Ovality

Fail criteria	**Classification**	**Award**
Exceeding the specification value	Irregularity	1.0

Overall dimensions

Fail criteria	**Classification**	**Award**
>0% and =<10% of the specification value	Irregularity	0.5
>10% of the specification value	Irregularity	1.0

Sheath thickness

Refer to Appendix 2

7.9 ASSESSMENT OF TEST RESULTS - SCHEME E Cont'd

Electrical

Conductor resistance

Fail criteria	Classification	Award
>100% and =<101% of the specification value	Irregularity	0.5
>101% and =<103% of the specification value	Minor	2.0
>103% and =<105% of the specification value	Major	3.0
>105% of the specification value	Actionable	3.0

Copper sheath resistance

Fail criteria	Classification	Award
>100% and =<101% of the specification value	Irregularity	0.5
>101% and =<103% of the specification value	Minor	2.0
>103% and =<105% of the specification value	Major	3.0
>105% of the specification value	Actionable	3.0

Insulation resistance

Fail criteria	Classification	Award
<100% and =>80% of the specification value	Irregularity	0.5
<80% and =>60% of the specification value	Irregularity	1.0
<60% and =>40% of the specification value	Minor	2.0
<40% of the specification value	Actionable	3.0

Insulation resistance constant

Fail criteria	Classification	Award
<100% and =>80% of the specification value	Irregularity	0.5
<80% and =>60% of the specification value	Irregularity	1.0
<60% and =>40% of the specification value	Minor	2.0
<40% of the specification value	Major	3.0

Long term resistance of insulation to dc

Fail criteria	Classification	Award
Not complying	Major	3.0
Repeat failure	Actionable	3.0

Voltage test on complete cable (sheathed cables)

Fail criteria	Classification	Award
Not complying	Major	3.0
Repeat failure	Actionable	3.0

Voltage test on complete cable (unsheathed cables)

Fail criteria	Classification	Award
Not complying	Major	3.0
Repeat failure	Actionable	3.0

7.9 ASSESSMENT OF TEST RESULTS - SCHEME E Cont'd

Electrical

Voltage test on complete cable for mineral insulated cables

Fail criteria	Classification	Award
Not complying	Major	3.0
Repeat failure	Actionable	3.0

Voltage test on cores

Fail criteria	Classification	Award
Not complying	Major	3.0
Repeat failure	Actionable	3.0

7.9 ASSESSMENT OF TEST RESULTS - SCHEME E Cont'd

Mechanical

Bending test of mineral insulated cables

Fail criteria	**Classification**	**Award**
Not complying	Major	3.0

Cold bend

Fail criteria	**Classification**	**Award**
Not complying	Irregularity	1.0

Cold elongation

Fail criteria	**Classification**	**Award**
Not complying	Irregularity	1.0

Cold impact

Fail criteria	**Classification**	**Award**
Not complying	Irregularity	1.0

Compatibility

Fail criteria	**Classification**	**Award**
Staining of blotting paper	Irregularity	0.5
Absolute: <100% and =>90% of the spec. value	Irregularity	0.5
Absolute: <90% and =>80% of the spec. value	Minor	2.0
Absolute: <80% of the specification value	Actionable	3.0
Variation: >0% and =<5% additional to the spec.	Irregularity	0.5
Variation: >5% and =<10% additional to the spec.	Minor	2.0
Variation: >10% and =<12.5% additional to the	Major	3.0
Variation: <12.5% additional to the specification	Actionable	3.0

Flattening test (mineral insulated cables)

Fail criteria	**Classification**	**Award**
Not complying	Irregularity	1.0

Heat shock

Fail criteria	**Classification**	**Award**
Not complying	Irregularity	1.0

Hot deformation

Fail criteria	**Classification**	**Award**
>100% and =<110% of the specification value	Irregularity	1.0
>110% and =<120% of the specification value	Minor	2.0
>120% of the specification value	Actionable	3.0

7.9 ASSESSMENT OF TEST RESULTS - SCHEME E Cont'd

Mechanical

Hot pressure

Fail criteria	Classification	Award
>100% and =<110% of the specification value	Irregularity	1.0
>110% and =<120% of the specification value	Minor	2.0
>120% of the specification value	Actionable	3.0

Loss of mass

Fail criteria	Classification	Award
>100% and =<110% of the specification value	Irregularity	1.0
>110% and =<120% of the specification value	Minor	2.0
>120% and =<150% of the specification value	Major	3.0
>150% of the specification value	Actionable	3.0

Non-contamination test

Fail criteria	Classification	Award
Absolute: <100% and =>90% of the spec. value	Irregularity	0.5
Absolute: <90% and =>80% of the spec.value	Minor	2.0
Absolute: <80% and =>75% of the spec. value	Major	3.0
Absolute: <75% of the specification value	Actionable	3.0
Variation: >0% and =<5% additional to the spec.	Irregularity	0.5
Variation: >5% and =<10% additional to the spec.	Minor	2.0
Variation: >10% and =<12.5% additional to the spec.	Major	3.0
Variation: >12.5% additional to the speci. value	Actionable	3.0

Separation of cores

Fail criteria	Classification	Award
Other defects	Irregularity	1.0
If insulation is torn open	Minor	2.0

Shrinkage

Fail criteria	Classification	Award
>100% and =<110% of the specification value	Irregularity	0.5
>110% and =<130% of the specification value	Irregularity	1.0
>130% and =<150% of the specification value	Minor	2.0
>150% of the specification value	Major	3.0

Snatch test for tinsel cords

Fail criteria	Classification	Award
Not complying	Minor	2.0

7.9 ASSESSMENT OF TEST RESULTS - SCHEME E Cont'd

Mechanical

Tensile strength & %EL - before & after ageing in air

Fail criteria	**Classification**	**Award**
Absolute: <100% and =>90% of the spec. value	Irregularity	0.5
Absolute: <90% and =>80% of the spec. value	Minor	2.0
Absolute: <80% of the specification value	Actionable	3.0
Variation: >0% and =<5% additional to the spec.	Irregularity	0.5
Variation: >5% and =<10% additional to the spec.	Minor	2.0
Variation: >10% and =<12.5% additional to the spec.	Major	3.0
Variation: >12.5% additional to the spec. value	Actionable	3.0

Water absorption

Fail criteria	**Classification**	**Award**
>100% =<120% of the specification value	Irregularity	0.5
>120% =<140% of the specification value	Minor	2.0
>140% =<150% of the specification value	Major	3.0
>150% of the specification value	Actionable	3.0

7.9 ASSESSMENT OF TEST RESULTS - SCHEME E Cont'd

Miscellaneous

Acid gas emissions (IEC 60754-1)

Fail criteria	**Classification**	**Award**
>0.5% and =<1%	Irregularity	1.0
>1.0%	Major	3.0

Adhesion of Insulation/Bedding/Sheath

Fail criteria	**Classification**	**Award**
Unable to remove without damage to conductor/ insulation/armour	Actionable	3.0

Colour of Insulation/Sheath

Fail Criteria	**Classification**	**Award**
Fading of colour	Irregularity	1.0

pH and Conductivity (IEC 60754-2)

Fail criteria	**Classification**	**Award**
=<4.3pH to >4.2pH =<4.2pH	Irregularity	1.0
>10micro s/mm to =<12.5micro s/mm	Minor	2.0
>12.5micro s/mm to =<15micro s/mm	Major	3.0
>15micro s/mm	Actionable	3.0

Exudation of plasticiser

Fail criteria	**Classification**	**Award**
Not complying	Irregularity	1.0

Flexing for cords and extensible leads

Fail criteria	**Classification**	**Award**
By voltage test after 30 000 cycles	Irregularity	1.0
Between 30 000 and 20 000 cycles	Minor	2.0
Before 20 000 cycles	Actionable	3.0

Fluorine content (IEC 60684-2)

Failure criteria	**Classification**	**Award**
>0.1% and =<0.2%	Irregularity	1.0
>0.2%	Major	3.0

Insulation Surface Colour

Fail criteria	**Classification**	**Award**
Separation of surface colour from base insulation	Major	3.0

Nail Penetration Test (IS 273)	**Classification**	**Award**
Not complying	Actionable	3.0

Oxygen concentration

Fail criteria	**Classification**	**Award**
Not complying	Actionable	3.0

7.9 ASSESSMENT OF TEST RESULTS - SCHEME E Cont'd

Miscellaneous

Smoke emission of LSF covered mineral insulated cable

Fail criteria	Classification	Award
<100% to =>90% of the specified value	Irregularity	1.0
<90% to =>80% of the specified value	Minor	2.0
<80% of the specified value	Actionable	3.0

Test under fire conditions – Flame propagation on a single cable

Fail criteria	Classification	Award
Not complying	Actionable	3.0

Test under fire conditions - outer covering of mineral insulated cable

Fail criteria	Classification	Award
Not complying	Major	3.0

Test under fire conditions - whole of mineral insulated cable

Fail criteria	Classification	Award
Not complying	Actionable	3.0

Thermal stability

Fail criteria	Classification	Award
Not complying	Major	3.0

7.10 ASSESSMENT OF TEST RESULTS - SCHEME F

Construction, Marking and Dimensions

Armour wire diameter

Fail criteria	Classification	Award
=>95% of the minimum specification value	Irregularity	0.25
=>90% and <95% of the minimum specification value	Minor	1.0
<90% of the minimum specification value	Major	1.5
=<105% of the maximum specification value	Irregularity	0.25
>105% and =<115% of the maximum specification value	Minor	1.0
>115% of the maximum specification value	Major	1.5

Armour Wire Direction of Lay

Fail criteria	Classification	Award
Wrong lay direction	Actionable	1.5

Bedding thickness - minimum value

Fail criteria	Classification	Award
<100% and =>80% of the specification value	Irregularity	0.25
<80% and =>50% of the specification value	Major	1.5
<50% of the specification value	Actionable	1.5

Conductor screen

Fail criteria	Classification	Award
Conductor screen does not comply	Irregularity	0.25
Conductor screen not present when claimed	Actionable	1.5

Insulation, insulation screen, conductor screen lead and oversheath thickness

Fail criteria	Classification	Award
<100% and =>95% of the specification value	Irregularity	0.25
<95% and =>90% of the specification value	Irregularity	0.5
<90% and =>85% of the specification value	Minor	1.0
<85% of the specification value (MEAN value)	Major	1.5
<85% of the specification value (MINIMUM value)	Actionable	1.5

Insulation circularity

Fail criteria	Classification	Award
>100% =<110% of the specification value	Irregularity	0.5
>110% =<120% of the specification value	Minor	1.0
>120% of the specification value	Major	1.5

Insulation concentricity

Fail criteria	Classification	Award
>100% =<110% of the specification value	Irregularity	0.5
>110% =<120% of the specification value	Minor	1.0
>120% of the specification value	Major	1.5

7.10 ASSESSMENT OF TEST RESULTS - SCHEME F Cont'd

Insulation screen

Fail criteria	**Classification**	**Award**
Metallic screen gap too wide	Minor	1.0
Not present when claimed as part of the construction	Actionable	1.5

Construction, Marking and Dimensions

Irregularities of insulation and screen

Fail criteria	**Classification**	**Award**
Dissociation of bonding between insulation and screen	Actionable	1.5
Inclusions between screen and insulation	Actionable	1.5
Insulation breaking through screen	Actionable	1.5
Penetration of insulation by screen material	Major	1.5
Contaminant density >1 per cm^3	Major	1.5
Contaminant >0.15mm largest dimension	Major	1.5
Discoloured particles >1.25mm	Major	1.5

Laying up

Fail criteria	**Classification**	**Award**
Not complying	Irregularity	0.25

Marking

Fail criteria	**Classification**	**Award**
Any provision of the standard not listed	Irregularity	0.25
Presence of incorrect marking element	Irregularity	0.5
Cable not "BASEC" marked	Irregularity	0.5
Durability of printed markings	Irregularity	0.25
Repeat interval between one legend and the next	Irregularity	0.25
Lack of indication of origin	Irregularity	0.5
Legibility of legends	Irregularity	0.5
Incorrect voltage markings	Actionable	1.5
Core scheme incorrect	Actionable	1.5
Mixed conductor sizes	Actionable	1.5

Separation layer thickness

Fail criteria	**Classification**	**Award**
<100% and =>80% of the specification value	Irregularity	0.25
<80% and =>50% of the specification value	Major	1.5
<50% of the specification value	Actionable	1.5

7.10 ASSESSMENT OF TEST RESULTS - SCHEME F Cont'd

Electrical

Adherence of screens during short circuit

Fail criteria	**Classification**	**Award**
Not complying	Actionable	1.5

Bending test

Fail criteria	**Classification**	**Award**
Not complying	Major	1.5
Repeat failure	Actionable	1.5

Conductor resistance

Fail criteria	**Classification**	**Award**
>100% and =<101% of the specification value	Irregularity	0.25
>101% and =<103% of the specification value	Minor	1.0
>103% and =<105% of the specification value	Major	1.5
>105% of the specification value	Actionable	1.5

Copper wire screen resistance

Fail criteria	**Classification**	**Award**
>100% and =<101% of the specification value	Irregularity	0.25
>101% and =<103% of the specification value	Minor	1.0
>103% and =<105% of the specification value	Major	1.5
>105% of the specification value	Actionable	1.5

d.c. Voltage test on oversheath

Fail criteria	**Classification**	**Award**
Not complying	Major	1.5
Repeat failure	Actionable	1.5

Four hour voltage test

Fail criteria	**Classification**	**Award**
Not complying	Major	1.5
Repeat failure	Actionable	1.5

Heating Cycle Test

Fail criteria	**Classification**	**Award**
Not complying	Actionable	1.5

Impulse voltage test

Fail criteria	**Classification**	**Award**
Does not comply	Major	1.5
Repeat failure on same sample	Actionable	1.5

7.10 ASSESSMENT OF TEST RESULTS - SCHEME F Cont'd

Electrical

Insulation resistance constant of insulation/sheath

Fail criteria	**Classification**	**Award**
<100% and =>80% of the specification value	Irregularity	0.25
<80% and =>60% of the specification value	Irregularity	0.5
<60% and =>40% of the specification value	Minor	1.0
<40% of the specification value	Actionable	1.5

Long Term Test

Fail criteria	**Classification**	**Award**
Not complying	Actionable	1.5

Partial discharge

Fail criteria	**Classification**	**Award**
Not complying	Actionable	1.5

Resistivity of screen

Fail criteria	**Classification**	**Award**
>100% and =<101% of the specification value	Irregularity	0.25
>101% and =<103% of the specification value	Minor	1.0
>103% and =<105% of the specification value	Major	1.5
>105% of the specification value	Actionable	1.5

Semi-conducting lapped inner covering resistivity

Fail criteria	**Classification**	**Award**
>100% and =<101% of the specification value	Irregularity	0.25
>101% and =<103% of the specification value	Minor	1.0
>103% and =<105% of the specification value	Major	1.5
>105% of the specification value	Actionable	1.5

Tan Delta (δ) in relation to voltage

Fail criteria	**Classification**	**Award**
Not complying	Actionable	1.5

Tan Delta (δ) in relation to temperature

Fail criteria	**Classification**	**Award**
Not complying	Actionable	1.5

Voltage test on complete cable

Fail criteria	**Classification**	**Award**
Not complying	Major	1.5
Repeat failure	Actionable	1.5

7.10 ASSESSMENT OF TEST RESULTS - SCHEME F Cont'd

Electrical

Water blocking tape resistivity

Fail criteria	Classification	Award
>100% and =<105% of the specification value	Irregularity	0.25
>105% and =<110% of the specification value	Minor	1.0
>110% and =<115% of the specification value	Major	1.5
>115% of the specification value	Actionable	1.5

Wet compatibility test

Fail criteria	Classification	Award
>100% and =<105% of the specification value	Irregularity	0.25
>105% and =<110% of the specification value	Minor	1.0
>110% and =<115% of the specification value	Major	1.5
>115% of the specification value	Actionable	1.5

Mechanical

Abrasion resistance

Fail criteria	Classification	Award
Not complying	Actionable	1.5

Cold bend

Fail criteria	Classification	Award
Not complying	Irregularity	0.5

Cold elongation

Fail criteria	Classification	Award
Not complying	Irregularity	0.5

Cold impact

Fail criteria	Classification	Award
Not complying	Irregularity	0.5

Cold stripability of extruded screen

Fail criteria	Classification	Award
Not complying	Major	1.5

Compatibility - mechanical tests

Fail criteria	Classification	Award
Absolute: <100% and =>90% of the spec. value	Irregularity	0.25
Absolute: <90% and =>80% of the spec. value	Minor	1.0
Absolute: <80% and =>75% of the spec. value	Major	1.5
Absolute: <75% of the specification value	Actionable	1.5
Variation: >0% and =<5% additional to the spec.	Irregularity	0.25
Variation: >5% and =<10% additional to the spec.	Minor	1.0
Variation: >10% and =<12.5% additional to the spec.	Major	1.5
Variation: >12.5% additional to the spec. value	Actionable	1.5

7.10 ASSESSMENT OF TEST RESULTS - SCHEME F Cont'd

Mechanical

Compatibility - screen resistivity

Fail criteria	Classification	Award
>100% and =<101% of the specification value	Irregularity	0.25
>101% and =<103% of the specification value	Minor	1.0
>103% and =<110% of the specification value	Major	1.5
>110% of the specification value		

Compatibility - insulation screen stripability

Fail criteria	Classification	Award
Not complying	Major	1.5

Heat shock - oversheath and insulation

Fail criteria	Classification	Award
Not complying	Irregularity	0.5

Hot deformation

Fail criteria	Classification	Award
>100% and =<110% of the specification value	Irregularity	0.5
>110% and =<120% of the specification value	Minor	1.0
>120% of the specification value	Actionable	1.5

Hot pressure - oversheath and insulation

Fail criteria	Classification	Award
>100% and =<110% of the specification value	Irregularity	0.5
>110% and =<120% of the specification value	Minor	1.0
>120% of the specification value	Actionable	1.5

Hot set

Fail criteria	Classification	Award
Permanent: >15% and =<20% of the spec. value	Irregularity	0.5
Elongation: >175% and =<250% of the spec. value	Irregularity	0.5
Elongation: >250% and =<350% of the spec. value	Minor	1.0
Permanent: >20% and =<30% of the spec. value	Minor	1.0
Permanent: >30% of the specification value	Major	1.5
Elongation: >350% of the specification value	Actionable	1.5

Insulation screen cutting test

Fail criteria	Classification	Award
Not complying	Minor	1.0

7.10 ASSESSMENT OF TEST RESULTS - SCHEME F Cont'd

Mechanical

Loss of mass - oversheath and insulation

Fail criteria	Classification	Award
>100% and =<110% of the specification value	Irregularity	0.5
>110% and =<120% of the specification value	Minor	1.0
>120% and =<150% of the specification value	Major	1.5
>150% of the specification value	Actionable	1.5

Mass of zinc coating on steel wire armour

Fail criteria	Classification	Award
<100% and =>90% of the specification value	Irregularity	0.25
<90% and =>70% of the specification value	Irregularity	0.5
<70% and =>50% of the specification value	Minor	1.0
<50% of the specification value	Actionable	1.5

Shrinkage

Fail criteria	Classification	Award
>100% and =<110% of the specification value	Irregularity	0.25
>110% and =<130% of the specification value	Irregularity	0.5
>130% and =<150% of the specification value	Minor	1.0
>150% of the specification value	Major	1.5

Tear resistance

Fail criteria	Classification	Award
Not complying	Irregularity	0.5

Tensile strength & %EL - before & after ageing in air

Fail criteria	Classification	Award
Absolute: <100% and =>90% of the spec. value	Irregularity	0.25
Absolute: <90% and =>80% of the spec. value	Minor	1.0
Absolute: <80% and =>75% of the spec. value	Major	1.5
Absolute: <75% of the specification value	Actionable	1.5
Variation: >0% and =<5% additional to the spec.	Irregularity	0.25
Variation: >5% and =<10% additional to the spec.	Minor	1.0
Variation: >10% and =<12.5% additional to the spec.	Major	1.5
Variation: >12.5% additional to the spec. value	Actionable	1.5

Tensile strength & %EL - before & after ageing in air bomb

Fail criteria	Classification	Award
Absolute: <100% and =>90% of the spec. value	Irregularity	0.25
Absolute: <90% and =>80% of the spec. value	Minor	1.0
Absolute: <80% of the specification value	Actionable	1.5
Variation: >0% and =<5% additional to the spec.	Irregularity	0.25
Variation: >5% and =<10% additional to the spec.	Minor	1.0
Variation: >10% and =<12.5% additional to the spec.	Major	1.5
Variation: >12.5% additional to the spec. value	Actionable	1.5

7.10 ASSESSMENT OF TEST RESULTS - SCHEME F Cont'd

Mechanical

Tensile strength & %EL of bedding

Fail criteria	Classification	Award
Absolute: <100% and =>75% of the spec. value	Irregularity	0.25
Absolute: <75% of the specification value	Major	1.5
Variation: >0% and =<10% additional to the spec.	Irregularity	0.25
Variation: >10% additional to the spec. value	Major	1.5

Tensile test on aluminium wire

Fail criteria	Classification	Award
<100% and =>98% of the specification value	Irregularity	0.25
<98% and =>94% of the specification value	Irregularity	0.5
<94% and =>90% of the specification value	Minor	1.0
<90% of the specification value	Major	1.5

Water absorption

Fail criteria	Classification	Award
>100% =<120% of the specification value	Irregularity	0.5
>120% =<140% of the specification value	Minor	1.0
>140% =<150% of the specification value	Major	1.5
>150% of the specification value	Actionable	1.5

Water immersion

Fail criteria	Classification	Award
>5% and =<10% additional to the specification value	Minor	1.0
>10% and =<12.5% additional to the specification value	Major	1.5
>12.5% additional to the specification value	Actionable	1.5

Wrapping test on steel wire armour

Fail criteria	Classification	Award
Not complying	Irregularity	0.5

7.10 ASSESSMENT OF TEST RESULTS - SCHEME F Cont'd

Miscellaneous

Application of insulation/sheath/metallic screen /water blocking tape/lead sheath

Fail criteria	Classification	Award
Unable to remove without damage to adjacent material	Actionable	3.0

Carbon black content

Fail criteria	Classification	Award
Does not comply	Irregularity	0.25

Corrosive and acid gas emissions

Fail criteria	Classification	Award
>0.5% and =<1%	Irregularity	0.5
>1.0%	Major	1.5

Hardness

Fail criteria	Classification	Award
Does not comply	Irregularity	0.5

Lead Sheath Analysis

Fail criteria	Classification	Award
Not complying	Major	1.5

Ozone resistance

Fail criteria	Classification	Award
Not complying	Actionable	1.5

Smoke emission

Fail criteria	Classification	Award
Not complying	Actionable	1.5

Test under fire conditions – flame propagation on single cable

Fail criteria	Classification	Award
Not complying	Actionable	1.5

Test under fire conditions – flame propagation on multiple cables

Fail criteria	Classification	Award
Not complying	Actionable	1.5

UV Exposure

Fail criteria	Classification	Award
Does not comply	Actionable	1.5

7.10 ASSESSMENT OF TEST RESULTS - SCHEME F Cont'd

Water Blocking Tape - swell height

Fail criteria	**Classification**	**Award**
<7mm and =>6mm	Minor	1.0
<6mm and =>5mm	Major	1.5
<5mm	Actionable	1.5

Water Penetration test

Fail criteria	**Classification**	**Award**
Not complying	Actionable	1.5

Water Content of Insulation

Fail criteria	**Classification**	**Award**
Not complying	Actionable	1.5

Water Blocking Tape Moisture Content

Fail criteria	**Classification**	**Award**
Not complying	Actionable	1.5

Water Blocking Tape Characterisation

Fail criteria	**Classification**	**Award**
Not complying	Actionable	1.5

7.11 APPENDIX 1 – INSULATION THICKNESS

Mean Specification Value				Minimum Specification Value		
(mm)	**Failure criteria**	**Classification**	**Award**	**Failure criteria**	**Classification**	**Award**
0.4	<0.345mm & =>0.315mm	Irregularity	1.0	<0.255mm & =>0.235mm	Irregularity	1.0
	<0.315mm & =>0.275mm	Minor	2.0	<0.235mm & =>0.205mm	Minor	2.0
	<0.275mm	Major	3.0	<0.205mm	Major	3.0
0.5	<0.444mm & =>0.405mm	Irregularity	1.0	<0.345mm & =>0.315mm	Irregularity	1.0
	<0.405mm & =>0.355mm	Minor	2.0	<0.315mm & =>0.275mm	Minor	2.0
	<0.355mm	Major	3.0	<0.275mm	Major	3.0
0.6	<0.545mm & =>0.495mm	Irregularity	1.0	<0.435mm & =>0.395mm	Irregularity	1.0
	<0.495mm & =>0.435mm	Minor	2.0	<0.395mm & =>0.345mm	Minor	2.0
	<0.435mm	Major	3.0	<0.345mm	Major	3.0
0.7	<0.645mm & =>0.585mm	Irregularity	1.0	<0.525mm & =>0.475mm	Irregularity	1.0
	<0.585mm & =>0.515mm	Minor	2.0	<0.475mm & =>0.415mm	Minor	2.0
	<0.515mm	Major	3.0	<0.415mm	Major	3.0
0.8	<0.745mm & =>0.675mm	Irregularity	1.0	<0.615mm & =>0.555mm	Irregularity	1.0
	<0.675mm & =>0.595mm	Minor	2.0	<0.555mm & =>0.495mm	Minor	2.0
	<0.595mm	Major	3.0	<0.495mm	Major	3.0
0.9	<0.845mm & =>0.765mm	Irregularity	1.0	<0.705mm & =>0.635mm	Irregularity	1.0
	<0.765mm & =>0.675mm	Minor	2.0	<0.635mm & =>0.565mm	Minor	2.0
	<0.675mm	Major	3.0	<0.565mm	Major	3.0
1.0	<0.945mm & =>0.855mm	Irregularity	1.0	<0.795mm & =>0.715mm	Irregularity	1.0
	<0.855mm & =>0.755mm	Minor	2.0	<0.715mm & =>0.635mm	Minor	2.0
	<0.755mm	Major	3.0	<0.635mm	Major	3.0

7.11 APPENDIX 1 – INSULATION THICKNESS Continued

Mean Specification Value				Minimum Specification Value		
(mm)	**Failure criteria**	**Classification**	**Award**	**Failure criteria**	**Classification**	**Award**
1.1	<1.045mm & =>0.945mm	Irregularity	1.0	<0.885mm & =>0.795mm	Irregularity	1.0
	<0.945mm & =>0.835mm	Minor	2.0	<0.795mm & =>0.705mm	Minor	2.0
	<0.835mm	Major	3.0	<0.705mm	Major	3.0
1.2	<1.145mm & =>1.035mm	Irregularity	1.0	<0.975mm & =>0.875mm	Irregularity	1.0
	<1.035mm & =>0.915mm	Minor	2.0	<0.875mm & =>0.775mm	Minor	2.0
	<0.915mm	Major	3.0	<0.775mm	Major	3.0
1.3	<1.245mm & =>1.125mm	Irregularity	1.0	<1.065mm & =>0.955mm	Irregularity	1.0
	<1.125mm & =>0.995mm	Minor	2.0	<0.955mm & =>0.855mm	Minor	2.0
	<0.995mm	Major	3.0	<0.855mm	Major	3.0
1.4	<1.345mm & =>1.215mm	Irregularity	1.0	<1.155mm & =>1.035mm	Irregularity	1.0
	<1.215mm & =>1.075mm	Minor	2.0	<1.035mm & =>0.925mm	Minor	2.0
	<1.075mm	Major	3.0	<0.925mm	Major	3.0
1.5	<1.445mm & =>1.305mm	Irregularity	1.0	<1.245mm & =>1.115mm	Irregularity	1.0
	<1.305mm & =>1.155mm	Minor	2.0	<1.115mm & =>0.995mm	Minor	2.0
	<1.155mm	Major	3.0	<0.995mm	Major	3.0
1.6	<1.545mm & =>1.395mm	Irregularity	1.0	<1.335mm & =>1.195mm	Irregularity	1.0
	<1.395mm & =>1.235mm	Minor	2.0	<1.195mm & =>1.065mm	Minor	2.0
	<1.235mm	Major	3.0	<1.065mm	Major	3.0
1.7	<1.645mm & =>1.485mm	Irregularity	1.0	<1.425mm & =>1.275mm	Irregularity	1.0
	<1.485mm & =>1.315mm	Minor	2.0	<1.275mm & =>1.135mm	Minor	2.0
	<1.315mm	Major	3.0	<1.135mm	Major	3.0

7.11 APPENDIX 1 – INSULATION THICKNESS Continued

Mean Specification Value (mm)	Failure criteria	Classification	Award	Minimum Specification Value Failure criteria	Classification	Award
1.8	<1.745mm & =>1.575mm	Irregularity	1.0	<1.515mm & =>1.355mm	Irregularity	1.0
	<1.575mm & =>1.395mm	Minor	2.0	<1.355mm & =>1.215mm	Minor	2.0
	<1.395mm	Major	3.0	<1.215mm	Major	3..0
1.9	<1.845mm & =>1.665mm	Irregularity	1.0	<1.605mm & =>1.435mm	Irregularity	1.0
	<1.665mm & =>1.475mm	Minor	2.0	<1.435mm & =>1.285mm	Minor	2.0
	<1.475mm	Major	3.0	<1.285mm	Major	3.0
2.0	<1.945mm & =>1.755mm	Irregularity	1.0	<1.695mm & =>1.515mm	Irregularity	1.0
	<1.755mm & =>1.555mm	Minor	2.0	<1.515mm & =>1.355mm	Minor	2.0
	<1.555mm	Major	3.0	<1.355mm	Major	3.0
2.1	<2.045mm & =>1.845mm	Irregularity	1.0	<1.785mm & =>1.595mm	Irregularity	1.0
	<1.845mm & =>1.635mm	Minor	2.0	<1.595mm & =>1.425mm	Minor	2.0
	<1.635mm	Major	3.0	<1.425mm	Major	3.0
2.2	<2.145mm & =>1.935mm	Irregularity	1.0	<1.875mm & =>1.675mm	Irregularity	1.0
	<1.935mm & =>1.715mm	Minor	2.0	<1.675mm & =>1.495mm	Minor	2.0
	<1.715mm	Major	3.0	<1.495mm	Major	3.0
2.3	<2.245mm & =>2.025mm	Irregularity	1.0	<1.965mm & =>1.755mm	Irregularity	1.0
	<2.025mm & =>1.795mm	Minor	2.0	<1.755mm & =>1.575mm	Minor	2.0
	<1.795mm	Major	3.0	<1.575mm	Major	3.0
2.4	<2.345mm & =>2.115mm	Irregularity	1.0	<2.055mm & =>1.835mm	Irregularity	1.0
	<2.115mm & =>1.875mm	Minor	2.0	<1.835mm & =>1.645mm	Minor	2.0
	<1.875mm	Major	3.0	<1.645mm	Major	3.0

7.11 APPENDIX 1 – INSULATION THICKNESS Continued

Mean Specification Value				Minimum Specification Value		
(mm)	**Failure criteria**	**Classification**	**Award**	**Failure criteria**	**Classification**	**Award**
2.5	<2.445mm & =>2.205mm	Irregularity	1.0	<2.145mm & =>1.915mm	Irregularity	1.0
	<2.205mm & =>1.955mm	Minor	2.0	<1.915mm & =>1.715mm	Minor	2.0
	<1.955mm	Major	3.0	<1.715mm	Major	3.0
2.6	<2.545mm & =>2.295mm	Irregularity	1.0	<2.235mm & =>1.995mm	Irregularity	1.0
	<2.295mm & =>2.035mm	Minor	2.0	<1.995mm & =>1.785mm	Minor	2.0
	<2.035mm	Major	3.0	<1.785mm	Major	3.0
2.7	<2.645mm & =>2.385mm	Irregularity	1.0	<2.325mm & =>2.075mm	Irregularity	1.0
	<2.385mm & =>2.115mm	Minor	2.0	<2.075mm & =>1.855mm	Minor	2.0
	<2.115mm	Major	3.0	<1.855mm	Major	3.0
2.8	<2.745mm & =>2.475mm	Irregularity	1.0	<2.415mm & =>2.155mm	Irregularity	1.0
	<2.475mm & =>2.195mm	Minor	2.0	<2.155mm & =>1.935mm	Minor	2.0
	<2.195mm	Major	3.0	<1.935mm	Major	3.0
2.9	<2.845mm & =>2.565mm	Irregularity	1.0	<2.505mm & =>2.235mm	Irregularity	1.0
	<2.565mm & =>2.275mm	Minor	2.0	<2.235mm & =>2.005mm	Minor	2.0
	<2.275mm	Major	3.0	<2.005mm	Major	3.0
3.0	<2.945mm & =>2.655mm	Irregularity	1.0	<2.595mm & =>2.315mm	Irregularity	1.0
	<2.655mm & =>2.355mm	Minor	2.0	<2.315mm & =>2.075mm	Minor	2.0
	<2.355mm	Major	3.0	<2.075mm	Major	3.0
3.1	<3.045mm & =>2.745mm	Irregularity	1.0	<2.685mm & =>2.395mm	Irregularity	1.0
	<2.745mm & =>2.435mm	Minor	2.0	<2.395mm & =>2.145mm	Minor	2.0
	<2.435mm	Major	3.0	<2.145mm	Major	3.0

7.11 APPENDIX 1 – INSULATION THICKNESS Continued

Mean Specification Value				Minimum Specification Value		
(mm)	**Failure criteria**	**Classification**	**Award**	**Failure criteria**	**Classification**	**Award**
3.2	<3.145mm & =>2.835mm	Irregularity	1.0	<2.775mm & =>2.475mm	Irregularity	1.0
	<2.835mm & =>2.515mm	Minor	2.0	<2.475mm & =>2.215mm	Minor	2.0
	<2.515mm	Major	3.0	<2.215mm	Major	3.0
3.3	<3.245mm & =>2.925mm	Irregularity	1.0	<2.865mm & =>2.555mm	Irregularity	1.0
	<2.925mm & =>2.595mm	Minor	2.0	<2.555mm & =>2.295mm	Minor	2.0
	<2.595mm	Major	3.0	<2.295mm	Major	3.0
3.4	<3.345mm & =>3.015mm	Irregularity	1.0	<2.955mm & =>2.635mm	Irregularity	1.0
	<3.015mm & =>2.675mm	Minor	2.0	<2.635mm & =>2.365mm	Minor	2.0
	<2.675mm	Major	3.0	<2.365mm	Major	3.0
3.5	<3.445mm & =>3.105mm	Irregularity	1.0	<3.045mm & =>2.715mm	Irregularity	1.0
	<3.105mm & =>2.755mm	Minor	2.0	<2.715mm & =>2.435mm	Minor	2.0
	<2.755mm	Major	3.0	<2.435mm	Major	3.0
3.6	<3.545mm & =>3.195mm	Irregularity	1.0	<3.135mm & =>2.795mm	Irregularity	1.0
	<3.195mm & =>2.835mm	Minor	2.0	<2.795mm & =>2.505mm	Minor	2.0
	<2.835mm	Major	3.0	<2.505mm	Major	3.0
3.7	<3.645mm & =>3.285mm	Irregularity	1.0	<3.225mm & =>2.875mm	Irregularity	1.0
	<3.285mm & =>2.915mm	Minor	2.0	<2.875mm & =>2.575mm	Minor	2.0
	<2.915mm	Major	3.0	<2.575mm	Major	3.0
3.8	<3.745mm & =>3.375mm	Irregularity	1.0	<3.315mm & =>2.955mm	Irregularity	1.0
	<3.375mm & =>2.995mm	Minor	2.0	<2.955mm & =>2.655mm	Minor	2.0
	<2.995mm	Major	3.0	<2.655mm	Major	3.0

7.11 APPENDIX 1 – INSULATION THICKNESS Continued

Mean Specification Value				Minimum Specification Value		
(mm)	**Failure criteria**	**Classification**	**Award**	**Failure criteria**	**Classification**	**Award**
3.9	<3.845mm & =>3.465mm	Irregularity	1.0	<3.405mm & =>3.035mm	Irregularity	1.0
	<3.465mm & =>3.075mm	Minor	2.0	<3.035mm & =>2.725mm	Minor	2.0
	<3.075mm	Major	3.0	<2.725mm	Major	3.0
4.0	<3.945mm & =>3.555mm	Irregularity	1.0	<3.495mm & =>3.115mm	Irregularity	1.0
	<3.555mm & =>3.155mm	Minor	2.0	<3.115mm & =>2.795mm	Minor	2.0
	<3.155mm	Major	3.0	<2.795mm	Major	3.0
4.1	<4.045mm & =>3.645mm	Irregularity	1.0	<3.585mm & =>3.195mm	Irregularity	1.0
	<3.645mm & =>3.235mm	Minor	2.0	<3.195mm & =>2.865mm	Minor	2.0
	<3.235mm	Major	3.0	<2.865mm	Major	3.0
4.2	<4.145mm & =>3.735mm	Irregularity	1.0	<3.675mm & =>3.275mm	Irregularity	1.0
	<3.735mm & =>3.315mm	Minor	2.0	<3.275mm & =>2.935mm	Minor	2.0
	<3.315mm	Major	3.0	<2.935mm	Major	3.0
4.3	<4.245mm & =>3.825mm	Irregularity	1.0	<3.765mm & =>3.355mm	Irregularity	1.0
	<3.825mm & =>3.395mm	Minor	2.0	<3.355mm & =>3.015mm	Minor	2.0
	<3.395mm	Major	3.0	<3.015mm	Major	3.0
4.4	<4.345mm & =>3.915mm	Irregularity	1.0	<3.855mm & =>3.435mm	Irregularity	1.0
	<3.915mm & =>3.475mm	Minor	2.0	<3.435mm & =>3.085mm	Minor	2.0
	<3.475mm	Major	3.0	<3.085mm	Major	3.0
4.5	<4.445mm & =>4.005mm	Irregularity	1.0	<3.945mm & =>3.515mm	Irregularity	1.0
	<4.005mm & =>3.555mm	Minor	2.0	<3.515mm & =>3.155mm	Minor	2.0
	<3.555mm	Major	3.0	<3.155mm	Major	3.0

7.11 APPENDIX 1 – INSULATION THICKNESS Continued

Mean Specification Value				Minimum Specification Value		
(mm)	**Failure criteria**	**Classification**	**Award**	**Failure criteria**	**Classification**	**Award**
4.6	<4.545mm & =>4.095mm	Irregularity	1.0	<4.035mm & =>3.595mm	Irregularity	1.0
	<4.095mm & =>3.635mm	Minor	2.0	<3.595mm & =>3.225mm	Minor	2.0
	<3.635mm	Major	3.0	<3.225mm	Major	3.0
4.7	<4.645mm & =>4.185mm	Irregularity	1.0	<4.125mm & =>3.675mm	Irregularity	1.0
	<4.185mm & =>3.715mm	Minor	2.0	<3.675mm & =>3.295mm	Minor	2.0
	<3.715mm	Major	3.0	<3.295mm	Major	3.0
4.8	<4.745mm & =>4.275mm	Irregularity	1.0	<4.215mm & =>3.755mm	Irregularity	1.0
	<4.275mm & =>3.795mm	Minor	2.0	<3.755mm & =>3.375mm	Minor	2.0
	<3.795mm	Major	3.0	<3.375mm	Major	3.0
4.9	<4.845mm & =>4.365mm	Irregularity	1.0	<4.305mm & =>3.835mm	Irregularity	1.0
	<4.365mm & =>3.875mm	Minor	2.0	<3.835mm & =>3.445mm	Minor	2.0
	<3.875mm	Major	3.0	<3.445mm	Major	3.0
5.0	<4.945mm & =>4.455mm	Irregularity	1.0	<4.395mm & =>3.915mm	Irregularity	1.0
	<4.455mm & =>3.955mm	Minor	2.0	<3.915mm & =>3.515mm	Minor	2.0
	<3.955mm	Major	3.0	<3.515mm	Major	3.0
5.1	<5.045mm & =>4.545mm	Irregularity	1.0	<4.485mm & =>3.995mm	Irregularity	1.0
	<4.545mm & =>4.035mm	Minor	2.0	<3.995mm & =>3.585mm	Minor	2.0
	<4.035mm	Major	3.0	<3.585mm	Major	3.0
5.2	<5.145mm & =>4.635mm	Irregularity	1.0	<4.575mm & =>4.075mm	Irregularity	1.0
	<4.635mm & =>4.115mm	Minor	2.0	<4.075mm & =>3.655mm	Minor	2.0
	<4.115mm	Major	3.0	<3.655mm	Major	3.0

7.11 APPENDIX 1 – INSULATION THICKNESS Continued

Mean Specification Value				Minimum Specification Value		
(mm)	**Failure criteria**	**Classification**	**Award**	**Failure criteria**	**Classification**	**Award**
5.3	<5.245mm & =>4.725mm	Irregularity	1.0	<4.665mm & =>4.155mm	Irregularity	1.0
	<4.725mm & =>4.195mm	Minor	2.0	<4.155mm & =>3.735mm	Minor	2.0
	<4.195mm	Major	3.0	<3.735mm	Major	3.0
5.4	<5.345mm & =>4.815mm	Irregularity	1.0	<4.755mm & =>4.235mm	Irregularity	1.0
	<4.815mm & =>4.275mm	Minor	2.0	<4.235mm & =>3.805mm	Minor	2.0
	<4.275mm	Major	3.0	<3.805mm	Major	3.0
5.5	<5.445mm & =>4.905mm	Irregularity	1.0	<4.845mm & =>4.315mm	Irregularity	1.0
	<4.905mm & =>4.355mm	Minor	2.0	<4.315mm & =>3.875mm	Minor	2.0
	<4.355mm	Major	3.0	<3.875mm	Major	3.0
5.6	<5.545mm & =>4.995mm	Irregularity	1.0	<4.935mm & =>4.395mm	Irregularity	1.0
	<4.995mm & =>4.435mm	Minor	2.0	<4.395mm & =>3.945mm	Minor	2.0
	<4.435mm	Major	3.0	<3.945mm	Major	3.0
5.7	<5.645mm & =>5.085mm	Irregularity	1.0	<5.025mm & =>4.475mm	Irregularity	1.0
	<5.085mm & =>4.515mm	Minor	2.0	<4.475mm & =>4.015mm	Minor	2.0
	<4.515mm	Major	3.0	<4.015mm	Major	3.0
5.8	<5.745mm & =>5.175mm	Irregularity	1.0	<5.115mm & =>4.555mm	Irregularity	1.0
	<5.175mm & =>4.595mm	Minor	2.0	<4.555mm & =>4.095mm	Minor	2.0
	<4.595mm	Major	3.0	<4.095mm	Major	3.0
5.9	<5.845mm & =>5.265mm	Irregularity	1.0	<5.205mm & =>4.635mm	Irregularity	1.0
	<5.265mm & =>4.675mm	Minor	2.0	<4.635mm & =>4.165mm	Minor	2.0
	<4.675mm	Major	3.0	<4.165mm	Major	3.0

7.11 APPENDIX 1 – INSULATION THICKNESS Continued

Mean Specification Value				Minimum Specification Value		
(mm)	**Failure criteria**	**Classification**	**Award**	**Failure criteria**	**Classification**	**Award**
6.0	<5.945mm & =>5.355mm	Irregularity	1.0	<5.295mm & =>4.715mm	Irregularity	1.0
	<5.355mm & =>4.755mm	Minor	2.0	<4.715mm & =>4.235mm	Minor	2.0
	<4.755mm	Major	3.0	<4.235mm	Major	3.0
6.1	<6.045mm & =>5.445mm	Irregularity	1.0	<5.385mm & =>4.795mm	Irregularity	1.0
	<5.445mm & =>4.835mm	Minor	2.0	<4.795mm & =>4.305mm	Minor	2.0
	<4.835mm	Major	3.0	<4.305mm	Major	3.0
6.2	<6.145mm & =>5.535mm	Irregularity	1.0	<5.475mm & =>4.875mm	Irregularity	1.0
	<5.535mm & =>4.915mm	Minor	2.0	<4.875mm & =>4.375mm	Minor	2.0
	<4.915mm	Major	3.0	<4.375mm	Major	3.0
6.3	<6.245mm & =>5.625mm	Irregularity	1.0	<5.565mm & =>4.955mm	Irregularity	1.0
	<5.625mm & =>4.995mm	Minor	2.0	<4.955mm & =>4.455mm	Minor	2.0
	<4.995mm	Major	3.0	<4.455mm	Major	3.0
6.4	<6.345mm & =>5.715mm	Irregularity	1.0	<5.655mm & =>5.035mm	Irregularity	1.0
	<5.715mm & =>5.075mm	Minor	2.0	<5.035mm & =>4.525mm	Minor	2.0
	<5.075mm	Major	3.0	<4.525mm	Major	3.0
6.5	<6.445mm & =>5.805mm	Irregularity	1.0	<5.745mm & =>5.115mm	Irregularity	1.0
	<5.805mm & =>5.155mm	Minor	2.0	<5.115mm & =>4.595mm	Minor	2.0
	<5.155mm	Major	3.0	<4.595mm	Major	3.0
6.6	<6.545mm & =>5.895mm	Irregularity	1.0	<5.835mm & =>5.195mm	Irregularity	1.0
	<5.895mm & =>5.235mm	Minor	2.0	<5.195mm & =>4.665mm	Minor	2.0
	<5.235mm	Major	3.0	<4.665mm	Major	3.0

7.11 APPENDIX 1 – INSULATION THICKNESS Continued

Mean Specification Value				Minimum Specification Value		
(mm)	**Failure criteria**	**Classification**	**Award**	**Failure criteria**	**Classification**	**Award**
6.7	<6.645mm & =>5.985mm	Irregularity	1.0	<5.925mm & =>5.275mm	Irregularity	1.0
	<5.985mm & =>5.315mm	Minor	2.0	<5.275mm & =>4.735mm	Minor	2.0
	<5.315mm	Major	3.0	<4.735mm	Major	3.0
6.8	<6.745mm & =>6.075mm	Irregularity	1.0	<6.015mm & =>5.355mm	Irregularity	1.0
	<6.075mm & =>5.395mm	Minor	2.0	<5.355mm & =>4.815mm	Minor	2.0
	<5.395mm	Major	3.0	<4.815mm	Major	3.0
6.9	<6.845mm & =>6.165mm	Irregularity	1.0	<6.105mm & =>5.435mm	Irregularity	1.0
	<6.165mm & =>5.475mm	Minor	2.0	<5.435mm & =>4.885mm	Minor	2.0
	<5.475mm	Major	3.0	<4.885mm	Major	3.0
7.0	<6.945mm & =>6.255mm	Irregularity	1.0	<6.195mm & =>5.515mm	Irregularity	1.0
	<6.255mm & =>5.555mm	Minor	2.0	<5.515mm & =>4.955mm	Minor	2.0
	<5.555mm	Major	3.0	<4.955mm	Major	3.0
7.1	<7.045mm & =>6.345mm	Irregularity	1.0	<6.285mm & =>5.595mm	Irregularity	1.0
	<6.345mm & =>5.635mm	Minor	2.0	<5.595mm & =>5.025mm	Minor	2.0
	<5.635mm	Major	3.0	<5.025mm	Major	3.0
7.2	<7.145mm & =>6.435mm	Irregularity	1.0	<6.375mm & =>5.675mm	Irregularity	1.0
	<6.435mm & =>5.715mm	Minor	2.0	<5.675mm & =>5.095mm	Minor	2.0
	<5.715mm	Major	3.0	<5.095mm	Major	3.0
7.3	<7.245mm & =>6.525mm	Irregularity	1.0	<6.465mm & =>5.755mm	Irregularity	1.0
	<6.525mm & =>5.795mm	Minor	2.0	<5.755mm & =>5.175mm	Minor	2.0
	<5.795mm	Major	3.0	<5.175mm	Major	3.0

7.11 APPENDIX 1 – INSULATION THICKNESS Continued

Mean Specification Value				Minimum Specification Value		
(mm)	**Failure criteria**	**Classification**	**Award**	**Failure criteria**	**Classification**	**Award**
7.4	<7.345mm & =>6.615mm	Irregularity	1.0	<6.555mm & =>5.835mm	Irregularity	1.0
	<6.615mm & =>5.875mm	Minor	2.0	<5.835mm & =>5.245mm	Minor	2.0
	<5.875mm	Major	3.0	<5.245mm	Major	3.0
7.5	<7.445mm & =>6.705mm	Irregularity	1.0	<6.645mm & =>5.915mm	Irregularity	1.0
	<6.705mm & =>5.955mm	Minor	2.0	<5.915mm & =>5.315mm	Minor	2.0
	<5.955mm	Major	3.0	<5.315mm	Major	3.0
7.6	<7.545mm & =>6.795mm	Irregularity	1.0	<6.735mm & =>5.995mm	Irregularity	1.0
	<6.795mm & =>6.035mm	Minor	2.0	<5.995mm & =>5.385mm	Minor	2.0
	<6.035mm	Major	3.0	<5.385mm	Major	3.0
7.7	<7.645mm & =>6.885mm	Irregularity	1.0	<6.825mm & =>6.075mm	Irregularity	1.0
	<6.885mm & =>6.115mm	Minor	2.0	<6.075mm & =>5.455mm	Minor	2.0
	<6.115mm	Major	3.0	<5.455mm	Major	3.0
7.8	<7.745mm & =>6.975mm	Irregularity	1.0	<6.915mm & =>6.155mm	Irregularity	1.0
	<6.975mm & =>6.195mm	Minor	2.0	<6.155mm & =>5.535mm	Minor	2.0
	<6.195mm	Major	3.0	<5.535mm	Major	3.0
7.9	<7.845mm & =>7.065mm	Irregularity	1.0	<7.005mm & =>6.235mm	Irregularity	1.0
	<7.065mm & =>6.275mm	Minor	2.0	<6.235mm & =>5.605mm	Minor	2.0
	<6.275mm	Major	3.0	<5.605mm	Major	3.0
8.0	<7.945mm & =>7.155mm	Irregularity	1.0	<7.095mm & =>6.315mm	Irregularity	1.0
	<7.155mm & =>6.355mm	Minor	2.0	<6.315mm & =>5.675mm	Minor	2.0
	<6.355mm	Major	3.0	<5.675mm	Major	3.0

7.11 APPENDIX 1 – INSULATION THICKNESS Continued

Mean Specification Value				Minimum Specification Value		
(mm)	**Failure criteria**	**Classification**	**Award**	**Failure criteria**	**Classification**	**Award**
8.1	<8.045mm & =>7.245mm	Irregularity	1.0	<7.185mm & =>6.395mm	Irregularity	1.0
	<7.245mm & =>6.435mm	Minor	2.0	<6.395mm & =>5.745mm	Minor	2.0
	<6.435mm	Major	3.0	<5.745mm	Major	3.0
8.2	<8.145mm & =>7.335mm	Irregularity	1.0	<7.275mm & =>6.475mm	Irregularity	1.0
	<7.335mm & =>6.515mm	Minor	2.0	<6.475mm & =>5.815mm	Minor	2.0
	<6.515mm	Major	3.0	<5.815mm	Major	3.0
8.3	<8.245mm & =>7.425mm	Irregularity	1.0	<7.365mm & =>6.555mm	Irregularity	1.0
	<7.425mm & =>6.595mm	Minor	2.0	<6.555mm & =>5.895mm	Minor	2.0
	<6.595mm	Major	3.0	<5.895mm	Major	3.0
8.4	<8.345mm & =>7.515mm	Irregularity	1.0	<7.455mm & =>6.635mm	Irregularity	1.0
	<7.515mm & =>6.675mm	Minor	2.0	<6.635mm & =>5.965mm	Minor	2.0
	<6.675mm	Major	3.0	<5.965mm	Major	3.0
8.5	<8.445mm & =>7.605mm	Irregularity	1.0	<7.545mm & =>6.715mm	Irregularity	1.0
	<7.605mm & =>6.755mm	Minor	2.0	<6.715mm & =>6.035mm	Minor	2.0
	<6.755mm	Major	3.0	<6.035mm	Major	3.0
8.6	<8.545mm & =>7.695mm	Irregularity	1.0	<7.635mm & =>6.795mm	Irregularity	1.0
	<7.695mm & =>6.835mm	Minor	2.0	<6.795mm & =>6.105mm	Minor	2.0
	<6.835mm	Major	3.0	<6.105mm	Major	3.0
8.7	<8.645mm & =>7.785mm	Irregularity	1.0	<7.725mm & =>6.875mm	Irregularity	1.0
	<7.785mm & =>6.915mm	Minor	2.0	<6.875mm & =>6.175mm	Minor	2.0
	<6.915mm	Major	3.0	<6.175mm	Major	3.0

7.11 APPENDIX 1 – INSULATION THICKNESS Continued

Mean Specification Value				Minimum Specification Value		
(mm)	**Failure criteria**	**Classification**	**Award**	**Failure criteria**	**Classification**	**Award**
8.8	<8.745mm & =>7.875mm	Irregularity	1.0	<7.815mm & =>6.955mm	Irregularity	1.0
	<7.875mm & =>6.995mm	Minor	2.0	<6.955mm & =>6.255mm	Minor	2.0
	<6.995mm	Major	3.0	<6.255mm	Major	3.0
8.9	<8.845mm & =>7.965mm	Irregularity	1.0	<7.905mm & =>7.035mm	Irregularity	1.0
	<7.965mm & =>7.075mm	Minor	2.0	<7.035mm & =>6.325mm	Minor	2.0
	<7.075mm	Major	3.0	<6.325mm	Major	3.0
9.0	<8.945mm & =>8.055mm	Irregularity	1.0	<7.995mm & =>7.115mm	Irregularity	1.0
	<8.055mm & =>7.155mm	Minor	2.0	<7.115mm & =>6.395mm	Minor	2.0
	<7.155mm	Major	3.0	<6.395mm	Major	3.0
9.1	<9.045mm & =>8.145mm	Irregularity	1.0	<8.085mm & =>7.195mm	Irregularity	1.0
	<8.145mm & =>7.235mm	Minor	2.0	<7.195mm & =>6.465mm	Minor	2.0
	<7.235mm	Major	3.0	<6.465mm	Major	3.0
9.2	<9.145mm & =>8.235mm	Irregularity	1.0	<8.175mm & =>7.275mm	Irregularity	1.0
	<8.235mm & =>7.315mm	Minor	2.0	<7.275mm & =>6.535mm	Minor	2.0
	<7.315mm	Major	3.0	<6.535mm	Major	3.0
9.3	<9.245mm & =>8.325mm	Irregularity	1.0	<8.265mm & =>7.355mm	Irregularity	1.0
	<8.325mm & =>7.395mm	Minor	2.0	<7.355mm & =>6.615mm	Minor	2.0
	<7.395mm	Major	3.0	<6.615mm	Major	3.0
9.4	<9.345mm & =>8.415mm	Irregularity	1.0	<8.355mm & =>7.435mm	Irregularity	1.0
	<8.415mm & =>7.475mm	Minor	2.0	<7.435mm & =>6.685mm	Minor	2.0
	<7.475mm	Major	3.0	<6.685mm	Major	3.0

7.11 APPENDIX 1 – INSULATION THICKNESS Continued

Mean Specification Value				Minimum Specification Value		
(mm)	**Failure criteria**	**Classification**	**Award**	**Failure criteria**	**Classification**	**Award**
9.5	<9.445mm & =>8.505mm	Irregularity	1.0	<8.445mm & =>7.515mm	Irregularity	1.0
	<8.505mm & =>7.555mm	Minor	2.0	<7.515mm & =>6.755mm	Minor	2.0
	<7.555mm	Major	3.0	<6.755mm	Major	3.0
9.6	<9.545mm & =>8.595mm	Irregularity	1.0	<8.535mm & =>7.595mm	Irregularity	1.0
	<8.595mm & =>7.635mm	Minor	2.0	<7.595mm & =>6.825mm	Minor	2.0
	<7.635mm	Major	3.0	<6.825mm	Major	3.0
9.7	<9.645mm & =>8.685mm	Irregularity	1.0	<8.625mm & =>7.675mm	Irregularity	1.0
	<8.685mm & =>7.715mm	Minor	2.0	<7.675mm & =>6.895mm	Minor	2.0
	<7.715mm	Major	3.0	<6.895mm	Major	3.0
9.8	<9.745mm & =>8.775mm	Irregularity	1.0	<8.715mm & =>7.755mm	Irregularity	1.0
	<8.775mm & =>7.795mm	Minor	2.0	<7.755mm & =>6.975mm	Minor	2.0
	<7.795mm	Major	3.0	<6.975mm	Major	3.0
9.9	<9.845mm & =>8.865mm	Irregularity	1.0	<8.805mm & =>7.835mm	Irregularity	1.0
	<8.865mm & =>7.875mm	Minor	2.0	<7.835mm & =>7.045mm	Minor	2.0
	<7.875mm	Major	3.0	<7.045mm	Major	3.0
10.0	<9.945mm & =>8.955mm	Irregularity	1.0	<8.895mm & =>7.915mm	Irregularity	1.0
	<8.955mm & =>7.955mm	Minor	2.0	<7.915mm & =>7.115mm	Minor	2.0
	<7.955mm	Major	3.0	<7.115mm	Major	3.0

7.12 APPENDIX 2 – SHEATH THICKNESS

Mean Specification Value				Minimum Specification Value		
(mm)	**Failure criteria**	**Classification**	**Award**	**Failure criteria**	**Classification**	**Award**
0.4	<0.345mm & =>0.315mm	Irregularity	1.0	<0.235mm & =>0.215mm	Irregularity	1.0
	<0.315mm & =>0.275mm	Minor	2.0	<0.215mm & =>0.185mm	Minor	2.0
	<0.275mm	Major	3.0	<0.185mm	Major	3.0
0.5	<0.445mm & =>0.405mm	Irregularity	1.0	<0.320mm & =>0.295mm	Irregularity	1.0
	<0.405mm & =>0.355mm	Minor	2.0	<0.295mm & =>0.255mm	Minor	2.0
	<0.355mm	Major	3.0	<0.255mm	Major	3.0
0.6	<0.545mm & =>0.495mm	Irregularity	1.0	<0.405mm & =>0.365mm	Irregularity	1.0
	<0.495mm & =>0.435mm	Minor	2.0	<0.365mm & =>0.325mm	Minor	2.0
	<0.435mm	Major	3.0	<0.325mm	Major	3.0
0.7	<0.645mm & =>0.585mm	Irregularity	1.0	<0.490mm & =>0.445mm	Irregularity	1.0
	<0.585mm & =>0.515mm	Minor	2.0	<0.445mm & =>0.395mm	Minor	2.0
	<0.515mm	Major	3.0	<0.395mm	Major	3.0
0.8	<0.745mm & =>0.675mm	Irregularity	1.0	<0.575mm & =>0.515mm	Irregularity	1.0
	<0.675mm & =>0.595mm	Minor	2.0	<0.515mm & =>0.455mm	Minor	2.0
	<0.595mm	Major	3.0	<0.455mm	Major	3.0
0.9	<0.845mm & =>0.765mm	Irregularity	1.0	<0.660mm & =>0.595mm	Irregularity	1.0
	<0.765mm & =>0.675mm	Minor	2.0	<0.595mm & =>0.535mm	Minor	2.0
	<0.675mm	Major	3.0	<0.535mm	Major	3.0
1.0	<0.945mm & =>0.855mm	Irregularity	1.0	<0.745mm & =>0.675mm	Irregularity	1.0
	<0.855mm & =>0.755mm	Minor	2.0	<0.675mm & =>0.595mm	Minor	2.0
	<0.755mm	Major	3.0	<0.595mm	Major	3.0

7.12 APPENDIX 2 – SHEATH THICKNESS Continued

Mean Specification Value				Minimum Specification Value		
(mm)	**Failure criteria**	**Classification**	**Award**	**Failure criteria**	**Classification**	**Award**
1.1	<1.045mm & =>0.945mm	Irregularity	1.0	<0.830mm & =>0.755mm	Irregularity	1.0
	<0.945mm & =>0.835mm	Minor	2.0	<0.755mm & =>0.665mm	Minor	2.0
	<0.835mm	Major	3.0	<0.665mm	Major	3.0
1.2	<1.145mm & =>1.035mm	Irregularity	1.0	<0.915mm & =>0.825mm	Irregularity	1.0
	<1.035mm & =>0.915mm	Minor	2.0	<0.825mm & =>0.735mm	Minor	2.0
	<0.915mm	Major	3.0	<0.735mm	Major	3.0
1.3	<1.245mm & =>1.125mm	Irregularity	1.0	<1.000mm & =>0.905mm	Irregularity	1.0
	<1.125mm & =>0.995mm	Minor	2.0	<0.905mm & =>0.805mm	Minor	2.0
	<0.995mm	Major	3.0	<0.805mm	Major	3.0
1.4	<1.345mm & =>1.215mm	Irregularity	1.0	<1.085mm & =>0.975mm	Irregularity	1.0
	<1.215mm & =>1.075mm	Minor	2.0	<0.975mm & =>0.865mm	Minor	2.0
	<1.075mm	Major	3.0	<0.865mm	Major	3.0
1.5	<1.445mm & =>1.305mm	Irregularity	1.0	<1.170mm & =>1.055mm	Irregularity	1.0
	<1.305mm & =>1.155mm	Minor	2.0	<1.055mm & =>0.935mm	Minor	2.0
	<1.155mm	Major	3.0	<0.935mm	Major	3.0
1.6	<1.545mm & =>1.395mm	Irregularity	1.0	<1.255mm & =>1.125mm	Irregularity	1.0
	<1.395mm & =>1.235mm	Minor	2.0	<1.125mm & =>1.005mm	Minor	2.0
	<1.235mm	Major	3.0	<1.005mm	Major	3.0
1.7	<1.645mm & =>1.485mm	Irregularity	1.0	<1.340mm & =>1.205mm	Irregularity	1.0
	<1.485mm & =>1.315mm	Minor	2.0	<1.205mm & =>1.075mm	Minor	2.0
	<1.315mm	Major	3.0	<1.075mm	Major	3.0

7.12 APPENDIX 2 – SHEATH THICKNESS Continued

Mean Specification Value				Minimum Specification Value		
(mm)	**Failure criteria**	**Classification**	**Award**	**Failure criteria**	**Classification**	**Award**
1.8	<1.745mm & =>1.575mm	Irregularity	1.0	<1.425mm & =>1.275mm	Irregularity	1.0
	<1.575mm & =>1.395mm	Minor	2.0	<1.275mm & =>1.135mm	Minor	2.0
	<1.395mm	Major	3.0	<1.135mm	Major	3.0
1.9	<1.845mm & =>1.665mm	Irregularity	1.0	<1.510mm & =>1.355mm	Irregularity	1.0
	<1.665mm & =>1.475mm	Minor	2.0	<1.355mm & =>1.215mm	Minor	2.0
	<1.475mm	Major	3.0	<1.215mm	Major	3.0
2.0	<1.945mm & =>1.755mm	Irregularity	1.0	<1.595mm & =>1.425mm	Irregularity	1.0
	<1.755mm & =>1.555mm	Minor	2.0	<1.425mm & =>1.275mm	Minor	2.0
	<1.555mm	Major	3.0	<1.275mm	Major	3.0
2.1	<2.045mm & =>1.845mm	Irregularity	1.0	<1.680mm & =>1.505mm	Irregularity	1.0
	<1.845mm & =>1.635mm	Minor	2.0	<1.505mm & =>1.345mm	Minor	2.0
	<1.635mm	Major	3.0	<1.345mm	Major	3.0
2.2	<2.145mm & =>1.935mm	Irregularity	1.0	<1.765mm & =>1.575mm	Irregularity	1.0
	<1.935mm & =>1.715mm	Minor	2.0	<1.575mm & =>1.415mm	Minor	2.0
	<1.715mm	Major	3.0	<1.415mm	Major	3.0
2.3	<2.245mm & =>2.025mm	Irregularity	1.0	<1.850mm & =>1.655mm	Irregularity	1.0
	<2.025mm & =>1.795mm	Minor	2.0	<1.655mm & =>1.485mm	Minor	2.0
	<1.795mm	Major	3.0	<1.485mm	Major	3.0
2.4	<2.345mm & =>2.115mm	Irregularity	1.0	<1.935mm & =>1.725mm	Irregularity	1.0
	<2.115mm & =>1.875mm	Minor	2.0	<1.725mm & =>1.545mm	Minor	2.0
	<1.875mm	Major	3.0	<1.545mm	Major	3.0

7.12 APPENDIX 2 – SHEATH THICKNESS Continued

Mean Specification Value				Minimum Specification Value		
(mm)	**Failure criteria**	**Classification**	**Award**	**Failure criteria**	**Classification**	**Award**
2.5	<2.445mm & =>2.205mm	Irregularity	1.0	<2.020mm & =>1.805mm	Irregularity	1.0
	<2.205mm & =>1.955mm	Minor	2.0	<1.805mm & =>1.615mm	Minor	2.0
	<1.955mm	Major	3.0	<1.615mm	Major	3.0
2.6	<2.545mm & =>2.295mm	Irregularity	1.0	<2.105mm & =>1.875mm	Irregularity	1.0
	<2.295mm & =>2.035mm	Minor	2.0	<1.875mm & =>1.685mm	Minor	2.0
	<2.035mm	Major	3.0	<1.685mm	Major	3.0
2.7	<2.645mm & =>2.385mm	Irregularity	1.0	<2.190mm & =>1.965mm	Irregularity	1.0
	<2.385mm & =>2.115mm	Minor	2.0	<1.965mm & =>1.755mm	Minor	2.0
	<2.115mm	Major	3.0	<1.755mm	Major	3.0
2.8	<2.745mm & =>2.475mm	Irregularity	1.0	<2.275mm & =>2.035mm	Irregularity	1.0
	<2.475mm & =>2.195mm	Minor	2.0	<2.035mm & =>1.815mm	Minor	2.0
	<2.195mm	Major	3.0	<1.815mm	Major	3.0
2.9	<2.845mm & =>2.565mm	Irregularity	1.0	<2.360mm & =>2.115mm	Irregularity	1.0
	<2.565mm & =>2.275mm	Minor	2.0	<2.115mm & =>1.895mm	Minor	2.0
	<2.275mm	Major	3.0	<1.895mm	Major	3.0
3.0	<2.945mm & =>2.655mm	Irregularity	1.0	<2.445mm & =>2.185mm	Irregularity	1.0
	<2.655mm & =>2.355mm	Minor	2.0	<2.185mm & =>1.955mm	Minor	2.0
	<2.355mm	Major	3.0	<1.955mm	Major	3.0
3.1	<3.045mm & =>2.745mm	Irregularity	1.0	<2.530mm & =>2.265mm	Irregularity	1.0
	<2.745mm & =>2.435mm	Minor	2.0	<2.265mm & =>2.025mm	Minor	2.0
	<2.435mm	Major	3.0	<2.025mm	Major	3.0

7.12 APPENDIX 2 – SHEATH THICKNESS Continued

Mean Specification Value				Minimum Specification Value		
(mm)	**Failure criteria**	**Classification**	**Award**	**Failure criteria**	**Classification**	**Award**
3.2	<3.145mm & =>2.835mm	Irregularity	1.0	<2.615mm & =>2.335mm	Irregularity	1.0
	<2.835mm & =>2.515mm	Minor	2.0	<2.335mm & =>2.095mm	Minor	2.0
	<2.515mm	Major	3.0	<2.095mm	Major	3.0
3.3	<3.245mm & =>2.925mm	Irregularity	1.0	<2.700mm & =>2.415mm	Irregularity	1.0
	<2.925mm & =>2.595mm	Minor	2.0	<2.415mm & =>2.165mm	Minor	2.0
	<2.595mm	Major	3.0	<2.165mm	Major	3.0
3.4	<3.345mm & =>3.015mm	Irregularity	1.0	<2.785mm & =>2.485mm	Irregularity	1.0
	<3.015mm & =>2.675mm	Minor	2.0	<2.485mm & =>2.225mm	Minor	2.0
	<2.675mm	Major	3.0	<2.225mm	Major	3.0
3.5	<3.445mm & =>3.105mm	Irregularity	1.0	<2.870mm & =>2.565mm	Irregularity	1.0
	<3.105mm & =>2.755mm	Minor	2.0	<2.565mm & =>2.295mm	Minor	2.0
	<2.755mm	Major	3.0	<2.295mm	Major	3.0
3.6	<3.545mm & =>3.195mm	Irregularity	1.0	<2.955mm & =>2.635mm	Irregularity	1.0
	<3.195mm & =>2.835mm	Minor	2.0	<2.635mm & =>2.365mm	Minor	2.0
	<2.835mm	Major	3.0	<2.365mm	Major	3.0
3.7	<3.645mm & =>3.285mm	Irregularity	1.0	<3.040mm & =>2.715mm	Irregularity	1.0
	<3.285mm & =>2.915mm	Minor	2.0	<2.715mm & =>2.435mm	Minor	2.0
	<2.915mm	Major	3.0	<2.435mm	Major	3.0
3.8	<3.745mm & =>3.375mm	Irregularity	1.0	<3.125mm & =>2.785mm	Irregularity	1.0
	<3.375mm & =>2.995mm	Minor	2.0	<2.785mm & =>2.495mm	Minor	2.0
	<2.995mm	Major	3.0	<2.495mm	Major	3.0

7.12 APPENDIX 2 – SHEATH THICKNESS Continued

Mean Specification Value				Minimum Specification Value		
(mm)	**Failure criteria**	**Classification**	**Award**	**Failure criteria**	**Classification**	**Award**
3.9	<3.845mm & =>3.465mm	Irregularity	1.0	<3.210mm & =>2.865mm	Irregularity	1.0
	<3.465mm & =>3.075mm	Minor	2.0	<2.865mm & =>2.575mm	Minor	2.0
	<3.075mm	Major	3.0	<2.575mm	Major	3.0
4.0	<3.945mm & =>3.555mm	Irregularity	1.0	<3.295mm & =>2.935mm	Irregularity	1.0
	<3.555mm & =>3.155mm	Minor	2.0	<2.935mm & =>2.635mm	Minor	2.0
	<3.155mm	Major	3.0	<2.635mm	Major	3.0
4.1	<4.045mm & =>3.645mm	Irregularity	1.0	<3.380mm & =>3.015mm	Irregularity	1.0
	<3.645mm & =>3.235mm	Minor	2.0	<3.015mm & =>2.705mm	Minor	2.0
	<3.235mm	Major	3.0	<2.705mm	Major	3.0
4.2	<4.145mm & =>3.735mm	Irregularity	1.0	<3.465mm & =>3.085mm	Irregularity	1.0
	<3.735mm & =>3.315mm	Minor	2.0	<3.085mm & =>2.775mm	Minor	2.0
	<3.315mm	Major	3.0	<2.775mm	Major	3.0
4.3	<4.245mm & =>3.825mm	Irregularity	1.0	<3.550mm & =>3.165mm	Irregularity	1.0
	<3.825mm & =>3.395mm	Minor	2.0	<3.165mm & =>2.845mm	Minor	2.0
	<3.395mm	Major	3.0	<2.845mm	Major	3.0
4.4	<4.345mm & =>3.915mm	Irregularity	1.0	<3.635mm & =>3.245mm	Irregularity	1.0
	<3.915mm & =>3.475mm	Minor	2.0	<3.245mm & =>2.905mm	Minor	2.0
	<3.475mm	Major	3.0	<2.905mm	Major	3.0
4.5	<4.445mm & =>4.005mm	Irregularity	1.0	<3.720mm & =>3.325mm	Irregularity	1.0
	<4.005mm & =>3.555mm	Minor	2.0	<3.325mm & =>2.975mm	Minor	2.0
	<3.555mm	Major	3.0	<2.975mm	Major	3.0

7.12 APPENDIX 2 – SHEATH THICKNESS Continued

Mean Specification Value				Minimum Specification Value		
(mm)	**Failure criteria**	**Classification**	**Award**	**Failure criteria**	**Classification**	**Award**
4.6	<4.545mm & =>4.095mm	Irregularity	1.0	<3.805mm & =>3.395mm	Irregularity	1.0
	<4.095mm & =>3.635mm	Minor	2.0	<3.395mm & =>3.045mm	Minor	2.0
	<3.635mm	Major	3.0	<3.045mm	Major	3.0
4.7	<4.645mm & =>4.185mm	Irregularity	1.0	<3.890mm & =>3.475mm	Irregularity	1.0
	<4.185mm & =>3.715mm	Minor	2.0	<3.475mm & =>3.115mm	Minor	2.0
	<3.715mm	Major	3.0	<3.115mm	Major	3.0
4.8	<4.745mm & =>4.275mm	Irregularity	1.0	<3.975mm & =>3.545mm	Irregularity	1.0
	<4.275mm & =>3.795mm	Minor	2.0	<3.545mm & =>3.175mm	Minor	2.0
	<3.795mm	Major	3.0	<3.175mm	Major	3.0
4.9	<4.845mm & =>4.365mm	Irregularity	1.0	<4.060mm & =>3.625mm	Irregularity	1.0
	<4.365mm & =>3.875mm	Minor	2.0	<3.625mm & =>3.255mm	Minor	2.0
	<3.875mm	Major	3.0	<3.255mm	Major	3.0
5.0	<4.945mm & =>4.455mm	Irregularity	1.0	<4.145mm & =>3.695mm	Irregularity	1.0
	<4.455mm & =>3.955mm	Minor	2.0	<3.695mm & =>3.315mm	Minor	2.0
	<3.955mm	Major	3.0	<3.315mm	Major	3.0
5.1	<5.045mm & =>4.545mm	Irregularity	1.0	<4.230mm & =>3.775mm	Irregularity	1.0
	<4.545mm & =>4.035mm	Minor	2.0	<3.775mm & =>3.385mm	Minor	2.0
	<4.035mm	Major	3.0	<3.385mm	Major	3.0
5.2	<5.145mm & =>4.635mm	Irregularity	1.0	<4.315mm & =>3.845mm	Irregularity	1.0
	<4.635mm & =>4.115mm	Minor	2.0	<3.845mm & =>3.455mm	Minor	2.0
	<4.115mm	Major	3.0	<3.455mm	Major	3.0

7.12 APPENDIX 2 – SHEATH THICKNESS

Mean Specification Value				Minimum Specification Value		
(mm)	**Failure criteria**	**Classification**	**Award**	**Failure criteria**	**Classification**	**Award**
5.3	<5.245mm & =>4.725mm	Irregularity	1.0	<4.400mm & =>3.925mm	Irregularity	1.0
	<4.725mm & =>4.195mm	Minor	2.0	<3.925mm & =>3.525mm	Minor	2.0
	<4.195mm	Major	3.0	<3.525mm	Major	3.0
5.4	<5.345mm & =>4.815mm	Irregularity	1.0	<4.485mm & =>3.995mm	Irregularity	1.0
	<4.815mm & =>4.275mm	Minor	2.0	<3.995mm & =>3.585mm	Minor	2.0
	<4.275mm	Major	3.0	<3.585mm	Major	3.0
5.5	<5.445mm & =>4.905mm	Irregularity	1.0	<4.570mm & =>4.075mm	Irregularity	1.0
	<4.905mm & =>4.355mm	Minor	2.0	<4.075mm & =>3.655mm	Minor	2.0
	<4.355mm	Major	3.0	<3.655mm	Major	3.0
5.6	<5.545mm & =>4.995mm	Irregularity	1.0	<4.655mm & =>4.145mm	Irregularity	1.0
	<4.995mm & =>4.435mm	Minor	2.0	<4.145mm & =>3.725mm	Minor	2.0
	<4.435mm	Major	3.0	<3.725mm	Major	3.0
5.7	<5.645mm & =>5.085mm	Irregularity	1.0	<4.740mm & =>4.225mm	Irregularity	1.0
	<5.085mm & =>4.515mm	Minor	2.0	<4.225mm & =>3.795mm	Minor	2.0
	<4.515mm	Major	3.0	<3.795mm	Major	3.0
5.8	<5.745mm & =>5.175mm	Irregularity	1.0	<4.825mm & =>4.295mm	Irregularity	1.0
	<5.175mm & =>4.595mm	Minor	2.0	<4.295mm & =>3.855mm	Minor	2.0
	<4.595mm	Major	3.0	<3.855mm	Major	3.0
5.9	<5.845mm & =>5.265mm	Irregularity	1.0	<4.910mm & =>4.375mm	Irregularity	1.0
	<5.265mm & =>4.675mm	Minor	2.0	<4.375mm & =>3.935mm	Minor	2.0
	<4.675mm	Major	3.0	<3.935mm	Major	3.0

7.12 APPENDIX 2 – SHEATH THICKNESS Continued

Mean Specification Value				Minimum Specification Value		
(mm)	**Failure criteria**	**Classification**	**Award**	**Failure criteria**	**Classification**	**Award**
6.0	<5.945mm & =>5.355mm	Irregularity	1.0	<4.995mm & =>4.445mm	Irregularity	1.0
	<5.355mm & =>4.755mm	Minor	2.0	<4.445mm & =>3.995mm	Minor	2.0
	<4.755mm	Major	3.0	<3.995mm	Major	3.0
6.1	<6.045mm & =>5.445mm	Irregularity	1.0	<5.080mm & =>4.525mm	Irregularity	1.0
	<5.445mm & =>4.835mm	Minor	2.0	<4.525mm & =>4.065mm	Minor	2.0
	<4.835mm	Major	3.0	<4.065mm	Major	3.0
6.2	<6.145mm & =>5.535mm	Irregularity	1.0	<5.165mm & =>4.605mm	Irregularity	1.0
	<5.535mm & =>4.915mm	Minor	2.0	<4.605mm & =>4.135mm	Minor	2.0
	<4.915mm	Major	3.0	<4.135mm	Major	3.0
6.3	<6.245mm & =>5.625mm	Irregularity	1.0	<5.250mm & =>4.685mm	Irregularity	1.0
	<5.625mm & =>4.995mm	Minor	2.0	<4.685mm & =>4.205mm	Minor	2.0
	<4.995mm	Major	3.0	<4.205mm	Major	3.0
6.4	<6.345mm & =>5.715mm	Irregularity	1.0	<5.335mm & =>4.755mm	Irregularity	1.0
	<5.715mm & =>5.075mm	Minor	2.0	<4.755mm & =>4.265mm	Minor	2.0
	<5.075mm	Major	3.0	<4.265mm	Major	3.0
6.5	<6.445mm & =>5.805mm	Irregularity	1.0	<5.420mm & =>4.835mm	Irregularity	1.0
	<5.805mm & =>5.155mm	Minor	2.0	<4.835mm & =>4.335mm	Minor	2.0
	<5.155mm	Major	3.0	<4.335mm	Major	3.0
6.6	<6.545mm & =>5.895mm	Irregularity	1.0	<5.505mm & =>4.905mm	Irregularity	1.0
	<5.895mm & =>5.235mm	Minor	2.0	<4.905mm & =>4.405mm	Minor	2.0
	<5.235mm	Major	3.0	<4.405mm	Major	3.0

7.12 APPENDIX 2 – SHEATH THICKNESS

Mean Specification Value				Minimum Specification Value		
(mm)	**Failure criteria**	**Classification**	**Award**	**Failure criteria**	**Classification**	**Award**
6.7	<6.645mm & =>5.985mm	Irregularity	1.0	<5.590mm & =>4.985mm	Irregularity	1.0
	<5.985mm & =>5.315mm	Minor	2.0	<4.985mm & =>4.475mm	Minor	2.0
	<5.315mm	Major	3.0	<4.475mm	Major	3.0
6.8	<6.745mm & =>6.075mm	Irregularity	1.0	<5.675mm & =>5.055mm	Irregularity	1.0
	<6.075mm & =>5.395mm	Minor	2.0	<5.055mm & =>4.535mm	Minor	2.0
	<5.395mm	Major	3.0	<4.535mm	Major	3.0
6.9	<6.845mm & =>6.165mm	Irregularity	1.0	<5.760mm & =>5.135mm	Irregularity	1.0
	<6.165mm & =>5.475mm	Minor	2.0	<5.135mm & =>4.615mm	Minor	2.0
	<5.475mm	Major	3.0	<4.615mm	Major	3.0
7.0	<6.945mm & =>6.255mm	Irregularity	1.0	<5.845mm & =>5.205mm	Irregularity	1.0
	<6.255mm & =>5.555mm	Minor	2.0	<5.205mm & =>4.675mm	Minor	2.0
	<5.555mm	Major	3.0	<4.675mm	Major	3.0
7.1	<7.045mm & =>6.345mm	Irregularity	1.0	<5.930mm & =>5.285mm	Irregularity	1.0
	<6.345mm & =>5.635mm	Minor	2.0	<5.285mm & =>4.745mm	Minor	2.0
	<5.635mm	Major	3.0	<4.745mm	Major	3.0
7.2	<7.145mm & =>6.435mm	Irregularity	1.0	<6.015mm & =>5.355mm	Irregularity	1.0
	<6.435mm & =>5.715mm	Minor	2.0	<5.355mm & =>4.815mm	Minor	2.0
	<5.715mm	Major	3.0	<4.815mm	Major	3.0
7.3	<7.245mm & =>6.525mm	Irregularity	1.0	<6.100mm & =>5.435mm	Irregularity	1.0
	<6.525mm & =>5.795mm	Minor	2.0	<5.435mm & =>4.885mm	Minor	2.0
	<5.795mm	Major	3.0	<4.885mm	Major	3.0

7.12 APPENDIX 2 – SHEATH THICKNESS Continued

Mean Specification Value				Minimum Specification Value		
(mm)	**Failure criteria**	**Classification**	**Award**	**Failure criteria**	**Classification**	**Award**
7.4	<7.345mm & =>6.615mm	Irregularity	1.0	<6.185mm & =>5.505mm	Irregularity	1.0
	<6.615mm & =>5.875mm	Minor	2.0	<5.505mm & =>4.945mm	Minor	2.0
	<5.875mm	Major	3.0	<4.945mm	Major	3.0
7.5	<7.445mm & =>6.705mm	Irregularity	1.0	<6.270mm & =>5.585mm	Irregularity	1.0
	<6.705mm & =>5.955mm	Minor	2.0	<5.585mm & =>5.015mm	Minor	2.0
	<5.955mm	Major	3.0	<5.015mm	Major	3.0
7.6	<7.545mm & =>6.795mm	Irregularity	1.0	<6.355mm & =>5.655mm	Irregularity	1.0
	<6.795mm & =>6.035mm	Minor	2.0	<5.655mm & =>5.085mm	Minor	2.0
	<6.035mm	Major	3.0	<5.085mm	Major	3.0
7.7	<7.645mm & =>6.885mm	Irregularity	1.0	<6.440mm & =>5.735mm	Irregularity	1.0
	<6.885mm & =>6.115mm	Minor	2.0	<5.735mm & =>5.155mm	Minor	2.0
	<6.115mm	Major	3.0	<5.155mm	Major	3.0
7.8	<7.745mm & =>6.975mm	Irregularity	1.0	<6.525mm & =>5.805mm	Irregularity	1.0
	<6.975mm & =>6.195mm	Minor	2.0	<5.805mm & =>5.215mm	Minor	2.0
	<6.195mm	Major	3.0	<5.215mm	Major	3.0
7.9	<7.845mm & =>7.065mm	Irregularity	1.0	<6.610mm & =>5.885mm	Irregularity	1.0
	<7.065mm & =>6.275mm	Minor	2.0	<5.885mm & =>5.295mm	Minor	2.0
	<6.275mm	Major	3.0	<5.295mm	Major	3.0
8.0	<7.945mm & =>7.155mm	Irregularity	1.0	<6.695mm & =>5.965mm	Irregularity	1.0
	<7.155mm & =>6.355mm	Minor	2.0	<5.965mm & =>5.355mm	Minor	2.0
	<6.355mm	Major	3.0	<5.355mm	Major	3.0

7.12 APPENDIX 2 – SHEATH THICKNESS Continued

Mean Specification Value				Minimum Specification Value		
(mm)	**Failure criteria**	**Classification**	**Award**	**Failure criteria**	**Classification**	**Award**
8.1	<8.045mm & =>7.245mm	Irregularity	1.0	<6.780mm & =>6.045mm	Irregularity	1.0
	<7.245mm & =>6.435mm	Minor	2.0	<6.045mm & =>5.425mm	Minor	2.0
	<6.435mm	Major	3.0	<5.425mm	Major	3.0
8.2	<8.145mm & =>7.335mm	Irregularity	1.0	<6.865mm & =>6.115mm	Irregularity	1.0
	<7.335mm & =>6.515mm	Minor	2.0	<6.115mm & =>5.495mm	Minor	2.0
	<6.515mm	Major	3.0	<5.495mm	Major	3.0
8.3	<8.245mm & =>7.425mm	Irregularity	1.0	<6.950mm & =>6.195mm	Irregularity	1.0
	<7.425mm & =>6.595mm	Minor	2.0	<6.195mm & =>5.565mm	Minor	2.0
	<6.595mm	Major	3.0	<5.565mm	Major	3.0
8.4	<8.345mm & =>7.515mm	Irregularity	1.0	<7.035mm & =>6.265mm	Irregularity	1.0
	<7.515mm & =>6.675mm	Minor	2.0	<6.265mm & =>5.625mm	Minor	2.0
	<6.675mm	Major	3.0	<5.625mm	Major	3.0
8.5	<8.445mm & =>7.605mm	Irregularity	1.0	<7.120mm & =>6.345mm	Irregularity	1.0
	<7.605mm & =>6.755mm	Minor	2.0	<6.345mm & =>5.695mm	Minor	2.0
	<6.755mm	Major	3.0	<5.695mm	Major	3.0
8.6	<8.545mm & =>7.695mm	Irregularity	1.0	<7.205mm & =>6.415mm	Irregularity	1.0
	<7.695mm & =>6.835mm	Minor	2.0	<6.415mm & =>5.765mm	Minor	2.0
	<6.835mm	Major	3.0	<5.765mm	Major	3.0
8.7	<8.645mm & =>7.785mm	Irregularity	1.0	<7.290mm & =>6.495mm	Irregularity	1.0
	<7.785mm & =>6.915mm	Minor	2.0	<6.495mm & =>5.835mm	Minor	2.0
	<6.915mm	Major	3.0	<5.835mm	Major	3.0

7.12 APPENDIX 2 – SHEATH THICKNESS

Mean Specification Value				Minimum Specification Value		
(mm)	**Failure criteria**	**Classification**	**Award**	**Failure criteria**	**Classification**	**Award**
8.8	<8.745mm & =>7.875mm	Irregularity	1.0	<7.375mm & =>6.565mm	Irregularity	1.0
	<7.875mm & =>6.995mm	Minor	2.0	<6.565mm & =>5.895mm	Minor	2.0
	<6.995mm	Major	3.0	<5.895mm	Major	3.0
8.9	<8.845mm & =>7.965mm	Irregularity	1.0	<7.460mm & =>6.645mm	Irregularity	1.0
	<7.965mm & =>7.075mm	Minor	2.0	<6.645mm & =>5.975mm	Minor	2.0
	<7.075mm	Major	3.0	<5.975mm	Major	3.0
9.0	<8.945mm & =>8.055mm	Irregularity	1.0	<7.545mm & =>6.715mm	Irregularity	1.0
	<8.055mm & =>7.155mm	Minor	2.0	<6.715mm & =>6.035mm	Minor	2.0
	<7.155mm	Major	3.0	<6.035mm	Major	3.0
9.1	<9.045mm & =>8.145mm	Irregularity	1.0	<7.630mm & =>6.795mm	Irregularity	1.0
	<8.145mm & =>7.235mm	Minor	2.0	<6.795mm & =>6.105mm	Minor	2.0
	<7.235mm	Major	3.0	<6.105mm	Major	3.0
9.2	<9.145mm & =>8.235mm	Irregularity	1.0	<7.715mm & =>6.865mm	Irregularity	1.0
	<8.235mm & =>7.315mm	Minor	2.0	<6.865mm & =>6.175mm	Minor	2.0
	<7.315mm	Major	3.0	<6.175mm	Major	3.0
9.3	<9.245mm & =>8.325mm	Irregularity	1.0	<7.800mm & =>6.945mm	Irregularity	1.0
	<8.325mm & =>7.395mm	Minor	2.0	<6.945mm & =>6.245mm	Minor	2.0
	<7.395mm	Major	3.0	<6.245mm	Major	3.0
9.4	<9.345mm & =>8.415mm	Irregularity	1.0	<7.885mm & =>7.015mm	Irregularity	1.0
	<8.415mm & =>7.475mm	Minor	2.0	<7.015mm & =>6.305mm	Minor	2.0
	<7.475mm	Major	3.0	<6.305mm	Major	3.0

7.12 APPENDIX 2 – SHEATH THICKNESS Continued

Mean Specification Value				Minimum Specification Value		
(mm)	**Failure criteria**	**Classification**	**Award**	**Failure criteria**	**Classification**	**Award**
9.5	<9.445mm & =>8.505mm	Irregularity	1.0	<7.970mm & =>7.095mm	Irregularity	1.0
	<8.505mm & =>7.555mm	Minor	2.0	<7.095mm & =>6.375mm	Minor	2.0
	<7.555mm	Major	3.0	<6.375mm	Major	3.0
9.6	<9.545mm & =>8.595mm	Irregularity	1.0	<8.055mm & =>7.165mm	Irregularity	1.0
	<8.595mm & =>7.635mm	Minor	2.0	<7.165mm & =>6.445mm	Minor	2.0
	<7.635mm	Major	3.0	<6.445mm	Major	3.0
9.7	<9.645mm & =>8.685mm	Irregularity	1.0	<8.140mm & =>7.245mm	Irregularity	1.0
	<8.685mm & =>7.715mm	Minor	2.0	<7.245mm & =>6.515mm	Minor	2.0
	<7.715mm	Major	3.0	<6.515mm	Major	3.0
9.8	<9.745mm & =>8.775mm	Irregularity	1.0	<8.225mm & =>7.325mm	Irregularity	1.0
	<8.775mm & =>7.795mm	Minor	2.0	<7.325mm & =>6.575mm	Minor	2.0
	<7.795mm	Major	3.0	<6.575mm	Major	3.0
9.9	<9.845mm & =>8.865mm	Irregularity	1.0	<8.310mm & =>7.405mm	Irregularity	1.0
	<8.865mm & =>7.875mm	Minor	2.0	<7.405mm & =>6.655mm	Minor	2.0
	<7.875mm	Major	3.0	<6.655mm	Major	3.0
10.0	<9.945mm & =>8.955mm	Irregularity	1.0	<8.395mm & =>7.475mm	Irregularity	1.0
	<8.955mm & =>7.955mm	Minor	2.0	<7.475mm & =>6.715mm	Minor	2.0
	<7.955mm	Major	3.0	<6.715mm	Major	3.0

8 COMPLAINTS AGAINST BASEC APPROVED CABLE

8.1 BASEC will notify the Licensee when a complaint, including a complaint raised pursuant to clauses 8.11 or 8.12 below, is received, and has been subject to initial investigation. The identity of the complainant(s) will be kept confidential from the Licensee unless agreed by the complainant(s). BASEC may at its discretion consult with other parties in the investigation of the complaint.

8.2 BASEC will investigate the circumstances of the complaint and may, at BASEC's discretion, conduct an appropriate series of investigations, examinations and tests in order to verify the validity and nature of the complaint and the conformity of the product(s) to the relevant Standard / Specification. The Licensee will be liable for BASEC's fees for any such activities (see 8.6).

8.3 The findings of investigations and tests will be communicated to the Licensee, once complete, including BASEC's determination of the validity of the complaint. Any non-conformity against the relevant Standard / Specification and / or against BASEC's Rules and Regulations will be followed up by BASEC. BASEC will establish that suitable correction and corrective actions have been implemented. This may be at the next surveillance audit or separately, at BASEC's discretion. The Licensee shall be liable for BASEC's fees for any such follow-up activity (see 8.6).

8.4 The Licensee shall give representatives of BASEC access at any time during normal working hours to the premises or sites on which work relevant to the product the subject of the complaint is performed or on which the said product is stored for the purpose of BASEC undertaking the investigations, examinations, tests and surveillance detailed under clauses 8.2 and 8.3 above.

8.5 BASEC will, if requested to do so by the complainant(s), provide to the complainant(s) reports of the outcome of BASEC's investigations, including BASEC's determination of the validity of the complaint, the conformity of the product to the specification(s), and of any tests carried out as referred to in paragraph 8.2 above, or a summary of the same. BASEC will also, if requested to do so by the complainant(s), provide to the complainant(s) a statement that suitable correction and corrective actions as referred to in paragraph 8.3 have been implemented. For the avoidance of doubt, any information provided by BASEC to the complainant(s) pursuant to this clause will not include information relating to investigations carried out at the Licensee's premises or the outcome of those investigations or the details of any steps taken by BASEC in accordance with clauses 8.6 to 8.9 below.

8.6 If the nature of the complaint is proven to BASEC's satisfaction to be attributable in whole or in part to the non-conformity of a Licensee's product, then any reasonable costs incurred by BASEC during investigation, testing and other activities associated with handling the complaint will be charged to the Licensee.

8.7 If the complaint results in test failures being recorded then BASEC may, at its discretion, award deviation values according to PCR Section 7, in addition to any awarded as a result of routine surveillance testing. Any necessary follow-up resulting from these deviation values (including non-conformities or recall of product) will be handled in the normal manner.

8.8 Where a product is found not to conform to the requirements of the relevant Standard and / or BASEC's Rules and Regulations, BASEC will re-appraise the level of surveillance applied to the Licensee, and may impose additional surveillance visits and / or testing. The Licensee will be liable for BASEC's fees for any such additional activities.

8.9 Where a product is found not to conform to the requirements of the relevant Standard / Specification and / or BASEC's Rules and Regulations, and the scope, scale or severity of the resulting impact on the product, on customers' interests (in particular, the degree of hazard presented by the product), or on BASEC's reputation is sufficiently serious, then BASEC will consider suspending the Licensee's Product Certificate(s) and / or Product Marking Licence.

8.10 If the Licensee is unhappy with the conduct or findings of any complaint, or with any resulting sanctions applied to the Licensee by BASEC, then the Licensee may request that the complaint be referred to the BASEC Complaints Panel or BASEC Appeals Panel, as appropriate.

8.11 When a Licensee purchases a BASEC approved product from another BASEC Licensee for secondary processing, (see also Collaboration in manufacture) e.g., for coiling, and that product is defective, then BASEC may raise a customer complaint on the supplier with or without the consent of the purchaser. The complaint will then be dealt with in accordance with the provisions of this section 8.

8.12 When a BASEC approved product is brought to BASEC's attention by any route other than routine surveillance and which does not involve a complaint by a third party, and that product is defective, then BASEC may raise a customer complaint on the Licensee. The complaint will then be dealt with in accordance with the provisions of this section 8.

9 STAND-BY PRODUCT CERTIFICATION SCHEME

9.1 General

The Stand-By Product Certification Scheme may not be applied to any certified product subject to HAR marking (as set out on the relevant Product Certificate).

The purpose of the Stand-By Product Certification Scheme is to permit Licensees to continue to hold Product Certificates and a Product Marking Licence for specified products during periods when, by virtue of slackened demand and lack of production of relevant cables, adequate numbers of samples are not available for routine surveillance testing by BASEC. The Stand-By Product Certification Scheme is provided as an alternative to termination or withdrawal of certification in those circumstances. Time limits will apply.

Because normal levels of product testing are not undertaken, special restrictions apply.

If a Licensee is unable to provide samples of particular cable types in sufficient quantity, such that there is a shortfall of 25% of the samples required within either a 6 month period or two consecutive routine sample selection visits (whichever is the shorter), then they will be considered for moving to the Stand-By Product Certification Scheme.

BASEC will notify the Licensee of the shortfall situation and commence an assessment of the situation, and will make its decision known to the Licensee. The Licensee's relevant Product Certificate(s) will be placed on Stand-By and transferred to a Stand-By Product Marking Licence. Alternatively, if the Licensee so wishes, the relevant Product Certificate(s) and if appropriate the entire Product Marking Licence may be voluntarily suspended, subject to the rules and time limits on suspension.

During a period of Stand-By, a Stand-By Product Marking Licence and relevant Stand-By Product Certificate(s) will be issued by BASEC with special terms related to batch certification and subject to the endorsement "Subject to special conditions - refer to BASEC for details".

A Licensee may hold a normal Product Marking Licence and Product Certificate(s) at the same time as holding a Stand-By Product Marking Licence and Stand-By Product Certificate(s).

9.2 Requirements and Arrangements

The special arrangements relating to the Stand-By Product Certification Scheme are:

- BASEC will continue to list the Licensee's certifications (those on Stand-By and those operational) on the BASEC website, but with a note to specify the status of each Stand-By Product Certificate.

- If the Licensee wishes to recommence production of any product on Stand-By the Stand-By Product Certificate will be replaced by a regular Product Certificate, and the Stand-By Product Marking Licence amended or withdrawn, as appropriate.

- The Licensee must only recommence production of a product subject to a Stand-By Product Certificate following notification of BASEC by the Licensee and following written authorisation issued by BASEC.

- The Licensee is permitted to apply the appropriate BASEC Registered Certification Trade Mark(s) on any product that has recommenced production.

- A type test covering all specified tests must be conducted on any product that has recommenced production. At BASEC's discretion testing may be undertaken in BASEC's laboratory or at the Licensee's premises. If this is satisfactorily passed then a regular Product Certificate will be issued by BASEC and the product will come off Stand-By.

- Product may be shipped to customers while the type tests are being conducted by BASEC, but subject to all the usual deviation points and recall procedure etc. when the tests are complete.

- Once products have come off Stand-By, the Licensee shall provide normal routine sample numbers.

- BASEC's fees for visits and type testing will be as per the published List of Fees. Travel costs may be charged as appropriate.

At appropriate intervals while a Stand-By Product Marking Licence is active, BASEC will audit:

- Process control.

- Test, measuring and inspection equipment.

- Corrective actions and preventive actions.

- During a Stand-By period no cables of the same type may be manufactured and not BASEC marked.

Stand-By Product Certificate(s) and a Stand-By Product Marking Licence are issued until the end of the certification period. The arrangement may be extended for a further period, at the discretion of BASEC. If not extended, BASEC will withdraw certification and if appropriate cancel the Product Marking Licence.

The Licensee may not re-apply for a BASEC Licence for the product types covered by the withdrawn Product Certificate or Product Marking Licence until such time that sufficient samples can be supplied.

BASEC may require evidence that the sampling criteria can be met prior to accepting re-application.

Type testing requirements for the appropriate Scheme will apply afresh at the time of any such re-application.

10 INCREASED VISITS AND SAMPLES

10.1 General

If BASEC is dissatisfied in any way with the operation of a Product Marking Licence by a Licensee, such as a raised or high risk assessment or excessive deviations, increased surveillance may be implemented at the expense of the Licensee.

Such increased surveillance may be implemented if the requirements of the Scheme are not satisfied at any time during the certification year or over a rolling twelve month period i.e. the allowable deviations per year or per visit as defined in section 7.3 are exceeded, and may take either or both of the following forms:

- An extra visit or visits to the manufacturing location(s) concerned.
- An increase to the annual required number of samples as follows:-

Scheme A: A minimum of 20 extra samples to be selected from the type(s) of cable which have shown the deviations causing the total deviation values allowed to be exceeded. The samples are to be tested against those requirements which caused the deviation total to be exceeded.

If a rechecking procedure is carried out on a manufacturer for which reduced sampling, as section 11.2 applies, after positive completion of rechecking procedure, the reduced sampling as section 11.2 will be re-instated.

The limit for rechecking procedures without further actions is one rechecking procedure out of six surveillance visits (approximately 18 months). In the case where this limit is exceeded further appropriate actions must be taken. These actions could include additional unannounced surveillance visits and/or tests and could when considered necessary, include the suspension or withdrawal of licences or the reduction of the range of HAR certified cables.

HAR Scheme Cables:

If either the total of the deviation values allowed over a rolling period of 12 months or the total of the deviation values allowed per inspection is exceeded, the manufacturer shall take steps to ensure that the relevant specification is met.

A rechecking shall be carried out with the sampling rules given in sub-clause 2.1 of PD D, but taking at least 20 samples selected from the types of cables or cords which have shown the deviation or deviations causing the total deviations allowed to be exceeded.

Prior to the sampling a reasonable period shall be agreed between BASEC and the manufacturer to eliminate the causes of such deviations.

These samples shall be tested against those requirements which caused the total of the deviation values allowed to be exceeded. If the appropriate total of the deviation values allowed in Table 1 and table 2 of section 7.3, as appropriate are not exceeded, the original samples and their deviation values shall be removed from the evaluation.

In case a rechecking procedure is carried out for a manufacturer, for which reduced sampling applies, after positive completion of such procedure, BASEC will reinstate the reduced sampling according to the provisions of PD 4, clause 2.

The limit number of rechecking procedures without further actions is one re-checking procedure out of six surveillance visits (approximately 18 months). In case this limit is exceeded BASEC must take appropriate actions. These actions could include additional unannounced surveillance visits and/or tests and could when BASEC considers it necessary, include the suspension or withdrawal of licences or the reduction of range of HAR certified cables.

Other Schemes: As advised by BASEC

NB: These extra samples will normally be confined to the cable types exhibiting the non-compliances that gave rise to the deviations.

Increased surveillance shall continue until BASEC is satisfied that compliance with the conditions of licensing has been achieved. Additionally, BASEC reserves the right to suspend the Product Certificate(s) for one or more cable types in appropriate circumstances.

11 SCHEME A REQUIREMENTS

11.1 SCOPE

Scheme A covers building wires and cables, flexes and similar cable types generally up to 450/750V rating, being (a) harmonised types listed in HAR agreement document PD7 and (b) cable types included in relevant British standards that are identified as a national type.

Where a cable type listed in this scheme is technically similar to a cable type listed in another scheme, the manufacturer's production of these cables may, at BASEC's discretion, be treated for sampling purposes as part of the other scheme (except for HAR scheme approvals).

11.1.1 Processes Permitted to be Subcontracted

For HAR scheme approvals, the following table defines the processes that compulsorily must be carried out in the Licensee's plant and the processes for which there are no limitations regarding the location. In these cases the process shall be controlled by the quality system of the manufacturer, and BASEC will check this control during assessment visits.

Process	Input Material or Product	Output Product	Process Location
Casting	Copper Cathode	Copper Rod	No limit. To be controlled by the QS of the Licensee. No requirement for BASEC to audit subcontracted process at subcontractor's plant.
Wire Drawing	Copper Rod Tin (if used)	Solid Conductor Class 1 or drawn wire	No limit. To be controlled by the QS of the Licensee. No requirement for BASEC to audit subcontracted process at subcontractor's plant.
Stranding	Drawn Wires	Conductor Class 2 and above	No limit. To be controlled by the QS of the Licensee. No requirement for BASEC to audit subcontracted process at subcontractor's plant. (Note: 1)
Compounding	Materials of the compounds.	Compound to be extruded	No limit. To be controlled by the QS of the Licensee. No requirement for BASEC to audit subcontracted process at subcontractor's plant.
Insulation	Separator (if used) Thermoplastic, cross-linked compound.	Core (insulated conductor)	Licensee's plant (Note: 2)
Assembling	Cores, Tapes, feeders,…(if used)	Assembled cores	Licensee's plant (Note: 2)
Sheathing	Separator (if used) Thermoplastic, cross-linked compound.	Cable	Licensee's plant (Note: 2)
Marking	Ink (if used)	Cable with marking	Licensee's plant (Note: 2)

(Note: 1) Special care shall be taken in assessing the control carried out by the Licensee in cases where the incoming conductor is a significant part of the total process (e.g. conductors of large sections).

(Note: 2) The availability of production machinery for the types and ranges requested shall be assessed by BASEC.

11.2 REDUCED SAMPLING

The number of samples selected for testing can be reduced to 75 samples per calendar year, but not less than 25 per place of manufacture (4 visits per year per place of manufacture), once a satisfactory quality record has been established. To qualify for reduced sampling all the following conditions must be fulfilled:

The Licensee shall have been registered with BASEC, to ISO 9001 and Product Certification Scheme A, for at least twelve months, and shall have provided the requisite number of samples during this period.

During the twelve month period there shall not be:

- Two Major or Actionable test failures awarded under the Scheme, or
- any outstanding major non-conformances in the quality management system.

The total of deviations from samples tested by BASEC during the preceding twelve months must be less than 40% of the number of deviations allowed per annum.

Given that the requirements are met, reduced sampling will begin in the visit quarter beginning immediately after a 6 month period from the date of application for reduced sampling, in which period the Licensee shall continue to meet the requirements above.

Continued participation in reduced sampling is dependent on the compliance of product, selected for testing by BASEC giving a deviation level of less than 40% of the allowable deviations per annum.

Where the rolling total of deviations exceeds the 40% of allowable deviations the following shall apply:

11.2.1 >100% of allowable deviations

The Licensee will immediately return to the normal sampling rates and will need a full 12 months at less than 40% deviations before re-entry into the reduced sampling scheme.

11.2.2 Between 40% and 100% of allowable deviations

The Licensee will be allowed up to 6 months to remedy the situation. This will require full selection of samples for testing at the next two scheduled routine visits. The rolling total average of the allowable deviations shall remain below 40%.

If after six months the level has reduced to less than 40% then the sampling will return to the reduced level otherwise the Licensee will be returned to the normal surveillance and will need a full twelve months at less than 40% of the allowable deviations before re-entry into the reduced sampling scheme.

11.3 AVAILABILITY OF TEST EQUIPMENT

Each table of tests includes a code a, b, c or o, which indicates the requirement for availability of test equipment as follows:

a Test or measurement which must be conducted at the place of manufacture.

b Test or measurement which if not conducted at the place of manufacture may be conducted at any laboratory of the Licensee.

o Test or measurement which if not conducted at a laboratory of the Licensee may be conducted by a laboratory approved for use by BASEC.

c Test or measurement which may be carried out at an external laboratory under a written agreement.

Continuous assessment of production facilities will be undertaken by at least annual checks of manufacturer's test facilities and machinery capability for the type(s) of cable certified. Any deviations from the specified test equipment availability must be authorised by BASEC, by the manufacturer applying for a BASEC concession using form BSF 238.

11.4 FREQUENCY OF TESTS

F100 Test is conducted on 100% of the samples selected

F50 Test is conducted on 50% of the samples selected

F25 Test is conducted on 25% of the samples selected

F5 Test is conducted on 5% of the samples selected

1/1y Test is conducted one per year

1/3y Test is conducted every three years

Man Test is conducted on every product by the manufacturer

11.5 BS 6004:2000 Amendment Nos 1 & 2

Electric Cables – PVC-Insulated, Non-Armoured Cables For Voltages up to and Including 450/750V, For Electric Power, Lighting And Internal Wiring.

Tests, Facilities Required and Test Frequencies

Test description	**Requirement**		**Test method**		**Freq**	**Avail**
	Specification	**Clause**	**Specification**	**Clause**		
Absence of faults on insulation (voltage test)	BS 6004	7.5	BS 6004	Annex C 6.2.3	F100	a
Absence of faults on insulation (voltage test)	BS 6004	7.5	BS 6004	Annex C 6.2.3	man	a
Absence of faults on insulation (spark test)	BS 6004	7.5	BS 6004	Annex C 6.2.2	man	a
Application of insulation/sheath	BS 6004	6.2.2/6.4.2	Visual Exam	-	F100	n/a
Bending test at low temperature (insulation)	BS EN 50363-3	5	BS EN 60811-504	4.2	F5	b
Bending test at low temperature (sheath & inner sheath)	BS EN 50363-4.1 BS 7655-4.2	5 -	BS EN 60811-504	4.3	F5	b
Bi-colour combinations	BS 6004	5.2.2	BS 6469-99.1	8	F100	a
Cable construction	BS 6004	5.1	Visual Exam	-	F100	n/a
Core Colour - clarity and durability of colour	BS 6004	5.2.4	Visual Exam	-	F100	a
Compatibility	BS 6004	8.4	BS 6004	Annex G	F25	a
Conductor construction	BS 6004	6.1	BS EN 60228	-	F100	a
Conductor resistance	BS 6004	7.2	BS EN 60228	-	F100	a
Core I/D - Colour	BS 6004	6.3	Visual Exam	-	F100	n/a
Core I/D - Number	BS 6004	5.2.3	BS EN 50334	-	F100	a
Elongation at low temperature (insulation)	BS EN 50363-3	6	BS EN 60811-505	4.2	F5	b
Elongation at low temperature (sheath)	BS EN 50363-4.1 BS 7655-4.2	6 -	BS EN 60811-505	4.3	F5	b

11.5 BS 6004:2000 Amendment Nos 1 & 2 Continued

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Fillers	BS 6004	6.4.1	Visual Exam	-	F100	n/a
Flame propagation single cable	BS 6004	8.5	BS EN 60332-1-2	Annex A	F25	b
Heat shock (insulation)	BS EN 50363-3	3	BS EN 60811-509	4.3	F50	a
Heat shock (inner sheath)	BS EN 50363-4.1	3	BS EN 60811-509	4.4	F50	a
Heat shock (sheath)	BS 7655-4.2	-	BS EN 60811-509	4.4	F50	a
Hot deformation (sheath)	BS 7655-4.2	-	BS 6469-99.1	10	F5	b
Insulation resistance	BS 6004	7.6	BS 6004	Annex C4	F5	a
Insulation resistance constant (sheath)	BS 7655-4.2	-	BS 6469-99.2	8	F5	o
Long term resistance of insulation to d.c.	BS 6004	7.7	BS 6004	Annex C5	F5	b
Loss of mass (insulation)	BS EN 50363-3	2	BS EN 60811-409	4	F5	a
Loss of mass (sheath & inner sheath)	BS EN 50363-4.1/BS 7655-4.2	2	BS EN 60811-409	6	F5	a
Marking legend	BS 6004	5.3	Visual Exam	-	F100	a
Marking durability	BS 6004	5.3.5	Visual Exam	-	F100	a
Mean overall diameter	BS 6004	8.2	BS EN 60811-203	-	F25	a
Mineral oil immersion	BS EN 50363-4.1	1.3	BS EN 60811-404	-	F5	b
Ovality	BS 6004	8.3	BS EN 60811-203	-	F25	a

11.5 BS 6004:2000 Amendment Nos 1 & 2 Continued

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	**Clause**	**Specification**	**Clause**		
Pressure test at high temperature (sheath)	BS EN 50363-4.1/BS 7655-4.2	4	BS EN 60811-508	4.4	F5	b
Pressure test at high temperature (insulation)	BS EN 50363-3	4	BS EN 60811-508	4.3	F5	b
Screening efficiency	BS 6004	7.8	BS 6004	Annex C7	F5	b
Screen wire diameter	BS 6004	6.5	BS 6004	6.5	F5	a
Tensile & elongation before & after ageing (insulation)	BS EN 50363-3	1.1 & 1.2	BS EN 60811-401 BS EN 60811-501	- 4.2	F25	a
Tensile & elongation before & after ageing (inner sheath)	BS EN 50363-4.1	1.1 & 1.2	BS EN 60811-401 BS EN 60811-501	- 4.3	F25	a
Tensile & elongation before & after ageing (sheath)	BS 7655-4.2	-	BS EN 60811-401 BS EN 60811-501	- 4.3	F25	a
Thermal stability (insulation)	BS EN 50363-3	7	BS EN 60811-405	-	F5	a
Thickness (insulation)	BS 6004	6.2.3	BS 6004	Annex D1	F100	a
Thickness (inner sheath)	BS 6004	6.4.2	BS 6004	Annex D2	F100	a
Thickness(sheath)	BS 6004	6.6.3	BS 6004	Annex D2/D3	F100	a
Sheath colour	BS 6004	6.6.4	Visual Exam	-	F100	a
Voltage test complete cable (sheathed)	BS 6004	7.3	BS 6004	Annex C2	F25	a
Voltage test complete cable (unsheathed)	BS 6004	7.3	BS 6004	Annex C2	F25	a
Voltage test cores	BS 6004	7.4	BS 6004	Annex C3	F5	a

This is a full list of tests covering the requirements of all applicable Tables of the standard. Not all are necessarily required for selected Tables. Reference should be made to the standard. For an explanation of availability and frequency of tests codes, see 11.3 and 11.4.

11.5 BS 6004:2000 Amendment Nos 1 & 2 Cont'd

Schedule of Samples for Type Approval Submission

Table	Type of Cable	Number and size of samples
4a	PVC- insulated, non-sheathed general purpose cable, 450/750V, single-core, (rigid copper conductor)	1 sample of approximately minimum conductor size 1 sample approximately maximum conductor size
4b	PVC-insulated, non-sheathed general purpose cable, 450/750V, single-core (flexible copper conductor)	1 sample approximately minimum conductor size 1 sample approximately maximum conductor size
5	PVC-insulated, non-sheathed cable for internal wiring, 300/500V, single-core	1 sample with rigid conductor 1 sample with flexible conductor
7	PVC-insulated, PVC-sheathed cable, 300/500V single-core, flat twin and 3-core	1 sample single core 1 sample multicore
8	PVC-insulated, PVC-sheathed cables with circuit protective conductor, 300/500V single-core, flat twin and 3-core	1 sample single core 1 sample multicore
9	PVC-insulated, PVC-sheathed cable with circuit protective conductor, 300/500V, single-core and flat twin	1 sample single core 1 sample multicore
9	PVC-insulated, PVC-sheathed cable without circuit protective conductor, 300/500V, single core and flat twin (alternative conductor versions)	1 sample single core 1 sample multicore
10a	PVC-insulated, non-sheathed cable, 450/750V, single-core for installation at low temperatures (rigid copper conductor)	1 sample with solid conductor 1 sample with stranded conductor 1 sample with flexible conductor
10b	PVC- insulated, non-sheathed cable, 450/750V, single core for installation at low temperatures (flexible copper conductor)	1 sample with solid conductor 1 sample with stranded conductor 1 sample with flexible conductor

11.5 BS 6004:2000 Amendment Nos 1 & 2 Cont'd

Schedule of Samples for Type Approval Submission

Table	Type of Cable	Number and size of samples
11a & 11b	PVC-insulated, non-sheathed, heat resisting cable for internal wiring, 450/750V, single-core, rigid and flexible copper conductor	1 sample with rigid or flexible conductor 1 sample with stranded conductor
12	PVC-insulated, non-sheathed, heat resisting cable for internal wiring, 300/500V, single-core and twisted twin	1 sample with rigid conductor 1 sample with flexible conductor
13	Oil resisting PVC-sheathed, screened cables, 300/500V, having between 2 and 60 cores	1 sample of approx. minimum cross section and approx. maximum number of cores. 1 sample of approx. maximum cross section and approx. minimum number of cores. (when applicable, one sample round and one sample flat)

11.7 BS 6500:2000 Amendments Nos 1, 2 & 3 Corrigenda 1&2, Clause 7

Electric cables – Flexible cords rated up to 300/500V, for use with appliances and equipment intended for domestic, office and similar environments. Flexible cords with thermosetting insulation. Flexible cords with thermoplastic insulation.

Tests, Facilities Required and Test Frequencies

Test description	Cross Reference	Freq	Avail
Absence of faults on insulation voltage test	BS 6500	man	a
Absence of faults on insulation voltage test	BS 6500	F100	a
Absence of faults on insulation spark test	BS 5099 & BS EN 62230	man	a
Application insulation & sheath	BS 6500	F100	n/a
Bending test at low temperature (Insulation)	BS EN 50363-3	F5	b
Bending test at low temperature (Sheath)	BS EN 50363-4.1	F5	b
Bending test on tinsel cords	BS 6500	F5	b
Bi-colour combinations	BS 6500	F100	a
Cable construction	BS 6500	F100	a
Colour - clarity and durability of colour	BS 6500	F100	a
Colour - sequence	BS 6500	F100	a
Compatibility	BS 6500	F25	a
Conductor construction	BS EN 60228	F100	a
Conductor resistance	BS EN 60228	F100	a
Core identification - colour	BS 6500	F100	a
Elongation test at low temperature (insulation)	BS EN 50363-3	F5	b
Elongation test at low temperature (sheath)	BS EN 50363-4.1	F5	b
Flame propagation of a single cable	BS EN 60332-1-2	F25	b
Fillers and Binders	BS 6500	F25	n/a
Impact test at low temperature insulation/sheath	BS EN 50363-3./4.1	F5	b
Insulation resistance	BS 6500	F5	a
Long term resistance of insulation to dc	BS 6500	F5	b
Loss of mass (insulation)	BS EN 50363-3	F5	a
Loss of mass (sheath)	BS EN 50363-4.1	F5	a
Marking - legend	BS 6500	F100	a
Marking - durability	BS 6500	F100	a
Ovality	BS EN 60811-203	F25	a
Overall dimensions	BS EN 60811-203	F25	a
Pressure test at high temperature (Insulation)	BS EN 50363-3	F5	b

11.7 BS 6500:2000 Amendments Nos 1, 2 & 3 Corrigenda 1&2, Clause 7 - continued

Tests, Facilities Required and Test Frequencies

Test description	Cross Reference	Freq	Avail
Pressure test at high temperature (Sheath)	BS EN 50363-4.1	F5	b
Resistance to cracking (Insulation)	BS EN 50363-3	F50	a
Resistance to cracking (Sheath)	BS EN 50363-4.1	F50	a
Snatch test	BS 6500	F5	b
Tensile strength & Elongation before/after ageing in air (Insulation)	BS EN 50363-3	F25	a
Tensile strength & Elongation before/after ageing in air (Sheath)	BS EN 50363-4.1	F25	a
Thermal stability (insulation / sheath)	BS EN 50363-3/4.1	F5	a
Thickness of insulation	BS EN 60811-201	F100	a
Thickness of sheath	BS EN 60811-202	F100	a
Two pulley flexing test	BS 6500	F5	b
Voltage test on complete cable - sheathed	BS 6500	F25	a
Voltage test on cores	BS 6500	F5	a

This is a full list of tests covering the requirements of all applicable Tables of the standard. Not all are necessarily required for selected Tables. Reference should be made to the standard.

For an explanation of availability and frequency of tests codes, see 11.3 and 11.4

11.7 BS 6500:2000 Amendments Nos 1, 2 & 3 Corrigenda 1&2, Clause 7 - continued

Schedule of Samples for Type Approval Submission

Table	Type of Cable	Number and size of samples
24	PVC-insulated (tinsel conductors) flexible cords, parallel twin, 300/300V	1 sample
26	Light duty PVC-insulated and sheathed flexible cord, parallel twin, circular twin, 3-core and 4-core, 300/300V	1 sample circular 1 sample flat
27	Ordinary duty PVC-insulation and sheathed flexible cord, parallel twin, circular twin	1 sample approximately minimum conductor size and approximately maximum number of cores 1 sample approximately maximum conductor size and approximately minimum number of cores
28	Light duty 90°C PVC insulated and sheathed flexible cord, parallel, twin circular twin, 3-core, 4-core and 5-core, 300/500V	1 sample round or flat approximately minimum conductor size and approximately maximum number of cores 1 sample round or flat approximately maximum conductor size and minimum number of cores
29	Ordinary duty 90°C PVC insulated and sheathed flexible cord, parallel twin, circular twin, 3-core, 4-core and 5-core 300/500V	1 sample approximately minimum conductor size and approximately maximum number of cores 1 sample approximately maximum conductor size and approximately minimum number of cores

11.9 BS 7211:1998 Amendment Nos 1 & 2

Electric Cables – Thermosetting insulated non-armoured cables for voltages up to and Including 450/750V, for electric power and lighting and and internal wiring, and having low emission of smoke and corrosive gases when affected by fire.

Tests, Facilities Required and Test Frequencies

Test description	**Requirement**		**Test method**		**Freq**	**Avail**
	Specification	**Clause**	**Specification**	**Clause**		
Absence of faults on insulation (voltage test) multicore	BS 7211	13.5	BS 7211	Annex B 5.2.3	F100	a
Absence of faults on insulation (voltage test) multicore	BS 7211	13.5	BS 7211	Annex B 5.2.3	man	a
Absence of faults on insulation (spark test) single core	BS 7211	13.5	BS EN 62230 BS 5099	Annex B 5.2.2	man	a
Application of insulation/fillers & binders/inner covering/sheath	BS 7211	6.2/8.1/9.2	Visual Exam	-	F100	n/a
Assembly of fillers and binders	BS 7211	8.1	Visual Exam	-	F25	a
Bending test at low temperature (insulation)	BS EN 50363-5	4	BS EN 60811-504	4.2	F5	b
Bending test at low temperature (sheath)	BS 7655-6.1	-	BS EN 60811-504	4.3	F5	b
Bi-colour combinations	BS 7211	8.2	BS EN 50396	5.2	F100	a
Cable construction	BS 7211	5 & T 3-7	Visual Exam	-	F100	n/a
Core Colour - clarity and durability of colour	BS 7211	7.5	BS 7211	7.5	F100	a
Compatibility	BS 7211	6.1	BS 7211	Annex D	F25	a
Conductor construction	BS 7211	5	BS EN 60228	-	F100	a
Conductor resistance	BS 7211	5	BS EN 60228	-	F100	a
Core I/D - Colour	BS 7211	7.1/7.2/7.3	Visual Exam	-	F100	n/a
Core assembly and sequence	BS 7211	7.2 & T 3-7	Visual Exam	-	F100	n/a
Corrosive & acid gas (insulation of unsheathed cables)	BS 7211	6.4	BS EN 60754-2	-	F5	b
Corrosive & acid gas (insulation of sheathed cables, fillers & binders, inner covering, sheath)	BS 7211	6.4/8.3/9.5	BS EN 60754-1	-	F5	b

11.9 BS 7211:1998 Amendment Nos 1 & 2 Continued

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Elongation at low temperature (insulation)	BS EN 50363-5	5	BS EN 60811-505	4.2	F5	b
Elongation at low temperature (sheath)	BS 7655-6.1	-	BS EN 60811-505	4.3	F5	b
Flame propagation single cable	BS 7211	14.1	BS EN 60332-1-2 BS EN 60332-2-2	Annex A Annex A	F25	b
Flame propagation on multiple cables	BS 7211	14.2	BS EN 60332-3-24	Annex B	1/yr	c
Fluorine content	BS EN 50363-5	7.3	BS EN 60684-2	-	F5	b
Hot set (insulation)	BS 7655-1.3/BS EN 50363-5	3	BS EN 60811-507	-	F5	b
Impact test at low temperature (sheath)	BS 7655-6.1	-	BS EN 60811-506	-	F5	b
Insulation resistance	BS 7211	13.4 & T3-7	Annex B	-	F5	a
Insulation resistance constant (insulation)	BS 7655-1.3	-	BS 6469-99.2	8	F5	a
Marking legend	BS 7211	10.0	Visual Exam	-	F100	a
Marking durability of printed information	BS 7211	10.5	BS 7211	10.5	F100	a
Mean overall diameter	BS 7211	11.2 &T3-7	BS EN 60811-203	-	F25	a
Ovality	BS 7211	11.3	BS EN 60811-203	-	F25	a
Ozone resistance (low concentration) (insulation)	BS EN 50363-5	6	BS EN 50396	8.1.3	1/YR	o
Pressure test at high temperature (sheath)	BS 7655-6.1	-	BS EN 60811-508	4.4	F5	b
Pressure test at high temperature (insulation)	BS EN 50363-5	3	BS EN 60811-508	4.3	F5	b

11.9 BS 7211:1998 Amendment Nos 1 & 2 Continued

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Tensile & elongation before & after ageing (insulation)	BS EN 50363-5/BS 7655-1.3	1.1 & 1.2	BS EN 60811-401 BS EN 60811-501	- 4.2	F25	a
Tensile & elongation before & after ageing (sheath)	BS 7655-6.1	-	BS EN 60811-401 BS EN 60811-501	- 4.3	F25	a
Thickness (insulation)	BS 7211	6.3 & T 3-7	BS EN 60811-201	-	F100	a
Thickness (inner covering)	BS 7211	8.1 & T 6	-	-	F5	a
Thickness(sheath)	BS 7211	9.3 & T 5-7	BS EN 60811-202	-	F100	a
Sheath colour	BS 7211	9.4 & T5-7	Visual Exam	-	F100	a
Shrinkage of insulation	BS 7211	6.1	BS EN 60811-502	-	F5	a
Smoke emission	BS 7211	15	BS EN 61034-2	-	F5	c
Voltage test complete cable (sheathed)	BS 7211	13.2	BS 7211	Annex B2	F25	a
Voltage test cores	BS 7211	13.3	BS 7211	Annex B3	F5	a
Water absorption (insulation)	BS 7655-1.3	-	BS EN 60811-402	-	F5	a
Water immersion (sheath)	BS 7655-6.1	-	BS 6469-99.1	14	F5	a

This is a full list of tests covering the requirements of all applicable Tables of the standard.
Not all are necessarily required for selected Tables. Reference should be made to the standard.
For an explanation of availability and frequency of tests codes, see 11.3 and 11.4

11.9 BS 7211:1998 Amendment Nos 1 & 2 – continued

Schedule Of Samples For Type Approval Submission

Table	Type of Cable	Number and size of samples
3a	Thermosetting insulated, non-sheathed, single-core cables 450/750V (rigid copper conductor)	For each rigid and flexible conductor 1 sample of approx. minimum cross section. 1 sample of approx. maximum cross section
3b	Thermosetting insulated, non-sheathed, single-core cables 450/750V (flexible copper conductor)	As Table 3a.
4a	Thermosetting insulated, non-sheathed single-core cables 300/500V (rigid copper conductor)	As Table 3a.
4b	Thermosetting insulated, non-sheathed single-core cables, 300/500V (flexible copper conductor)	As Table 3a.
5	Thermosetting insulated, single-core sheathed cables, 450/750V	1 sample approximately minimum conductor size 1 sample approximately maximum conductor size
6	Thermosetting insulated, twin, 3-core , 4-core and 5-core circular sheathed cables, 450/750V	1 sample approximately minimum conductor size and approximately maximum number of cores. 1 sample approximately maximum conductor size and approximately minimum number of cores
7	Thermosetting insulated, single-core, flat twin and flat 3-core sheathed cable with circuit protective conductor, 300/500V	1 sample approximately minimum conductor size and approximately maximum number of cores. 1 sample approximately maximum conductor size and approximately minimum number of cores

11.9 BS 7211:1998 Incorporating Amendment Nos 1 & 2 – continued

Sample requirements for smoke emission testing

Tables 3, 4 and 5	One sample of approximately maximum conductor size One sample of approximately minimum conductor size
Tables 6 and 7	1 sample approximately minimum conductor size and approximately maximum number of cores 1 sample approximately maximum conductor size and approximately minimum number of cores

Cables in which the insulation is in two layers will be accepted under this scheme, however, all tests shall be applied to the complete insulation, which must meet all the requirements of the specification.

Schedule Of Samples For Type Approval Submission (Fire, Corrosive & Acid Gas Testing and Ozone Testing)

Flame propagation of bunched wires or cables:

One size multicore cable diameter <=15mm tested in touching formation.

One size multicore cable diameter between 26mm and 40mm in spaced formation.

Corrosive and acid gas emission testing: One sample of each of the relevant cable components.

Ozone resistance testing: One sample is required.

11.10 BS EN 60702-1:2002 + Amendment A1:2015

Mineral insulated cables and their terminations with a rated voltage not exceeding 750V.

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Emission of acidic and corrosive gases	BS EN 60702-1	12.5	IEC 60754-2	-	F5	b
Bending test	BS EN 60702-1	13.6	BS EN 60702-1	13.6	F5	b
Cable construction	BS EN 60702-1	14.3/15.3	BS EN 60702-1	-	F100	a
Conductor resistance	BS EN 60702-1	5	IEC 60228	-	F100	a
Copper sheath resistance	BS EN 60702-1	13.3	BS EN 60702-1	13.3	F5	a
Copper sheath thickness	BS EN 60702-1	7.2	BS EN 60702-1	13.5	F5	a
Diameter and ovality over copper sheath	BS EN 60702-1	11.6	BS EN 60702-1	11.6	F100	a
Fire resistance	BS EN 60702-1	13.8	IEC 60331-1 & IEC 60331-2	-	F5	a
Flame retardance test	BS EN 60702-1	12.4	BS EN 60332-1-2	-	F25	b
Flattening test	BS EN 60702-1	13.7	BS EN 60702-1	13.7	F5	b
Heat shock test of outer covering	BS EN 60702-1	8.2.2	IEC 60811-509	4.4	F50	a
Insulation resistance	BS EN 60702-1	11.3	BS EN 60702-1	11.3	F100	a
Insulation thickness	BS EN 60702-1	6.2	BS EN 60702-1	13.4	F5	a
Integrity of insulation and copper sheath	BS EN 60702-1	11.4	BS EN 60702-1	11.4	F100	a
Low temperature impact of outer covering	BS EN 60702-1	8.2.1	IEC 60811-506	-	F5	b
Marking legend	BS EN 60702-1	9	IEC 60227-1	-	F100	a

11.10 BS EN 60702-1:2002 + Amendment A1:2015 Continued

Mineral insulated cables and their terminations with a rated voltage not exceeding 750V.

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Smoke emission of halogen free covering	BS EN 60702-1	12.6	IEC 61034-2	-	F5	c
Spark test on outer covering	BS EN 60702-1	11.5	BS EN 60702-1	11.5	Man	a
Thickness of outer covering	BS EN 60702-1	8.4	IEC 60811-202	-	F25	a
Voltage test on complete cable (15 minutes)	BS EN 60702-1	12.2	BS EN 60702-1	12.2	F5	a
Voltage test without outer covering (1 minute)	BS EN 60702-1	13.2	BS EN 60702-1	13.2	F25	a

This is a full list of tests covering the requirements of all applicable Tables of the standard. Not all are necessarily required for selected Tables. Reference should be made to the standard.

For an explanation of availability and frequency of tests codes, see 11.3 and 11.4

Schedule of Samples for Type Approval Submission

Type of cable	Number and size of samples
500V cable (light duty grade)	one sample of approximately maximum conductor size and minimum number of cores one sample of approximately minimum conductor size and maximum number of cores
750V cable (heavy duty grade)	one sample of approximately maximum conductor size and minimum number of cores one sample of approximately minimum conductor size and maximum number of cores

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11.13 BS 7919:2001 + Amendments 1, 2 & 3 + Corrigendum 1; Clause 7

Electric cables – Flexible cables rated up to 450/750V, for use with appliances and equipment intended for industrial and similar environments. Flexible cables with thermoplastic insulation.

Tests, Facilities Required and Test Frequencies

Test description	Cross Reference	Freq	Avail
Absence of faults in insulation (spark test)	BS 7919	man	a
Absence of faults in insulation (voltage test)	BS 7919	man	a
Absence of faults in insulation (voltage test)	BS 7919	F100	a
Application of insulation and sheath	BS 7919	F25	n/a
Bending test at low temperature (insulation)	BS EN 50363-3	F5	b
Bending test at low temperature (sheath)	BS EN 50363-4.1/BS 7655-4.2	F5	b
Bi-colour combinations	BS 7919	F100	a
Cable construction	BS 7919	F100	a
Colour - clarity and durability of colours	BS 7919	F100	a
Colour - sequence	BS 7919	F100	a
Compatibility	BS EN 60811-401	F25	a
Conductor construction	BS EN 60228	F100	a
Conductor resistance	BS EN 60228	F100	a
Core identification - colour/number	BS 7919	F100	a
Elongation test at low temperature (insulation)	BS EN 50363-3	F5	b
Elongation test at low temperature (sheath)	BS EN 50363-4.1/BS 7655-4.2	F5	b
Fillers and Binders	BS 7919	F25	n/a
Flame propagation of a single cable	BS EN 60332-1-2	F25	b
Flexing test two pulley	BS 7919	F5	b
Impact test at low temperature (insulation)	BS EN 50363-3	F5	b
Impact test at low temperature (sheath)	BS EN 50363-4.1/BS 7655-4.2	F5	b
Insulation resistance test	BS EN 50363-3	F5	a
Long term resistance of insulation to dc	BS 7919	F5	b
Loss of mass (insulation)	BS EN 50363-3	F5	a
Loss of mass (sheath)	BS EN 50363-4.1/BS 7655-4.2	F5	a
Marking – durability	BS 7919	F100	a
Mean overall dimensions	BS EN 60811-203	F25	a
Mineral oil immersion	BS EN 50363-4.1	F5	b
Minimum thermal stability (insulation)	BS EN 50363-3	F5	a
Minimum thermal stability (sheath)	BS EN 50363-4-1	F5	a
Ovality	BS EN 60811-203	F25	a

11.13 BS 7919:2001 + Amendments 1, 2 & 3 + Corrigendum 1; Clause 7 – Cont'd

Tests, Facilities Required and Test Frequencies - Continued

Test description	Cross Reference	Freq	Avail
Pressure test at high temperature (Insulation)	BS EN 50363-3	F5	B
Pressure test at high temperature (Sheath)	BS EN 50363-4.1/BS 7655-4.2	F5	b
Resistance to Cracking (Insulation)	BS EN 50363-3	F50	a
Resistance to Cracking (Sheath)	BS EN 50363-4.1/BS 7655-4.2	F50	a
Tensile Strength & Elongation before/after ageing in air (Insulation)	BS EN 50363-3	F25	a
Tensile Strength & Elongation before/after ageing in air (Sheath)	BS EN 50363-4.1	F25	a
Thickness of insulation	BS EN 60811-201	F100	a
Thickness of sheath	BS EN 60811-202	F100	a
Voltage test on completed cable	BS 7919	F25	a
Voltage test on cores	BS 7919	F5	a

The table above is a full list of tests covering the requirements of all applicable Tables of the standard. Not all are necessarily required for selected Tables. Reference should be made to the standard.

For an explanation of availability and frequency of tests codes, see 11.3 and 11.4.

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11.13 BS 7919:2001 + Amendments 1, 2 & 3 + Corrigendum 1; Clause 7 – Cont'd

Schedule of Samples for Type Approval Submission

Table	Type of Cable	Number and size of samples
40	Ordinary duty PVC insulated and sheathed flexible cable, circular twin, 3-core, 4-core and 5-core, 300/500V	1 sample approximately minimum conductor size and approximately maximum number of cores 1 sample approximately maximum conductor size and approximately minimum number of cores (when applicable, one sample round and one sample flat)
41	Ordinary duty 90°C PVC insulated and sheathed flexible cable circular twin, 3-core, 4-core and 5-core, 300/500V	1 sample approximately minimum conductor size and approximately maximum number of cores 1 sample approximately maximum conductor size and approximately minimum number of cores (when applicable, one sample round and one sample flat)
42	Ordinary duty PVC insulated and oil resisting PVC sheathed flexible cable, circular twin, 3-core, 4-core and 5-core, 300/500V	1 sample approximately minimum conductor size and approximately maximum number of cores 1 sample approximately maximum conductor size and approximately minimum number of cores
43	Ordinary duty PVC insulated and oil resisting PVC sheathed flexible cable, 6-core, 7-core, 12-core, 18-core, 27-core, 36-core, 48-core and 60-core, 300/500V	1 sample approximately minimum conductor size and approximately maximum number of cores. 1 sample approximately maximum conductor size and approximately minimum number of cores.
44	Ordinary duty low temperature PVC insulated and sheathed flexible cable, parallel twin, circular twin, 3-core, 4-core and 5-core, 300/500	1 sample approximately minimum conductor size and approximately maximum number of cores 1 sample approximately maximum conductor size and approximately minimum number of cores

11.16 BS EN 50525-2-11:2011 (Formerly BS 6500:2000 Tables 26-29 & BS 7919:2001 Tables 40 & 41)

Electric Cables – Low Voltage energy cables of rated voltages up to and including 450/750V (Uo/U)
Part 2-11: Cables for general applications – Flexible cables with thermoplastic PVC insulation.

Tests, Facilities Required and Test Frequencies

Test description	**Requirement**		**Test method**		**Freq**	**Avail**
	Specification	**Clause**	**Specification**	**Clause**		
Absence of faults on insulation (voltage test)	BS EN 50525-1	Table 1,6.2	BS EN 50395	10.3	F100	a
Absence of faults on insulation (voltage test)	BS EN 50525-1	Table 1,6.2	BS EN 50395	10.3	man	a
Absence of faults on insulation (spark test)	BS EN 50525-1	Table 1,6.1	BS EN 50395	10.2	man	a
Application of insulation	BS EN 50525-1	5.3.2	Visual Exam	-	F100	n/a
Application of sheath	BS EN 50525-1	5.7.2	Visual Exam	-	F100	n/a
Application of sheath colour	BS EN 50525-1	5.7.4	Visual Exam	-	F25	n/a
Bending test at low temperature (insulation)	BS EN 50363-3	5	BS EN 60811-504	4.2	F5	b
Bending test at low temperature (sheath)	BS EN 50363-4.1	5	BS EN 60811-504	4.3	F5	b
Bi-colour combinations	BS EN 50525-1	5.4.4	BS EN 50396	5.2	F100	a
Cable construction	BS EN 50525-1 BS EN 50525-2-11	5.2.4 4.1.1.4 4.2.1.4 5.1.1.4 5.2.1.4	BS EN 60228 Visual Exam	-	F100	a
Core Colour - clarity and durability of colour	BS EN 50525-1	5.4.1	BS EN 50396	5.1	F100	a
Core colour sequence	BS EN 50525-1	5.4.3.1	HD 308	Table 1 & 2	F100	a

11.16 BS EN 50525-2-11:2011 (Formerly BS 6500:2000 Tables 26-29 & BS 7919:2001 Tables 40 & 41) Continued

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Compatibility	BS EN 50525-2-11	Annex C	BS EN 60811-401	-	F25	a
Conductor construction	BS EN 50525-1	5.2.4	BS EN 60228	-	F100	a
Conductor resistance	BS EN 50525-1	5.2.5	BS EN 50395	5	F100	a
Elongation at low temperature (insulation)	BS EN 50363-3	6	BS EN 60811-505	4.2	F5	b
Elongation at low temperature (sheath)	BS EN 50363-4.1	6	BS EN 60811-505	4.3	F5	b
Flexing test two pulley	BS EN 50525-2-11	Annex A1	BS EN 50396	6.2	F5	b
Fillers	BS EN 50525-1	5.6.2	Visual Exam	-	F100	n/a
Flame propagation single cable	BS EN 60332-1-2	Annex A	BS EN 60332-1-2	-	F25	b
Heat shock (insulation)	BS EN 50363-3	3	BS EN 60811-509	4.3	F50	a
Heat shock (sheath)	BS EN 50363-4.1	3	BS EN 60811-509	4.4	F50	a
Impact test at low temperature -5ºC complete cable	BS EN 50525-1	Annex A1	BS EN 60811-506	-	F5	b
Insulation resistance	BS EN 50525-2-11	Annex B1/B2	BS EN 50395	8.1	F5	a
Long term resistance of insulation to d.c.	BS EN 50525-1	Table 1,5.0	BS EN 50395	9	F5	b
Loss of mass (insulation)	BS EN 50363-3	2	BS EN 60811-409	4	F5	a
Loss of mass (sheath)	BS EN 50363-4.1	2	BS EN 60811-409	6	F5	a

11.16 BS EN 50525-2-11:2011 (Formerly BS 6500:2000 Tables 26-29 & BS 7919:2001 Tables 40 & 41) Continued

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Marking legend	BS EN 50525-2-11	4.1.1.6 4.2.1.6 5.1.1.6 5.2.1.6 5.3.1.7	BS EN 50525-1	6	F100	a
Marking legibility/durability	BS EN 50525-1	6.6.1/6.6.2	BS EN 50396	5.1	F100	a
Mean overall diameter/ovality	BS EN 50525-2-11	Annex B1/B2	BS EN 50396	4.4	F25	a
Mechanical strength of strain bearing member	BS EN 50525-2-11	Annex A1	EN ISO 6892-1 & BS EN 50525-2-11	- Table A1e	F5	b
Pressure test at high temperature (insulation)	BS EN 50363-3	4	BS EN 60811-508	4.3	F5	b
Pressure test at high temperature (sheath)	BS EN 50363-4-1	4	BS EN 60811-508	4.4	F5	b
Tensile & elongation before & after ageing (insulation)	BS EN 50363-3	1.1 & 1.2	BS EN 60811-401 BS EN 60811-501	- 4.2	F25	a
Tensile & elongation before & after ageing (sheath)	BS EN 50363-4-1	1.1 & 1.2	BS EN 60811-401 BS EN 60811-501	- 4.3	F25	a
Thermal stability (insulation)	BS EN 50363-3	7	BS EN 60811-405	-	F5	a
Thermal stability (sheath)	BS EN 50363-4-1	7	BS EN 60811-405	-	F5	a
Thickness (insulation & sheath)	BS EN 50525-2-11	Annex B1/B2	BS EN 50396	4.1/4.2/4.3	F100	a
Voltage test complete cable (sheathed)	BS EN 50525-1	Table 1,2.0	BS EN 50395	6	F25	a
Voltage test cores	BS EN 50525-1	Table 1,3.0	BS EN 50395	7	F5	a

This is a full list of tests covering the requirements of all applicable Tables of the standard.
Not all are necessarily required for selected Tables. Reference should be made to the standard.
For an explanation of availability and frequency of tests codes, see 11.3 and 11.4.

11.16 BS EN 50525-2-11:2011 (Formerly BS 6500:2000 Tables 26-29 & BS 7919:2001 Tables 40 & 41) Continued

Schedule of Samples for Type Approval Submission

Clause	Type of Cable	Number and size of samples
4.1 H03VV-F H03VVH2-F	General Purpose Light duty PVC- insulated and sheathed flexible cord, parallel twin, circular twin, 3 core and 4 core 300/300V	1 sample circular 1 sample flat
4.2 H05VV-F H05VVH2-F	General Purpose Ordinary duty PVC-insulated and sheathed flexible cable, flat twin, circular twin, 3 core, 4 core and 5 core 300/500V	1 sample approximately minimum conductor size and approximately maximum number of cores. 1 sample approximately maximum conductor size and approximately minimum number of cores. (when applicable, one sample round and one sample flat)
5.1 H03V2V2-F H03V2V2H2-F	Heat Resistant 90ºC Light duty PVC- insulated and sheathed flexible cord, parallel twin, circular twin, 3 core and 4 core 300/300V	1 sample round or flat approximately minimum conductor size and approximately maximum number of cores. 1 sample round or flat approximately maximum conductor size and approximately minimum number of cores.

11.16 BS EN 50525-2-11:2011 (Formerly BS 6500:2000 Tables 26-29 & BS 7919:2001 Tables 40 & 41) Continued

Schedule of Samples for Type Approval Submission

Clause	Type of Cable	Number and size of samples
5.2 H05V2V2-F H05V2V2H2-F	Heat Resistant 90ºC Ordinary duty PVC-insulated and sheathed flexible cable, circular twin, 3 core, 4 core, 5 core and flat 2 core 300/500V	1 sample approximately minimum conductor size and approximately maximum number of cores. 1 sample approximately maximum conductor size and approximately minimum number of cores. (when applicable, one sample round and one sample flat)
5.3 H05V2V2D3-F	Heat Resistant 90ºC Ordinary duty with strain-bearing member, PVC-insulated and sheathed flexible cable, 2 core, 3 core and 4 core, 300/500V	1 sample minimum number of cores. 1 sample maximum number of cores

11.17 BS EN 50525-2-12:2011 (Formerly HD21.10 S2:2011)

Electric Cables – Low Voltage energy cables of rated voltages up to and including 450/750V (Uo/U)
Part 2-12: Cables with thermoplastic PVC insulation for extensible leads.

Tests, Facilities Required and Test Frequencies

Test description	**Requirement**		**Test method**		**Freq**	**Avail**
	Specification	**Clause**	**Specification**	**Clause**		
Absence of faults on insulation (voltage test)	BS EN 50525-1	Table 1,6.2	BS EN 50395	10.3	F100	a
Absence of faults on insulation (voltage test)	BS EN 50525-1	Table 1,6.2	BS EN 50395	10.3	man	a
Absence of faults on insulation (spark test)	BS EN 50525-1	Table 1,6.1	BS EN 50395	10.2	man	a
Application of insulation	BS EN 50525-1	5.3.2	Visual Exam	-	F100	n/a
Application of sheath	BS EN 50525-1	5.7.2	Visual Exam	-	F100	n/a
Application of sheath colour	BS EN 50525-1	5.7.4	Visual Exam	-	F25	n/a
Bending test at low temperature (insulation)	BS EN 50363-3	5	BS EN 60811-504	4.2	F5	b
Bending test at low temperature (sheath)	BS EN 50363-4.1	5	BS EN 60811-504	4.3	F5	b
Bi-colour combinations	BS EN 50525-1	5.4.4	BS EN 50396	5.2	F100	a
Cable construction	BS EN 50525-1 BS EN 50525-2-12	5.2.4 4.1.1 4.2.1	BS EN 60228 Visual Exam	-	F100	a
Core Colour - clarity and durability of colour	BS EN 50525-1	5.4.1	BS EN 50396	5.1	F100	a
Core colour sequence	BS EN 50525-1	5.4.3.1	HD 308	Table 1 & 2	F100	a

11.17 BS EN 50525-2-12:2011 (Formerly HD21.10 S2:2011) Continued

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Compatibility	BS EN 50525-2-12	Annex E	BS EN 60811-401	-	F25	a
Conductor construction	BS EN 50525-1	5.2.4	BS EN 60228	-	F100	a
Conductor resistance	BS EN 50525-1	5.2.5	BS EN 50395	5	F100	a
Elongation at low temperature (insulation)	BS EN 50363-3	6	BS EN 60811-505	4.2	F5	b
Elongation at low temperature (sheath)	BS EN 50363-4.1	6	BS EN 60811-505	4.3	F5	b
Endurance test	BS EN 50525-2-11	Annex F	BS EN 50396	9.2	F5	a
Extension test before & after ageing	BS EN 50525-2-11	Annex F	BS EN 50396	9.1	F5	b
Flame propagation single cable	BS EN 50396	Table C1 Note c	BS EN 60332-1-2	-	F25	b
Heat shock (insulation)	BS EN 50363-3	3	BS EN 60811-509	4.3	F50	a
Heat shock (sheath)	BS EN 50363-4.1	3	BS EN 60811-509	4.4	F50	a
Impact test at low temperature -5ºC complete cable	BS EN 50525-1	Annex A1	BS EN 60811-506	-	F5	b
Insulation resistance	BS EN 50525-2-12	Annex D1/D2	BS EN 50395	8.1	F5	a
Long term resistance of insulation to d.c.	BS EN 50525-1	Table 1,5.0	BS EN 50395	9	F5	b
Loss of mass (insulation)	BS EN 50363-3	2	BS EN 60811-409	4	F5	a
Loss of mass (sheath)	BS EN 50363-4.1	2	BS EN 60811-409	6	F5	a

11.17 BS EN 50525-2-12:2011 (Formerly HD21.10 S2:2011) Continued

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Marking legend	BS EN 50525-2-12	4.1.1.6 4.2.1.6	BS EN 50525-1	6	F100	a
Marking legibility/durability	BS EN 50525-1	6.6.1/6.6.2	BS EN 50396	5.1	F100	a
Mean overall diameter/ovality	BS EN 50525-2-12	Annex D1/D2	BS EN 50396	4.4	F25	a
Pressure test at high temperature (insulation)	BS EN 50363-3	4	BS EN 60811-508	4.3	F5	b
Pressure test at high temperature (sheath)	BS EN 50363-4-1	4	BS EN 60811-508	4.4	F5	b
Tensile & elongation before & after ageing (insulation)	BS EN 50363-3	1.1 & 1.2	BS EN 60811-401 BS EN 60811-501	- 4.2	F25	a
Tensile & elongation before & after ageing (sheath)	BS EN 50363-4-1	1.1 & 1.2	BS EN 60811-401 BS EN 60811-501	- 4.3	F25	a
Thickness (insulation & sheath)	BS EN 50525-2-12	Annex D1/D2	BS EN 50396	4.1/4.2/4.3	F100	a
Voltage test complete cable (sheathed)(post-coiling)	BS EN 50525-1	Table 1,2.0	BS EN 50395	6	F25	a
Voltage test cores (pre-coiling)	BS EN 50525-1	Table 1,3.0	BS EN 50395	7	F5	a

This is a full list of tests covering the requirements of all applicable Tables of the standard.
Not all are necessarily required for selected Tables. Reference should be made to the standard.
For an explanation of availability and frequency of tests codes, see 11.3 and 11.4.

11.17 BS EN 50525-2-12:2011 (Formerly HD21.10 S2:2011) Continued

Schedule of Samples for Type Approval Submission

Clause	Type of Cable	Number and size of samples
4.1 H03VVH8-F H03VVH2H8-F	General Purpose Light duty PVC- insulated and sheathed extensible leads 300/300V	1 linear sample circular 3G 0.75mm² and 1 sample linear flat 2 x 0.5mm². For the same cables, 15 samples coiled.
4.2 H05VVH8-F H05VVH2H8-F	General Purpose Ordinary duty PVC-insulated and sheathed extensible leads, 300/500V	1 linear sample circular 3G 1.5mm² and 1 sample linear flat 2 x 0.75mm². For the same cables, 15 samples coiled.

11.18 BS EN 50525-2-21:2011 (Formerly HD22.4/HD22.10/HD22.11/HD22.12/ HD22.16)

Electric Cables – Low Voltage energy cables of rated voltages up to and including 450/750V (Uo/U)
Part 2-21: Cables for general applications – Flexible cables with cross-linked elastomeric insulation.

Tests, Facilities Required and Test Frequencies

Test description	**Requirement**		**Test method**		**Freq**	**Avail**
	Specification	**Clause**	**Specification**	**Clause**		
Absence of faults on insulation (voltage test)	BS EN 50525-1	Table 1,6.2	BS EN 50395	10.3	F100	a
Absence of faults on insulation (voltage test)	BS EN 50525-1	Table 1,6.2	BS EN 50395	10.3	man	a
Absence of faults on insulation (spark test)	BS EN 50525-1	Table 1,6.1	BS EN 50395	10.2	man	a
Application of insulation	BS EN 50525-1	5.3.2	Visual Exam	-	F100	n/a
Application of sheath	BS EN 50525-1	5.7.2	Visual Exam	-	F100	n/a
Application of sheath colour	BS EN 50525-1	5.7.4	Visual Exam	-	F25	n/a
Assembly of cores	BS EN 50525-2-21	4.4.1.4 4.2.1.4 4.3.1.4 4.4.1.4 5.1.1.4 5.2.1.4 6.1.1.4 6.2.1.4 6.3.1.4 6.4.1.4 6.5.1.4 7.1.1.4 7.2.1.4 8.1.1.4	Visual Exam	-	F100	a

11.18 BS EN 50525-2-21:2011 (Formerly HD22.4/HD22.10/HD22.11/HD22.12/ HD22.16) Continued

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Bending test at low temperature (insulation)	BS EN 50363-1	4	BS EN 60811-504	4.2	F5	b
Bending test at low temperature (sheath)	BS EN 50363-10-2 BS EN 50363-2-1	4	BS EN 60811-504	4.3	F5	b
Bi-colour combinations	BS EN 50525-1	5.4.4	BS EN 50396	5.2	F100	a
Cable construction	BS EN 50525-1 BS EN 50525-2-21	5.2.4 4.1.1 4.2.1 4.3.1 4.4.1 5.1.1 5.2.1 6.1.1 6.2.1 6.3.1 6.4.1 6.5.1 7.1.1 7.2.1 8.1	BS EN 60228 Visual Exam	-	F100	a
Carbon black content (sheath)	BS EN 50363-2-1	7	BS EN 60811-605	-	F5	b
Core Colour - clarity and durability of colour	BS EN 50525-1	5.4.1	BS EN 50396	5.1	F100	a
Core colour sequence	BS EN 50525-1	5.4.3.1	HD 308	Table 1 & 2	F100	a
Core identification	BS EN 50525-2-21	4.4.1.3 5.2.1.3 6.5.1.3	BS EN 50525-1	Annex D	F100	a
Compatibility	BS EN 50525-2-21	Annex C	BS EN 60811-401 BS EN 60811-501	4.2.3.4 4.2 & 4.3	F25	a
Conductor construction	BS EN 50525-1	5.2.4	BS EN 60228	-	F100	a
Conductor resistance	BS EN 50525-1	5.2.5	BS EN 50395	5	F100	a

11.18 BS EN 50525-2-21:2011 (Formerly HD22.4/HD22.10/HD22.11/HD22.12/ HD22.16) Continued

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Elongation at low temperature (insulation)	BS EN 50363-1	5	BS EN 60811-505	4.2	F5	b
Elongation at low temperature (sheath)	BS EN 50363-2-1 BS EN 50363-10-2	6	BS EN 60811-505	4.3	F5	b
Flexing test two pulley	BS EN 50525-1	Annex A1	BS EN 50396 BS EN 50395	6.2 7	F5	b
Fillers	BS EN 50525-1	5.6.2	Visual Exam	-	F100	n/a
Flame propagation single cable	BS EN 60332-1-2	Annex A	BS EN 60332-1-2	-	F25	b
Heat shock (sheath)	BS EN 50363-10-2	2	BS EN 60811-509	4.4	F5	a
Hot set (insulation)	BS EN 50363-1	2	BS EN 60811-507	-	F5	a
Hot set (sheath)	BS EN 50363-2-1	2	BS EN 60811-507	-	F5	a
Impact test at low temperature -25ºC complete cable	BS EN 60811-506	4.6	BS EN 60811-506	-	F5	b
Marking legibility/durability	BS EN 50525-1	6.6.1/6.6.2	BS EN 50396	5.1	F100	a
Mean overall diameter/ovality	BS EN 50525-2-21	Annex B1/B2/B3/B4	BS EN 50396	4.4	F25	a

11.18 BS EN 50525-2-21:2011 (Formerly HD22.4/HD22.10/HD22.11/HD22.12/ HD22.16) Continued

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Marking legend	BS EN 50525-2-21	4.1.1.6 4.2.1.6 4.3.1.6 4.4.1.6 5.1.1.6 5.2.1.6 6.1.1.6 6.2.1.6 6.3.1.6 6.4.1.6 6.5.1.6 7.1.1.6 7.2.1.6 8.1.6	BS EN 50525-1	6	F100	a
Oil immersion (sheath)	BS EN 50363-2-1 BS EN 50363-10-2	1.4 1.3	BS EN 60811-404	-	F5	b
Ozone resistance (low concentration) (insulation)	BS EN 50363-1	6	BS EN 50396	8.1.3	1/yr	o
Ozone resistance (low concentration) (sheath)	BS EN 50363-2-1	6	BS EN 50396	8.1.3	1/yr	o
Pressure test at high temperature (insulation)	BS EN 50363-1	3	BS EN 60811-508	4.3	F5	b
Pressure test at high temperature (sheath)	BS EN 50363-10-2	3	BS EN 60811-508	4.4	F5	b
Resistance against saponification	BS EN 50363-10-2	7	BS EN 50396	10.1	F5	b
Solderability test (plain conductors)	BS EN 50396	8.2.6	BS EN 50396	8.2	F5	b
Surface resistance (sheath)	BS EN 50525-1	Table 1,7.0	BS EN 50395	11	F5	b

11.18 BS EN 50525-2-21:2011 (Formerly HD22.4/HD22.10/HD22.11/HD22.12/ HD22.16) Continued

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Tear resistance	BS EN 50363-10-2	6	BS EN 50396	10.2	F5	b
Tensile & elongation before & after ageing (insulation)	BS EN 50363-1	1.1 & 1.2	BS EN 60811-401 BS EN 60811-501	- 4.2	F25	a
Tensile & elongation before & after ageing in air bomb (insulation)	BS EN 50363-1	1.1 & 1.3	BS EN 60811-412	-	F5	a
Tensile & elongation before & after ageing (sheath) and continued ageing	BS EN 50363-2-1 BS EN 50363-10-2	1.1 & 1.2	BS EN 60811-401 BS EN 60811-501	- 4.3	F25	a
Thickness (insulation & sheath)	BS EN 50525-2-21	Annex B1/B2/B3/B4	BS EN 50396	4.1/4.2/4.3	F100	a
Voltage test complete cable (sheathed)	BS EN 50525-1	Table 1,2.0	BS EN 50395	6	F25	a
Voltage test cores	BS EN 50525-1	Table 1,3.0	BS EN 50395	7	F5	a
Water resistance –mechanical strength on sheath	BS EN 50525-2-21	Annex E	BS EN 50525-2-21	Annex E	F5	b
Water resistance –electrical test	BS EN 50525-2-21	Annex D	BS EN 50525-2-21	Annex D	F5	b
Water resistance for TPU sheath (resistance to hydrolosis)	BS EN 50363-10-2	1.4	BS EN 50396	10.3	F5	b

This is a full list of tests covering the requirements of all applicable Tables of the standard.
Not all are necessarily required for selected Tables. Reference should be made to the standard.
For an explanation of availability and frequency of tests codes, see 11.3 and 11.4.

11.18 BS EN 50525-2-21:2011 (Formerly HD22.4/HD22.10/HD22.11/HD22.12/ HD22.16) Continued

Schedule of Samples for Type Approval Submission

Clause	Type of Cable	Number and size of samples
4.1 H05RR-F	Ordinary duty elastomeric insulated and sheathed flexible cord, circular twin, 3 core, 4 core and 5 core 300/500V	1 sample approximately minimum conductor size and approximately maximum number of cores. 1 sample approximately maximum conductor size and approximately minimum number of cores.
4.2 H05RN-F	Ordinary duty elastomeric insulated and sheathed flexible cable, circular twin, 3 core and 4 core, 300/500V	1 sample approximately minimum conductor size and approximately maximum number of cores. 1 sample approximately maximum conductor size and approximately minimum number of cores.
4.3 H07RN-F	Heavy duty elastomeric insulated and sheathed flexible cord, single core, two core, 3 core and 4 core 450/750V	1 sample approximately minimum conductor size and approximately maximum number of cores. 1 sample approximately maximum conductor size and approximately minimum number of cores.

11.18 BS EN 50525-2-21:2011 (Formerly HD22.4/HD22.10/HD22.11/HD22.12/ HD22.16) Continued

Schedule of Samples for Type Approval Submission

Clause	Type of Cable	Number and size of samples
4.4 H07RN-F	Heavy duty elastomeric insulated and sheathed flexible cable, multi-core 450/750V	1 sample approximately minimum conductor size and approximately maximum number of cores. 1 sample approximately maximum conductor size and approximately minimum number of cores.
5.1 H07RN8-F	Heavy duty water resistant, elastomeric-insulated and sheathed flexible cable, single core, 2 core, and 5 core, 450/750V	1 sample approximately minimum conductor size and approximately maximum number of cores. 1 sample approximately maximum conductor size and approximately minimum number of cores.
5.2 H07RN8-F	Heavy duty water resistant, elastomeric-insulated and sheathed flexible cable, multi-core, 450/750V	1 sample approximately minimum conductor size and approximately maximum number of cores. 1 sample approximately maximum conductor size and approximately minimum number of cores.
6.1 H05BB-F	Ordinary duty heat resistant (90°C) elastomeric insulated and sheathed cable 2 core, 3 core,4 core and 5 core 300/500V	1 sample approximately minimum conductor size and approximately maximum number of cores. 1 sample approximately maximum conductor size and approximately minimum number of cores.

11.18 BS EN 50525-2-21:2011 (Formerly HD22.4/HD22.10/HD22.11/HD22.12/ HD22.16) Continued

Schedule of Samples for Type Approval Submission

Clause	Type of Cable	Number and size of samples
6.2 H07BB-F	Heavy duty heat resistant (90°C) elastomeric insulated and sheathed flexible cable, single core, 2 core, 3 core, 4 core and 5 core 450/750V	1 sample approximately minimum conductor size and approximately maximum number of cores. 1 sample approximately maximum conductor size and approximately minimum number of cores.
6.3 H05BN4-F	Ordinary duty heat resistant (90°C) elastomeric insulated and sheathed flexible cable, 2 core and 3 core 300/500V	1 sample of any conductor size .
6.4 H07RN8-F	Heavy duty heat resistant (90°C) elastomeric insulated and sheathed flexible cable, single core, 2 core, 3 core, 4 core and 5 core 450/750V	1 sample approximately minimum conductor size and approximately maximum number of cores. 1 sample approximately maximum conductor size and approximately minimum number of cores.
6.5 H07BN4-F	Heavy duty heat resistant (90°C) elastomeric insulated and sheathed flexible cable multi-core 450/750V	1 sample approximately minimum conductor size and approximately maximum number of cores. 1 sample approximately maximum conductor size and approximately minimum number of cores.

11.18 BS EN 50525-2-21:2011 (Formerly HD22.4/HD22.10/HD22.11/HD22.12/ HD22.16) Continued

Schedule of Samples for Type Approval Submission

Clause	Type of Cable	Number and size of samples
7.1 H05BQ-F	Ordinary duty heat resistant (90°C) elastomeric insulated and TPU sheathed flexible cable, 2 core, 3 core, 4 core and 5 core 300/500V	1 sample approximately minimum conductor size and approximately maximum number of cores. 1 sample approximately maximum conductor size and approximately minimum number of cores.
7.2 H07BQ-F	Heavy duty heat resistant (90°C) elastomeric insulated and TPU sheathed flexible cable, 2 core, 3 core, 4 core and 5 core 300/500V	1 sample approximately minimum conductor size and approximately maximum number of cores. 1 sample approximately maximum conductor size and approximately minimum number of cores.
8.1 H05GG-F H05GGH2-F	Ordinary duty EVA (110°C) flexible cable, 2 core flat, 2 core, 3 core, 4 core and 5 core circular cables 300/500V	1 sample flat cable. 1 sample approximately minimum conductor size and approximately maximum number of cores. 1 sample approximately maximum conductor size and approximately minimum number of cores.

11.19 BS EN 50525-2-22:2011

Electric Cables – Low Voltage energy cables of rated voltages up to and including 450/750V (Uo/U)
Part 2-22: Cables for general applications – High flexibility braided cables with cross-linked elastomeric insulation.

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Absence of faults on insulation (voltage test)	BS EN 50525-1	Table 1,6.2	BS EN 50395	10.3	F100	a
Absence of faults on insulation (voltage test)	BS EN 50525-1	Table 1,6.2	BS EN 50395	10.3	man	a
Absence of faults on insulation (spark test)	BS EN 50525-1	Table 1,6.1	BS EN 50395	10.2	man	a
Application of insulation	BS EN 50525-1	5.3.2	Visual Exam	-	F100	n/a
Assembly of cores	BS EN 50525-2-22	4.1.5	Visual Exam	-	F100	a
Bending test at low temperature (insulation)	BS EN 50363-1	4	BS EN 60811-504	4.2	F5	b
Bi-colour combinations	BS EN 50525-1	5.4.4	BS EN 50396	5.2	F100	a
Cable construction	BS EN 50525-1 BS EN 50525-2-22	5.2.4 4.1.2	BS EN 60228 Visual Exam	-	F100	a
Core Colour - clarity and durability of colour	BS EN 50525-1	5.4.1	BS EN 50396	5.1	F100	a
Core colour sequence	BS EN 50525-1	5.4.3.1	HD 308	Table 1 & 2	F100	a
Conductor construction	BS EN 50525-1	5.2.4	BS EN 60228	-	F100	a
Conductor resistance	BS EN 50525-1 & BS EN 50525-2-22	5.2.5 4.1.1	BS EN 50395	5	F100	a
Coverage of textile braid	BS EN 50525-2-22	4.1.6	BS EN 50525-2-22	Annex C	F5	a

11.19 BS EN 50525-2-22:2011 Continued

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Elongation at low temperature (insulation)	BS EN 50363-1	5	BS EN 60811-505	4.2	F5	b
Flexing test three pulley	BS EN 50525-1	Annex A3	BS EN 50396 BS EN 50395	6.3 7	F5	b
Fillers	BS EN 50525-1 & BS EN 50525-2-22	5.6.2 4.1.4	Visual Exam	-	F100	n/a
Flame propagation single cable	BS EN 60332-1-2	Annex A	BS EN 60332-1-2	-	F25	b
Hot set (insulation)	BS EN 50363-1	2	BS EN 60811-507	-	F5	a
Kink test	BS EN 50525-1	Annex A4	BS EN 50396	6.5	F5	b
Lay direction of cores	BS EN 50525-2-22	4.1.5	Visual Exam	-	F5	a
Lay length of cores	BS EN 50525-2-22	4.1.5	BS EN 50525-2-22	4.2	F5	a
Marking legibility/durability	BS EN 50525-1	6.6.1/6.6.2	BS EN 50396	5.1	F100	a
Mean overall diameter/ovality	BS EN 50525-2-21	Annex B1/B2/B3/B4	BS EN 50396	4.4	F25	a
Marking legend	BS EN 50525-2-22	4.1.7	BS EN 50525-1	6	F100	a
Ozone resistance (low concentration) (insulation)	BS EN 50363-1	6	BS EN 50396	8.1.3	1/yr	o
Resistance to heat of textile braid	BS EN 50396	7.2.6	BS EN 50396	7.2	F5	a
Solderability test (plain conductors)	BS EN 50396	8.2.6	BS EN 50396	8.2	F5	b

11.19 BS EN 50525-2-22:2011 Continued

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Tensile & elongation before & after ageing (insulation)	BS EN 50363-1	1.1 & 1.2	BS EN 60811-401 BS EN 60811-501	- 4.2	F25	a
Tensile & elongation before & after ageing in air bomb (insulation)	BS EN 50363-1	1.1 & 1.3	BS EN 60811-412	-	F5	a
Thickness (insulation)	BS EN 50525-2-22	Annex B1	BS EN 50396	4.1	F100	a
Voltage test complete cable	BS EN 50525-1	Table 1,2.0	BS EN 50395	6	F25	a
Voltage test cores	BS EN 50525-1	Table 1,3.0	BS EN 50395	7	F5	a
Wear resistance	BS EN 50525-1	Annex A2	BS EN 50396	6.6	F5	b

This is a full list of tests covering the requirements of all applicable Tables of the standard.
Not all are necessarily required for selected Tables. Reference should be made to the standard.
For an explanation of availability and frequency of tests codes, see 11.3 and 11.4.

Schedule of Samples for Type Approval Submission

Clause	Type of Cable	Number and size of samples
4.1 H03RT-H	Ordinary duty elastomeric insulated and textile braided flexible cord, 2 core & 3 core 300/500V	1 sample

11.20 BS EN 50525-2-31:2011 (Formerly BS 6004:2000 Tables 4a, 4b, 5, 11a, 11b, 12)

Electric Cables – Low Voltage energy cables of rated voltages up to and including 450/750V (Uo/U)
Part 2-31: Cables for general applications – Single core non-sheathed cables with thermoplastic PVC insulation.

Tests, Facilities Required and Test Frequencies

Test description	**Requirement**		**Test method**		**Freq**	**Avail**
	Specification	**Clause**	**Specification**	**Clause**		
Absence of faults on insulation (spark test)	BS EN 50525-1	Table 1,6.1	BS EN 50395	10.2	man	a
Application of insulation	BS EN 50525-1	5.3.2	Visual Examination	-	F100	n/a
Bending test at low temperature (insulation)	BS EN 50363-3	5	BS EN 60811-504	4.2	F5	b
Bi-colour combinations	BS EN 50525-1	5.4.4	BS EN 50396	5.2	F100	a
Cable construction	BS EN 50525-1	5.2.4	BS EN 60228	-	F100	n/a
Core Colour - clarity and durability of colour	BS EN 50525-1	5.4.1	BS EN 50396	5.1	F100	a
Conductor construction	BS EN 50525-1	5.2.1	BS EN 60228	-	F100	a
Conductor resistance	BS EN 50525-1	5.2.5	BS EN 50395	5	F100	a
Core I/D - Colour	BS EN 50525-1	5.4.2	Visual Exam	-	F100	n/a
Elongation at low temperature (insulation)	BS EN 50363-3	6	BS EN 60811-505	4.2	F5	b
Flame propagation single cable	BS EN 60332-1-2	Annex A	BS EN 60332-1-2	-	F25	b
Heat shock (insulation)	BS EN 50363-3	3	BS EN 60811-509	4.3	F50	a
Impact test -5ºC	BS EN 50525-2-31	Annex A1	BS EN 60811-506	-	F5	b
Insulation resistance	BS EN 50525-2-31	Annex B1/B2/B3/B4	BS EN 50395	8.1	F5	a

11.20 BS EN 50525-2-31:2011 (Formerly BS 6004:2000 Tables 4a, 4b, 5, 11a, 11b, 12) Continued

Tests, Facilities Required and Test Frequencies

Test description	**Requirement**		**Test method**		**Freq**	**Avail**
	Specification	**Clause**	**Specification**	**Clause**		
Long term resistance of insulation to d.c.	BS EN 50525-1	Table 1	BS EN 50395	9	F5	b
Loss of mass (insulation)	BS EN 50363-3	2	BS EN 60811-409	4	F5	a
Marking legend	BS EN 50525-2-31	4.1.1.4 4.2.1.4 4.3.1.4 4.4.1.4 5.1.1.4 5.2.1.4 5.3.1.4 5.4.1.4	BS EN 50525-1	6	F100	a
Marking legibility/durability	BS EN 50525-1	6.6.1/6.6.2	BS EN 50396	5.1	F100	a
Overall diameter	BS EN 50525-2-31	Annex B1/B2/B3/B4	BS EN 50396	4.4.1	F25	a
Pressure test at high temperature (insulation)	BS EN 50363-3	4	BS EN 60811-508	4.3	F5	b
Tensile strength & elongation before & after ageing in air	BS EN 50363-3	1.1 &1.2	BS EN 60811-401 BS EN 60811-501	- 4.2	F25	a

11.20 BS EN 50525-2-31:2011 (Formerly BS 6004:2000 Tables 4a, 4b, 5, 11a, 11b, 12) Continued

Tests, Facilities Required and Test Frequencies

Test description	**Requirement**		**Test method**		**Freq**	**Avail**
	Specification	**Clause**	**Specification**	**Clause**		
Thermal stability (insulation)	BS EN 50363-3	7	BS EN 60811-405	-	F5	a
Thickness of insulation	BS EN 50525-2-31 BS EN 50525-1	Annex B1/B2/B3/B4 5.3.3	BS EN 50396	4.1	F100	a
Voltage test complete cable (unsheathed)	BS EN 50525-1	Table 1,2.0	BS EN 50395	6	F25	a

This is a full list of tests covering the requirements of all applicable Tables of the standard.
Not all are necessarily required for selected Tables. Reference should be made to the standard.
For an explanation of availability and frequency of tests codes, see 11.3 and 11.4.

11.20 BS EN 50525-2-31:2011 (Formerly BS 6004:2000 Tables 4a, 4b, 5, 11a, 11b, 12) Continued

Schedule Of Samples For Type Approval Submission

Clause	Type of Cable	Number and size of samples
4.1 H07V-U H07V-R	PVC insulated non-sheathed general purpose cables for fixed wiring, 450/750V, single core, (rigid conductor)	For each solid and stranded conductor 1 sample of approx. minimum cross section. 1 sample of approx. maximum cross section
4.2 H07V-K	PVC insulated non-sheathed general purpose cables for fixed wiring, 450/750V, single core, (flexible conductor)	For each flexible conductor 1 sample of approx. minimum cross section. 1 sample of approx. maximum cross section
4.3 H05V-U H05V-R	PVC insulated non-sheathed general purpose cables for internal wiring, 300/500V, single core, (rigid conductor)	For each solid and stranded conductor 1 sample of approx. minimum cross section. 1 sample of approx. maximum cross section
4.4 H05V-K	PVC insulated non-sheathed general purpose cables for internal wiring, 300/500V, single core, (flexible conductor)	For each flexible conductor 1 sample of approx. minimum cross section. 1 sample of approx. maximum cross section

11.20 BS EN 50525-2-31:2011 (Formerly BS 6004:2000 Tables 4a, 4b, 5, 11a, 11b, 12) Continued

Schedule Of Samples For Type Approval Submission

Clause	Type of Cable	Number and size of samples
5.1 H07V2-U H07V2-R	PVC insulated non-sheathed heat resistant 90ºC cables for fixed wiring, 450/750V, single core, (rigid conductor)	For each solid and stranded conductor 1 sample of approx. minimum cross section. 1 sample of approx. maximum cross section
5.2 H07V2-K	PVC insulated non-sheathed heat resistant 90ºC cables for fixed wiring, 450/750V, single core, (flexible conductor)	For each flexible conductor 1 sample of approx. minimum cross section. 1 sample of approx. maximum cross section
5.3 H05V2-U H05V2-R	PVC insulated non-sheathed heat resistant 90ºC cables for internal wiring, 300/500V, single core, (rigid conductor)	For each solid and stranded conductor 1 sample of approx. minimum cross section. 1 sample of approx. maximum cross section
5.4 H05V2-K	PVC insulated non-sheathed heat resistant 90ºC cables for internal wiring, 300/500V, single core, (flexible conductor)	For each flexible conductor 1 sample of approx. minimum cross section. 1 sample of approx. maximum cross section

11.21 BS EN 50525-2-41:2011

Electric Cables – Low Voltage energy cables of rated voltages up to and including 450/750V (Uo/U)
Part 2-41: Cables for general applications – Single core cables with cross-linked silicone rubber insulation.

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Absence of faults on insulation (voltage test)	BS EN 50525-1	Table 1,6.2	BS EN 50395	10.3	F100	a
Absence of faults on insulation (voltage test)	BS EN 50525-1	Table 1,6.2	BS EN 50395	10.3	man	a
Absence of faults on insulation (spark test)	BS EN 50525-1	Table 1,6.1	BS EN 50395	10.2	man	a
Application of insulation	BS EN 50525-1	5.3.2	Visual Exam	-	F100	n/a
Application of sheath	BS EN 50525-1	5.7.2	Visual Exam	-	F100	n/a
Application of sheath colour	BS EN 50525-1	5.7.4	Visual Exam	-	F25	n/a
Bending test at low temperature (insulation)	BS EN 50363-1	4	BS EN 60811-504	4.2	F5	b
Bending test at low temperature (sheath)	BS EN 50363-2-1	4	BS EN 60811-504	4.3	F5	b
Bi-colour combinations	BS EN 50525-1	5.4.4	BS EN 50396	5.2	F100	a
Cable construction	BS EN 50525-1 BS EN 50525-2-41	5.2.4 4.1.1 4.2.1 4.3.1 4.4.1	BS EN 60228 Visual Exam	-	F100	a
Core Colour - clarity and durability of colour	BS EN 50525-1	5.4.1	BS EN 50396	5.1	F100	a
Core identification	BS EN 50525-1	5.4.2	Visual Exam	-	F100	a
Compatibility	BS EN 50525-2-41	Annex C	BS EN 60811-401 BS EN 60811-501	4.2.3.4 4.2 & 4.3	F25	a
Conductor construction	BS EN 50525-1	5.2.4	BS EN 60228	-	F100	a
Conductor resistance	BS EN 50525-1	5.2.5	BS EN 50395	5	F100	a

11.21 BS EN 50525-2-41:2011 Continued

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Elongation at low temperature (insulation)	BS EN 50363-1	5	BS EN 60811-505	4.2	F5	b
Elongation at low temperature (sheath)	BS EN 50363-2-1	5	BS EN 60811-505	4.3	F5	b
Flame propagation single cable	BS EN 60332-1-2	Annex A	BS EN 60332-1-2	-	F25	b
Hot set (insulation)	BS EN 50363-1	2	BS EN 60811-507	-	F5	a
Hot set (sheath)	BS EN 50363-2-1	2	BS EN 60811-507	-	F5	a
Impact test at low temperature -25ºC complete cable	BS EN 60811-506	4.6	BS EN 60811-506	-	F5	b
Marking legibility/durability	BS EN 50525-1	6.6.1/6.6.2	BS EN 50396	5.1	F100	a
Mean overall diameter/ovality	BS EN 50525-2-41	Annex B1/B2/B3/B4	BS EN 50396	4.4	F25	a
Marking legend	BS EN 50525-2-41	4.1.1.4 4.2.1.4 4.3.1.5 4.4.1.5	BS EN 50525-1	6	F100	a
Outer braid	BS EN 50525-2-41	4.3.1.4	BS EN 50525-1	5.6.7	F5	a
Solderability test (plain conductors)	BS EN 50396	8.2.6	BS EN 50396	8.2	F5	b
Surface resistance (sheath)	BS EN 50525-1	Table 1,7.0	BS EN 50395	11	F5	b

11.21 BS EN 50525-2-41:2011 Continued

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Tensile & elongation before & after ageing (insulation)	BS EN 50363-1	1.1 & 1.2	BS EN 60811-401 BS EN 60811-501	- 4.2	F25	a
Tensile & elongation before & after ageing (sheath)	BS EN 50363-2-1 BS EN 50363-10-2	1.1 & 1.2	BS EN 60811-401 BS EN 60811-501	- 4.3	F25	a
Thickness (insulation & sheath)	BS EN 50525-2-41	Annex B1/B2/B3/B4	BS EN 50396	4.1/4.2/4.3	F100	a
Voltage test complete cable (sheathed)	BS EN 50525-1	Table 1,2.0	BS EN 50395	6	F25	a
Voltage test cores	BS EN 50525-1	Table 1,3.0	BS EN 50395	7	F5	a

This is a full list of tests covering the requirements of all applicable Tables of the standard.
Not all are necessarily required for selected Tables. Reference should be made to the standard.
For an explanation of availability and frequency of tests codes, see 11.3 and 11.4.

11.21 BS EN 50525-2-41:2011 Continued

Schedule of Samples for Type Approval Submission

Clause	Type of Cable	Number and size of samples
4.1 H05S-U H05S-K	Heat resistant (180°C) single core non-sheathed cable for fixed wiring 300/500V	1 sample approximately minimum conductor size, class 1. 1 sample approximately maximum conductor size, class 5.
4.2 H03S-K	Heat resistant (180°C) single core non-sheathed cable for fixed wiring 300/300V	1 sample
4.3 H05SJ-U H05SJ-K	Heat resistant (180°C) single core non-sheathed braided cable for fixed wiring 300/500V	1 sample approximately minimum conductor size, class 1. 1 sample approximately maximum conductor size, class 5.
4.4 H05SS-K	Heat resistant (180°C) single core sheathed cable for fixed wiring 300/500V	1 sample

11.22 BS EN 50525-2-42:2011

Electric Cables – Low Voltage energy cables of rated voltages up to and including 450/750V (Uo/U)
Part 2-42: Cables for general applications – Single core non-sheathed cables with cross-linked EVA insulation.

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Absence of faults on insulation (voltage test)	BS EN 50525-1	Table 1,6.2	BS EN 50395	10.3	F100	a
Absence of faults on insulation (voltage test)	BS EN 50525-1	Table 1,6.2	BS EN 50395	10.3	man	a
Absence of faults on insulation (spark test)	BS EN 50525-1	Table 1,6.1	BS EN 50395	10.2	man	a
Application of insulation	BS EN 50525-1	5.3.2	Visual Exam	-	F100	n/a
Bending test at low temperature (insulation)	BS EN 50363-1	4	BS EN 60811-504	4.2	F5	b
Bi-colour combinations	BS EN 50525-1	5.4.4	BS EN 50396	5.2	F100	a
Cable construction	BS EN 50525-1 BS EN 50525-2-42	5.2.4 4.1.1 4.2.1	BS EN 60228 Visual Exam	-	F100	a
Core Colour - clarity and durability of colour	BS EN 50525-1	5.4.1	BS EN 50396	5.1	F100	a
Core identification	BS EN 50525-1	5.4.2	Visual Exam	-	F100	a
Conductor construction	BS EN 50525-1	5.2.4	BS EN 60228	-	F100	a
Conductor resistance	BS EN 50525-1	5.2.5	BS EN 50395	5	F100	a
Elongation at low temperature (insulation)	BS EN 50363-1	5	BS EN 60811-505	4.2	F5	b
Hot set (insulation)	BS EN 50363-1	2	BS EN 60811-507	-	F5	a
Impact test at low temperature -5ºC complete cable	BS EN 60811-506	4.6	BS EN 60811-506	-	F5	b
Insulation resistance (110+/-2)ºC	BS EN 50525-1 BS EN 50525-2-42	Table 1 Table A1[c]	BS EN 50395	8.2	F5	a

11.22 BS EN 50525-2-42:2011 Continued

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Marking legibility/durability	BS EN 50525-1	6.6.1/6.6.2	BS EN 50396	5.1	F100	a
Mean overall diameter/ovality	BS EN 50525-2-42	Annex B1	BS EN 50396	4.4	F25	a
Marking legend	BS EN 50525-2-42	4.1.1.4 4.2.1.4	BS EN 50525-1	6	F100	a
Pressure test at high temperature (insulation)	BS EN 50363-1	3	BS EN 60811-508	4.3	F5	b
Tensile & elongation before & after ageing (insulation)	BS EN 50363-1	1.1 & 1.2	BS EN 60811-401 BS EN 60811-501	- 4.2	F25	a
Tensile & elongation before & after ageing in air bomb (insulation)	BS EN 50363-1	1.1 & 1.3	BS EN 60811-412	-	F5	a
Thickness insulation	BS EN 50525-2-21	Annex B1/B2/B3/B4	BS EN 50396	4.1/4.2/4.3	F100	a
Voltage test complete cable	BS EN 50525-1	Table 1,2.0	BS EN 50395	6	F25	a

This is a full list of tests covering the requirements of all applicable Tables of the standard.
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For an explanation of availability and frequency of tests codes, see 11.3 and 11.4.

11.22 BS EN 50525-2-42:2011 Continued

Schedule of Samples for Type Approval Submission

Clause	Type of Cable	Number and size of samples
4.1 H07G-U H07G-R H07G-K	Heat resistant (110°C) single core non-sheathed cables for fixed wiring 450/750V	1 sample approximately minimum conductor size class 1. 1 sample approximately mid range conductor size class 2. 1 sample approximately maximum conductor size class 5.
4.2 H05G-U H05G-K	Heat resistant (110°C) single core non-sheathed cables for internal wiring 300/500V	1 sample approximately minimum conductor size class 1. 1 sample approximately maximum conductor size class 5.

11.23 BS EN 50525-2-51:2011

Electric Cables – Low Voltage energy cables of rated voltages up to and including 450/750V (Uo/U)
Part 2-51: Cables for general applications – Oil resistant control cables with thermoplastic PVC insulation.

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Absence of faults on insulation (voltage test)	BS EN 50525-1	Table 1,6.2	BS EN 50395	10.3	F100	a
Absence of faults on insulation (voltage test)	BS EN 50525-1	Table 1,6.2	BS EN 50395	10.3	man	a
Absence of faults on insulation (spark test)	BS EN 50525-1	Table 1,6.1	BS EN 50395	10.2	man	a
Application of insulation	BS EN 50525-1	5.3.2	Visual Exam	-	F100	n/a
Application of inner sheath and sheath	BS EN 50525-1	5.7.2	Visual Exam	-	F100	n/a
Application of sheath colour	BS EN 50525-1	5.7.4	Visual Exam	-	F25	n/a
Assembly of cores	BS EN 50525-2-51	4.4.1.4 4.2.1.4	Visual Exam	-	F100	a
Bending test at low temperature (insulation)	BS EN 50363-3	5	BS EN 60811-504	4.2	F5	b
Bending test at low temperature (inner sheath & sheath)	BS EN 50363-4-1	5	BS EN 60811-504	4.3	F5	b
Bi-colour combinations	BS EN 50525-1	5.4.4	BS EN 50396	5.2	F100	a
Cable construction	BS EN 50525-1 BS EN 50525-2-51	5.2.4 4.1.1 4.2.1	BS EN 60228 Visual Exam	-	F100	a
Core Colour - clarity and durability of colour	BS EN 50525-1	5.4.1	BS EN 50396	5.1	F100	a

11.23 BS EN 50525-2-51:2011 Continued

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Core colour sequence	BS EN 50525-1	5.4.3.1	HD 308	Table 1 & 2	F100	a
Core identification	BS EN 50525-2-51	4.1.1.5 4.2.1.5	BS EN 50525-1	Annex D	F100	a
Compatibility	BS EN 50525-2-51	Annex D	BS EN 60811-401 BS EN 60811-501	4.2.3.4 4.2 & 4.3	F25	a
Conductor construction	BS EN 50525-1	5.2.4	BS EN 60228	-	F100	a
Conductor resistance	BS EN 50525-1	5.2.5	BS EN 50395	5	F100	a
Elongation at low temperature (insulation)	BS EN 50363-3	6	BS EN 60811-505	4.2	F5	b
Elongation at low temperature (sheath)	BS EN 50363-4-1	6	BS EN 60811-505	4.3	F5	b
Flexing test two pulley	BS EN 50525-1	Annex A1	BS EN 50396 BS EN 50395	6.2 7	F5	b
Fillers	BS EN 50525-1	5.6.2	Visual Exam	-	F100	n/a
Flame propagation single cable	BS EN 60332-1-2	Annex A	BS EN 60332-1-2	-	F25	b
Heat shock (insulation)	BS EN 50363-3	3	BS EN 60811-509	4.3	F5	a
Heat shock (inner sheath and sheath)	BS EN 50363-4-1	3	BS EN 60811-509	4.4	F5	a
Impact test at low temperature -5ºC complete cable	BS EN 60811-506	4.6	BS EN 60811-506	-	F5	b
Insulation resistance 70ºC	BS EN 50525-2-51	Annex B1/B2	BS EN 50395	8.1	F5	a
Long term resistance of insulation to d.c.	BS EN 50525-1	Table 1,5.0	BS EN 50395	9	F5	b

11.23 BS EN 50525-2-51:2011 Continued

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Loss of mass (insulation)	BS EN 50363-3	2	BS EN 60811-609	4	F5	a
Loss of mass (inner sheath and sheath)	BS EN 50363-4-1	2	BS EN 60811-609	6	F5	a
Marking legibility/durability	BS EN 50525-1	6.6.1/6.6.2	BS EN 50396	5.1	F100	a
Mean overall diameter/ovality	BS EN 50525-2-51	Annex B1/B2	BS EN 50396	4.4.1/4.4.2	F25	a
Marking legend	BS EN 50525-2-51	4.1.1.7 4.2.1.9	BS EN 50525-1	6	F100	a
Oil immersion (sheath)	BS EN 50363-4-1	1.3	BS EN 60811-404	-	F5	b
Pressure test at high temperature (insulation)	BS EN 50363-1	3	BS EN 60811-508	4.3	F5	b
Pressure test at high temperature (inner sheath and sheath)	BS EN 50363-4-1	3	BS EN 60811-508	4.4	F5	b
Screen wire diameter	BS EN 50525-1 BS EN 50525-2-51	5.6.6 Annex C2	-	-	F5	a
Tensile & elongation before & after ageing (insulation)	BS EN 50363-3	1.1 & 1.2	BS EN 60811-401 BS EN 60811-501	- 4.2	F25	a
Tensile & elongation before & after ageing (sheath)	BS EN 50363-4-1	1.1 & 1.2	BS EN 60811-401 BS EN 60811-501	- 4.3	F25	a

11.23 BS EN 50525-2-51:2011 Continued

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Transfer impedance	BS EN 50525-2-51	4.2.2	BS EN 50395 BS EN 50289-1-6	12 6	F5	b
Thickness (insulation, inner sheath & sheath)	BS EN 50525-2-51	Annex B1/B2/C1/C3	BS EN 50396	4.1/4.2	F100	a
Voltage test complete cable (sheathed)	BS EN 50525-1	Table 1,2.0	BS EN 50395	6	F25	a
Voltage test cores	BS EN 50525-1	Table 1,3.0	BS EN 50395	7	F5	a

This is a full list of tests covering the requirements of all applicable Tables of the standard.
Not all are necessarily required for selected Tables. Reference should be made to the standard.
For an explanation of availability and frequency of tests codes, see 11.3 and 11.4.

11.23 BS EN 50525-2-51:2011 Continued

Schedule of Samples for Type Approval Submission

Clause	Type of Cable	Number and size of samples
4.1 H05VV5-F	PVC insulated control cables, 2 to 60 cores, 300/500V	1 sample approximately minimum conductor size and approximately maximum number of cores. 1 sample approximately maximum conductor size and approximately minimum number of cores.
4.2 H05VVC4V5-K	PVC insulated screened control cables, 2 to 60 cores, 300/500V	1 sample approximately minimum conductor size and approximately maximum number of cores. 1 sample approximately maximum conductor size and approximately minimum number of cores.

11.24 BS EN 50525-2-71:2011

Electric Cables – Low Voltage energy cables of rated voltages up to and including 450/750V (Uo/U)
Part 2-71: Cables for general applications – Flat tinsel cables (cords) with thermoplastic PVC insulation.

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Absence of faults on insulation (voltage test)	BS EN 50525-1	Table 1,6.2	BS EN 50395	10.3	F100	a
Absence of faults on insulation (voltage test)	BS EN 50525-1	Table 1,6.2	BS EN 50395	10.3	man	a
Absence of faults on insulation (spark test)	BS EN 50525-1	Table 1,6.1	BS EN 50395	10.2	man	a
Application of insulation	BS EN 50525-1	5.3.2	Visual Exam	-	F100	n/a
Bending test	BS EN 50525-2-71	Annex C	BS EN 50396	6.4	F25	b
Bending test at low temperature (insulation)	BS EN 50363-3	5	BS EN 60811-504	4.2	F5	b
Cable construction	BS EN 50525-1 BS EN 50525-2-71	5.2.4 4.1	BS EN 60228 Visual Exam	-	F100	a
Core Colour - clarity and durability of colour	BS EN 50525-1	5.4.1	BS EN 50396	5.1	F100	a
Conductor construction	BS EN 50525-1	5.2.4	BS EN 60228	-	F100	a
Conductor resistance	BS EN 50525-2-71	Annex B1	BS EN 50395	5	F100	a
Elongation at low temperature (insulation)	BS EN 50363-3	6	BS EN 60811-505	4.2	F5	b
Flame propagation single cable	BS EN 60332-1-2	Annex A	BS EN 60332-1-2	-	F25	b

11.24 BS EN 50525-2-71:2011 Continued

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Heat shock (insulation)	BS EN 50363-3	3	BS EN 60811-509	4.3	F5	a
Impact test at low temperature -5ºC complete cable	BS EN 60811-506	4.6	BS EN 60811-506	-	F5	b
Insulation resistance at 70ºC	BS EN 50525-2-71	Annex B1	BS EN 50395	8.1	F5	a
Long term resistance to d.c.	BS EN 50525-1	Table 1,5.0	BS EN 50395	9	F5	b
Loss of mass (insulation)	BS EN 50363-3	2	BS EN 60811-609	4	F5	a
Marking legibility/durability	BS EN 50525-1	6.6.1/6.6.2	BS EN 50396	5.1	F100	a
Mean overall diameter	BS EN 50525-2-71	Annex B1	BS EN 50396	4.4	F25	a
Marking legend	BS EN 50525-2-71	4.1.3	BS EN 50525-1	6	F100	a
Pressure test at high temperature (insulation)	BS EN 50363-3	4	BS EN 60811-508	4.3	F5	b
Snatch test	BS EN 50525-2-71	Annex C2	BS EN 50396	6.7	F5	b
Tensile & elongation before & after ageing (insulation)	BS EN 50363-3	1.1 & 1.2	BS EN 60811-401 BS EN 60811-501	- 4.2	F25	a
Thickness (insulation)	BS EN 50525-2-71	Annex B1	BS EN 50396	4.1	F100	a
Voltage test complete cable	BS EN 50525-1	Table 1,2.0	BS EN 50395	6	F25	a

This is a full list of tests covering the requirements of all applicable Tables of the standard.
Not all are necessarily required for selected Tables. Reference should be made to the standard.
For an explanation of availability and frequency of tests codes, see 11.3 and 11.4.

11.24 BS EN 50525-2-71:2011 Continued

Schedule of Samples for Type Approval Submission

Clause	Type of Cable	Number and size of samples
4.1 H03VH-Y	Flexible tinsel 2 core cable 300/300V	1 sample

11.25 BS EN 50525-2-72:2011

Electric Cables – Low Voltage energy cables of rated voltages up to and including 450/750V (Uo/U)
Part 2-72: Cables for general applications – Fat divisible cables (cords) with thermoplastic PVC insulation.

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Absence of faults on insulation (voltage test)	BS EN 50525-1	Table 1,6.2	BS EN 50395	10.3	F100	a
Absence of faults on insulation (voltage test)	BS EN 50525-1	Table 1,6.2	BS EN 50395	10.3	man	a
Absence of faults on insulation (spark test)	BS EN 50525-1	Table 1,6.1	BS EN 50395	10.2	man	a
Application of insulation	BS EN 50525-1	5.3.2	Visual Exam	-	F100	n/a
Bending test at low temperature (insulation)	BS EN 50363-3	5	BS EN 60811-504	4.2	F5	b
Cable construction	BS EN 50525-1 BS EN 50525-2-72	5.2.4 4.1	BS EN 60228 Visual Exam	-	F100	a
Core Colour - clarity and durability of colour	BS EN 50525-1	5.4.1	BS EN 50396	5.1	F100	a
Core identification	BS EN 50525-2-72	4.1.3	Visual Exam	-	F100	a
Conductor construction	BS EN 50525-1	5.2.4	BS EN 60228	-	F100	a
Conductor resistance	BS EN 50525-1	5.2.5	BS EN 50395	5	F100	a
Elongation at low temperature (insulation)	BS EN 50363-3	6	BS EN 60811-505	4.2	F5	b
Flexing test two pulley	BS EN 50525-1	Annex A1	BS EN 50396 BS EN 50395	6.2 7	F5	b
Flame propagation single cable	BS EN 60332-1-2	Annex A	BS EN 60332-1-2	-	F25	b

11.25 BS EN 50525-2-72:2011 Continued

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Heat shock (insulation)	BS EN 50363-3	3	BS EN 60811-509	4.3	F5	a
Impact test at low temperature -5ºC complete cable	BS EN 60811-506	4.6	BS EN 60811-506	-	F5	b
Insulation resistance at 70ºC	BS EN 50525-2-72	4.2 & Annex B1	BS EN 50395	8.1	F5	a
Long term resistance to d.c.	BS EN 50525-1	Table 1, 5.0	BS EN 50395 & BS EN 50525-2-72 Table A1[d]	9	F5	b
Loss of mass (insulation)	BS EN 50363-3	2	BS EN 60811-609	4	F5	a
Marking legibility/durability	BS EN 50525-1	6.6.1/6.6.2	BS EN 50396	5.1	F100	a
Mean overall diameter	BS EN 50525-2-72	Annex B1	BS EN 50396	4.4	F25	a
Marking legend	BS EN 50525-2-72	4.1.4	BS EN 50525-1	6	F100	a
Pressure test at high temperature (insulation)	BS EN 50363-3	4	BS EN 60811-508	4.3	F5	b
Separation of cores	BS EN 50525-1 BS 50525-2-72	Annex A5 4.2	BS EN 50396	6.8	F5	b

11.25 BS EN 50525-2-72:2011 Continued

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Tensile & elongation before & after ageing (insulation)	BS EN 50363-1	1.1 & 1.2	BS EN 60811-401 BS EN 60811-501	- 4.2	F25	a
Thickness (insulation inner & outer layer & complete insulation)	BS EN 50525-2-72	4.2 & Annex B1	BS EN 50396	4.1	F100	a
Voltage test complete cable	BS EN 50525-1	Table 1,2.0	BS EN 50395 BS EN 50525-2-72	6 Table A1[c]	F25	a

This is a full list of tests covering the requirements of all applicable Tables of the standard.
Not all are necessarily required for selected Tables. Reference should be made to the standard.
For an explanation of availability and frequency of tests codes, see 11.3 and 11.4.

Schedule of Samples for Type Approval Submission

Clause	Type of Cable	Number and size of samples
4.1 H03VH7H-F	Flat divisible 2 core cables 300/300V	1 sample

11.26 BS EN 50525-2-81:2011

Electric Cables – Low Voltage energy cables of rated voltages up to and including 450/750V (Uo/U)
Part 2-81: Cables for general applications – Cables with cross-linked elastomeric covering for arc welding

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Absence of faults on insulation (voltage test)	BS EN 50525-1	Table 1,6.2	BS EN 50395	10.3	F100	a
Absence of faults on insulation (voltage test)	BS EN 50525-1	Table 1,6.2	BS EN 50395	10.3	man	a
Absence of faults on insulation (spark test)	BS EN 50525-1	Table 1,6.1	BS EN 50395	10.2	man	a
Application of insulation	BS EN 50525-1	5.3.2	Visual Exam	-	F100	n/a
Bending test at low temperature (covering)	BS EN 50363-1 BS EN 50363-2-2	4 3	BS EN 60811-504 BS EN 50525-1 BS EN 50525-2-81	4.2 5.7.2.3c 4.2.2	F5	b
Cable construction	BS EN 50525-1 BS EN 50525-2-81	5.2.4 4.1	BS EN 60228 Visual Exam	-	F100	a
Conductor construction	BS EN 50525-1	5.2.4	BS EN 60228	-	F100	a
Conductor resistance	BS EN 50525-1	5.2.5	BS EN 50395	5	F100	a
Elongation at low temperature (covering)	BS EN 50363-1 BS EN 50363-2-2	5 4	BS EN 60811-505 BS EN 50525-1 BS EN 50525-2-81	4.2 5.7.2.3c 4.2.2	F5	b
Flame propagation single cable	BS EN 60332-1-2	Annex A	BS EN 60332-1-2	-	F25	b

11.26 BS EN 50525-2-81:2011 Continued

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Hot set (covering inner & outer layer)	BS EN 50363-1 BS EN 50363-2-2	2 2	BS EN 60811-507 BS EN 50525-1 BS EN 50525-2-81	- 5.7.2.3c 4.2.2	F5	a
Impact test at low temperature -20ºC complete cable	BS EN 60811-506	4.6	BS EN 60811-506	-	F5	b
Marking legibility/durability	BS EN 50525-1	6.6.1/6.6.2	BS EN 50396	5.1	F100	a
Mean overall diameter	BS EN 50525-2-81	Annex B1/B2	BS EN 50396	4.4	F25	a
Maximum diameter of wires in conductor	BS EN 50525-2-81	Annex B1/B2	-	-	F5	a
Marking legend	BS EN 50525-2-81	4.1.4	BS EN 50525-1	6	F100	a
Oil immersion (covering)	BS EN 50363-2-2	1.3	BS EN 60811-404 BS EN 50525-1 BS EN 50525-2-81	- 5.7.2.3c 4.2.2	F5	b
Ozone resistance (low concentration) (covering)	BS EN 50363-1	6	BS EN 50396 BS EN 50525-1 BS EN 50525-2-81	8.1.3 5.7.2.3c 4.2.2	1/yr	o
Static flexibility	BS EN 50525-2-81	Annex D	BS EN 50395	6.1	F5	b

11.26 BS EN 50525-2-81:2011 Continued

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Tensile & elongation before & after ageing (covering)	BS EN 50363-1 BS EN 50363-2-2	1.1 & 1.2	BS EN 60811-401 BS EN 60811-501 BS EN 50525-1 BS EN 50525-2-81	- 4.2 5.7.2.3c 4.2.2	F25	a
Tensile & elongation before & after ageing in air bomb (covering)	BS EN 50363-1 BS EN 50363-2-2	1.1 & 1.3	BS EN 60811-412 BS EN 50525-1 BS EN 50525-2-81	- 5.7.2.3c 4.2.2	F5	a
Test for resistance to hot particles	BS EN 50396	7.1.4	BS EN 50396	7.1	F5	b
Thickness (covering)	BS EN 50525-2-81	4.1.3 & Annex B1/B2	BS EN 50396	4.1/4.2/4.3	F100	a
Voltage test complete cable	BS EN 50525-2-81	Annex C	BS EN 50395 BS EN 50525-2-81	6 Annex C	F25	a

This is a full list of tests covering the requirements of all applicable Tables of the standard.
Not all are necessarily required for selected Tables. Reference should be made to the standard.
For an explanation of availability and frequency of tests codes, see 11.3 and 11.4.

11.26 BS EN 50525-2-81:2011 Continued

Schedule of Samples for Type Approval Submission

Clause	Type of Cable	Number and size of samples
4.1 H01N2-D H01N2-E	Arc welding single core covered normal flexibility and extra high flexibility cables 100/100V	1 sample normal flexibility of approximately minimum cross section. 1 sample extra high flexibility of approximately maximum cross section.

11.27 BS EN 50525-2-82:2011

Electric Cables – Low Voltage energy cables of rated voltages up to and including 450/750V (Uo/U)
Part 2-82: Cables for general applications – Cables with cross-linked elastomeric insulation for decorative chains.

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Absence of faults on insulation (voltage test)	BS EN 50525-1	Table 1,6.2	BS EN 50395	10.3	F100	a
Absence of faults on insulation (voltage test)	BS EN 50525-1	Table 1,6.2	BS EN 50395	10.3	man	a
Absence of faults on insulation (spark test)	BS EN 50525-1	Table 1,6.1	BS EN 50395	10.2	man	a
Application of insulation	BS EN 50525-1	5.3.2	Visual Exam	-	F100	n/a
Application of sheath	BS EN 50525-1	5.7.2	Visual Exam	-	F100	n/a
Application of sheath colour	BS EN 50525-1	5.7.4	Visual Exam	-	F25	n/a
Assembly of cores	BS EN 50525-2-82	4.2.1.4	Visual Exam	-	F100	a
Bending test at low temperature (insulation)	BS EN 50363-1	4	BS EN 60811-504	4.2	F5	b
Bending test at low temperature (sheath)	BS EN 50363-2-1	4	BS EN 60811-504	4.3	F5	b
Bi-colour combinations	BS EN 50525-1	5.4.4	BS EN 50396	5.2	F100	a
Cable construction	BS EN 50525-1 BS EN 50525-2-82	5.2.4 4.1.1 4.2.1	BS EN 60228 Visual Exam	-	F100	a

11.27 BS EN 50525-2-82:2011 Continued

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Core Colour - clarity and durability of colour	BS EN 50525-1	5.4.1	BS EN 50396	5.1	F100	a
Core identification	BS EN 50525-2-82	4.2.1.4	BS EN 50525-1	Annex D	F100	a
Compatibility	BS EN 50525-2-82	Annex C	BS EN 60811-401 BS EN 60811-501	4.2.3.4 4.2 & 4.3	F25	a
Conductor construction	BS EN 50525-1	5.2.4	BS EN 60228	-	F100	a
Conductor resistance	BS EN 50525-1	5.2.5	BS EN 50395	5	F100	a
Distance between centres of conductors	BS EN 50525-2-82	Annex B2	BS EN 50525-2-82	4.2.2	F25	a
Elongation at low temperature (insulation)	BS EN 50363-1	5	BS EN 60811-505	4.2	F5	b
Elongation at low temperature (sheath)	BS EN 50363-2-1	5	BS EN 60811-505	4.3	F5	b
Flexing test two pulley	BS EN 50525-1	Annex A1	BS EN 50396 BS EN 50395	6.2 7	F5	b
Flame propagation single cable	BS EN 60332-1-2	Annex A	BS EN 60332-1-2	-	F25	b
Hot set (insulation)	BS EN 50363-1	2	BS EN 60811-507	-	F5	a
Hot set (sheath)	BS EN 50363-2-1	2	BS EN 60811-507	-	F5	a
Impact test at low temperature -25ºC complete cable	BS EN 60811-506	4.6	BS EN 60811-506	-	F5	b
Marking legibility/durability	BS EN 50525-1	6.6.1/6.6.2	BS EN 50396	5.1	F100	a
Mean overall diameter/ovality	BS EN 50525-2-82	Annex B1/B2	BS EN 50396	4.4.1/4.4.2	F25	a

11.27 BS EN 50525-2-82:2011 Continued

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Marking legend	BS EN 50525-2-82	4.1.1.5 4.2.1.6	BS EN 50525-1	6	F100	a
Oil immersion (sheath)	BS EN 50363-2-1	1.4	BS EN 60811-404	-	F5	b
Ozone resistance (low concentration) (insulation)	BS EN 50363-1	6	BS EN 50396	8.1.3	1/yr	o
Solderability test (plain conductors)	BS EN 50396	8.2.6	BS EN 50396	8.2	F5	b
Surface resistance (sheath)	BS EN 50525-1	Table 1,7.0	BS EN 50395	11	F5	b
Tensile & elongation before & after ageing (insulation)	BS EN 50363-1	1.1 & 1.2	BS EN 60811-401 BS EN 60811-501	- 4.2	F25	a
Tensile & elongation before & after ageing in air bomb (insulation)	BS EN 50363-1	1.1 & 1.3	BS EN 60811-412	-	F5	a
Tensile & elongation before & after ageing (sheath)	BS EN 50363-2-1	1.1 & 1.2	BS EN 60811-401 BS EN 60811-501	- 4.3	F25	a
Thickness (insulation & sheath)	BS EN 50525-2-82	Annex B1/B2	BS EN 50396	4.1/4.2/4.3	F100	a
Voltage test complete cable (sheathed)	BS EN 50525-1	Table 1,2.0	BS EN 50395	6	F25	a
Voltage test cores	BS EN 50525-1	Table 1,3.0	BS EN 50395	7	F5	a

This is a full list of tests covering the requirements of all applicable Tables of the standard.
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For an explanation of availability and frequency of tests codes, see 11.3 and 11.4.

11.27 BS EN 50525-2-82:2011 Continued

Schedule of Samples for Type Approval Submission

Clause	Type of Cable	Number and size of samples
4.1 H03RN-F	Single core sheathed cables used with designated lampholder 300/300V	1 sample
4.2 H05RNH2-F	Circular single core, two core flat, sheathed cables 300/500V	1 sample single core . 1 sample two core flat.

11.28 BS EN 50525-2-83:2011

Electric Cables – Low Voltage energy cables of rated voltages up to and including 450/750V (Uo/U)
Part 2-83: Cables for general applications – Multicore cables with cross-linked silicone rubber insulation.

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Absence of faults on insulation (voltage test)	BS EN 50525-1	Table 1,6.2	BS EN 50395	10.3	F100	a
Absence of faults on insulation (voltage test)	BS EN 50525-1	Table 1,6.2	BS EN 50395	10.3	man	a
Absence of faults on insulation (spark test)	BS EN 50525-1	Table 1,6.1	BS EN 50395	10.2	man	a
Application of insulation	BS EN 50525-1	5.3.2	Visual Exam	-	F100	n/a
Application of sheath	BS EN 50525-1	5.7.2	Visual Exam	-	F100	n/a
Application of sheath colour	BS EN 50525-1	5.7.4	Visual Exam	-	F25	n/a
Assembly of cores	BS EN 50525-2-83	4.1.1.4 4.2.1.5	Visual Exam	-	F100	a
Bending test at low temperature (insulation)	BS EN 50363-1	4	BS EN 60811-504	4.2	F5	b
Bending test at low temperature (sheath)	BS EN 50363-2-1	4	BS EN 60811-504	4.3	F5	b
Bi-colour combinations	BS EN 50525-1	5.4.4	BS EN 50396	5.2	F100	a
Cable construction	BS EN 50525-1 BS EN 50525-2-83	5.2.4 4.1.1 4.2.1	BS EN 60228 Visual Exam	-	F100	a

11.28 BS EN 50525-2-83:2011 Continued

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Core Colour - clarity and durability of colour	BS EN 50525-1	5.4.1	BS EN 50396	5.1	F100	a
Core colour sequence	BS EN 50525-1	5.4.3.1	HD 308	Table 1 & 2	F100	a
Compatibility	BS EN 50525-2-83	Annex C	BS EN 60811-401 BS EN 60811-501	4.2.3.4 4.2 & 4.3	F25	a
Conductor construction	BS EN 50525-1	5.2.4	BS EN 60228	-	F100	a
Conductor resistance	BS EN 50525-1	5.2.5	BS EN 50395	5	F100	a
Elongation at low temperature (insulation)	BS EN 50363-1	5	BS EN 60811-505	4.2	F5	b
Elongation at low temperature (sheath)	BS EN 50363-2-1	6	BS EN 60811-505	4.3	F5	b
Flexing test two pulley	BS EN 50525-1	Annex A1	BS EN 50396 BS EN 50395	6.2 7	F5	b
Flame propagation single cable	BS EN 60332-1-2 BS EN 50525-2-83	Annex A Table A1[f]	BS EN 60332-1-2	-	F25	b
Hot set (insulation)	BS EN 50363-1	2	BS EN 60811-507	-	F5	a
Hot set (sheath)	BS EN 50363-2-1	2	BS EN 60811-507	-	F5	a
Impact test at low temperature -25ºC complete cable	BS EN 60811-506	4.6	BS EN 60811-506	-	F5	b
Marking legibility/durability	BS EN 50525-1	6.6.1/6.6.2	BS EN 50396	5.1	F100	a
Mean overall diameter/ovality	BS EN 50525-2-83	Annex B1 Table B1[b]	BS EN 50396	4.4	F25	a

11.28 BS EN 50525-2-83:2011 Continued

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Mechanical strength of strain-bearing element	BS EN 50525-2-83	4.2.2	EN ISO 6892-1 BS EN 60811-401 BS EN 60811-501 BS EN 50525-2-83	- - - Table A1[e]	F5	b
Marking legend	BS EN 50525-2-83	4.1.1.7 4.2.1.8	BS EN 50525-1	6	F100	a
Solderability test (plain conductors)	BS EN 50396	8.2.6	BS EN 50396	8.2	F5	b
Surface resistance (sheath)	BS EN 50525-1	Table 1,7.0	BS EN 50395	11	F5	b
Tensile & elongation before & after ageing (insulation)	BS EN 50363-1	1.1 & 1.2	BS EN 60811-401 BS EN 60811-501	- 4.2	F25	a
Tensile & elongation before & after ageing (sheath)	BS EN 50363-2-1	1.1 & 1.2	BS EN 60811-401 BS EN 60811-501	- 4.3	F25	a
Thickness (insulation & sheath)	BS EN 50525-2-83	Annex B1	BS EN 50396	4.1/4.2/4.3	F100	a
Voltage test complete cable (sheathed)	BS EN 50525-1	Table 1,2.0	BS EN 50395	6	F25	a
Voltage test cores	BS EN 50525-1	Table 1,3.0	BS EN 50395	7	F5	a

This is a full list of tests covering the requirements of all applicable Tables of the standard.
Not all are necessarily required for selected Tables. Reference should be made to the standard.
For an explanation of availability and frequency of tests codes, see 11.3 and 11.4.

11.28 BS EN 50525-2-83:2011 Continued

Schedule of Samples for Type Approval Submission

Clause	Type of Cable	Number and size of samples
4.1 H05SS-F H05SST-F	Heat resistant (180°C) unbraided and braided sheathed cables, 2 core, 3 core, 4 core and 5 core 300/500V	1 sample approximately minimum conductor size and approximately maximum number of cores. 1 sample approximately maximum conductor size and approximately minimum number of cores.
4.2 H05SSD3-K H05SSD3T-K	Heat resistant (180°C) unbraided and braided sheathed cables with strain-bearing element, 2 core, 3 core, 4 core 300/500V	1 sample approximately minimum conductor size and approximately maximum number of cores. 1 sample approximately maximum conductor size and approximately minimum number of cores.

11.29 BS EN 50525-3-11:2011 (Formerly HD21.14 S1:2003)

Electric Cables – Low Voltage energy cables of rated voltages up to and Including 450/750V (U_o/U)
Part 3-11: Cables with special fire performance – Flexible cables with halogen-free thermoplastic insulation, and low emission of smoke

Tests, Facilities Required and Test Frequencies

Test description	**Requirement**		**Test method**		**Freq**	**Avail**
	Specification	**Clause**	**Specification**	**Clause**		
Absence of faults on insulation (spark test)	BS EN 50525-1	Table 1,6.1	BS EN 50395	10.2	man	a
Application of insulation	BS EN 50525-1	5.3.2	Visual Examination	-	F100	n/a
Application of sheath	BS EN 50525-1	5.7.2	Visual Exam	-	F100	n/a
Application of sheath colour	BS EN 50525-1	5.7.4	Visual Exam		F25	n/a
Assessment of halogens (insulation & sheath)	BS EN 50525-1	Annex B	BS EN 60754-1 BS EN 60754-2 BS EN 50525-1 EN 60684-2	- - Annex C -	1/yr	b
Bending test at low temperature (insulation)	BS EN 50363-7	4	BS EN 60811-504	4.2	F5	b
Bending test at low temperature (sheath)	BS EN 50363-8	3	BS EN 60811-504	4.3	F5	b
Bi-colour combinations	BS EN 50525-1	5.4.4	BS EN 50396	5.2	F100	a
Cable construction	BS EN 50525-1	5.2.4	BS EN 60228	-	F100	n/a
Core Colour - clarity and durability of colour	BS EN 50525-1	5.4.1	BS EN 50396	5.1	F100	a
Conductor construction	BS EN 50525-1	5.2.1	BS EN 60228	-	F100	a
Conductor resistance	BS EN 50525-1	5.2.5	BS EN 50395	5	F100	a
Core I/D - Colour	BS EN 50525-1	5.4.2	Visual Exam	-	F100	n/a
Core colour sequence	BS EN 50525-1	5.4.3.1	HD 308	Table 1 & 2	F100	n/a
Compatibility	BS 50525-3-11	Annex C	BS EN 60811-401	-	F5	a

11.29 BS EN 50525-3-11:2011 (Formerly HD21.14 S1:2003) Continued

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Elongation at low temperature (insulation)	BS EN 50363-7	5	BS EN 60811-505	4.2	F5	b
Elongation at low temperature (sheath)	BS EN 50363-8	5	BS EN 60811-505	4.3	F5	b
Flame propagation single cable	BS EN 60332-1-2	Annex A	BS EN 60332-1-2	-	F25	b
Flex test on complete cable	BS EN 50525-1	Annex A	BS EN 50396 BS EN 50395	6.2 7	F5	b
Impact test -5ºC	BS EN 50525-3-11	Annex A1	BS EN 60811-506	-	F5	b
Insulation resistance	BS EN 50525-3-11	Annex B1/B2	BS EN 50395	8.1	F5	a
Long term resistance of insulation to dc	BS EN 50525-1	Table 1,5.0	BS EN 50395	9	F5	b
Marking legend	BS EN 50525-3-11	4.1.1/ 4.2.1	BS EN 50525-1	6	F100	a
Marking legibility/durability	BS EN 50525-1	6.6.1/6.6.2	BS EN 50396	5.1	F100	a
Overall diameter/Ovality	BS EN 50525-3-11	Annex B1/B2	BS EN 50396	4.4	F25	a
Ozone resistance (insulation & sheath)	BS EN 50363-7/-8	6	BS EN 50396	8.1.3	1/yr	o
Pressure test at high temperature (insulation)	BS EN 50363-7	3	BS EN 60811-508	4.3	F5	b
Pressure test at high temperature (sheath)	BS EN 50363-8	2	BS EN 60811-508	4.4	F5	b
Shrinkage (insulation)	BS EN 50363-7	2	BS EN 60811-502	-	F5	a
Smoke emission	BS EN 50525-3-11	4.1.2/4.2.2	BS EN 61034-2	-	F5	c
Surface resistance of sheath	BS EN 50525-1	Table 1,7.0	BS EN 50395	11	F5	b

11.29 BS EN 50525-3-11:2011 (Formerly HD21.14 S1:2003) Continued

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Tensile strength & elongation before & after ageing in air (insulation)	BS EN 50363-7	1	BS EN 60811-401 BS EN 60811-501	- 4.2	F25	a
Tensile strength & elongation before & after ageing in air (sheath)	BS EN 50363-8	1	BS EN 60811-401 BS EN 60811-501	- 4.3	F25	a
Thickness of insulation	BS EN 50525-3-11 BS EN 50525-1	Annex B1/B2 5.3.3	BS EN 50396	4.1	F100	a
Thickness of sheath	BS EN 50525-3-11 BS EN 50525-1	Annex B1/B2 5.3.3	BS EN 50396	4.2/4.3	F100	a
Voltage test complete cable	BS EN 50525-1	Table 1,2.0	BS EN 50395	6	F25	a
Voltage test on cores	BS EN 50525-1	Table 1,3.0	BS EN 50395	7	F5	a
Water immersion (sheath)	BS EN 50363-8	6	BS EN 50525-3-11	Annex D	F5	a

This is a full list of tests covering the requirements of all applicable Tables of the standard.
Not all are necessarily required for selected Tables. Reference should be made to the standard.
For an explanation of availability and frequency of tests codes, see 11.3 and 11.4.

11.29 BS EN 50525-3-11:2011 (Formerly HD21.14 S1:2003)Continued

Schedule Of Samples For Type Approval Submission

Clause	Type of Cable	Number and size of samples
4.1 H03Z1Z1-F H03Z1Z1H2-F	General purpose light duty cables Insulated and sheathed flexible cords rated voltage 300/300V	1 circular cord sample 4 x 0.75mm² and 1 sample flat cord 2 x 0.5mm²
4.2 H05Z1Z1-F H05Z1Z1H2-F	General purpose ordinary duty cables Insulated and sheathed flexible cords rated voltage 300/500V	1 circular cord sample 5 x 4.0mm² and 1 sample flat cord 2 x 0.75mm²

11.29 BS EN 50525-3-11:2011 (Formerly HD21.14 S1:2003) Continued

Sample requirements for smoke emission testing

Clauses 4.1,4.2	One sample of approximately maximum conductor size One sample of approximately minimum conductor size

Cables in which the insulation is in two layers will be accepted under this scheme, however, all tests shall be applied to the complete insulation, which must meet all the requirements of the specification.

Schedule Of Samples For Type Approval Submission (Fire and Assessment of Halogen Testing)

Two samples are required for flame propagation.

One sample is required for assessment of halogens testing.

One sample is required for ozone resistance testing.

11.30 BS EN 50525-3-21:2011 (Formerly BS 7919:2001 Tables 18 & 19)

Electric Cables – Low Voltage energy cables of rated voltages up to and including 450/750V (U_o/U)
Part 3-21: Cables with special fire performance – Flexible cables with halogen-free crosslinked insulation, and low emission of smoke

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Absence of faults on insulation (spark test)	BS EN 50525-1	Table 1,6.1	BS EN 50395	10.2	man	a
Application of insulation	BS EN 50525-1	5.3.2	Visual Examination	-	F100	n/a
Application of sheath	BS EN 50525-1	5.7.2	Visual Exam	-	F100	n/a
Application of sheath colour	BS EN 50525-1	5.7.4	Visual Exam		F25	n/a
Assessment of halogens (insulation & sheath)	BS EN 50525-1	Annex B	BS EN 60754-1 BS EN 60754-2 BS EN 50525-1 EN 60684-2	- - Annex C -	1/yr	b
Bending test at low temperature (insulation)	BS EN 50363-5	4	BS EN 60811-504	4.2	F5	b
Bending test at low temperature (sheath)	BS EN 50363-6	3	BS EN 60811-504	4.3	F5	b
Bi-colour combinations	BS EN 50525-1	5.4.4	BS EN 50396	5.2	F100	a
Cable construction	BS EN 50525-1	5.2.4	BS EN 60228	-	F100	n/a
Core Colour - clarity and durability of colour	BS EN 50525-1	5.4.1	BS EN 50396	5.1	F100	a
Conductor construction	BS EN 50525-1	5.2.1	BS EN 60228	-	F100	a
Conductor resistance	BS EN 50525-1	5.2.5	BS EN 50395	5	F100	a
Core I/D - Colour	BS EN 50525-1	5.4.2	Visual Exam	-	F100	n/a
Core colour sequence	BS EN 50525-1	5.4.3.1	HD 308	Table 1 & 2	F100	n/a
Compatibility	BS 50525-3-21	Annex C	BS EN 60811-401	-	F5	a

11.30 BS EN 50525-3-21:2011 (Formerly BS 7919:2001 Tables 18 & 19)Continued

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Elongation at low temperature (insulation)	BS EN 50363-5	5	BS EN 60811-505	4.2	F5	b
Elongation at low temperature (sheath)	BS EN 50363-6	5	BS EN 60811-505	4.3	F5	b
Flame propagation single cable	BS EN 50525-3-21	Annex A	BS EN 60332-1-2	Annex A	F25	b
Flame propagation on bunched cables	BS EN 50525-3-21	Annex A	BS EN 60332-3-24	Annex B	F5	c
Flex test on complete cable	BS EN 50525-1	Annex A	BS EN 50396 BS EN 50395	6.2 7	F5	b
Hot set on insulation	BS EN 50363-5	2	BS EN 60811-507	-	F5	a
Impact test -5ºC	BS EN 50525-3-21	Annex A1	BS EN 60811-506	-	F5	b
Insulation resistance	BS EN 50525-3-21	Annex B1/B2	BS EN 50395	8.1	F5	a
Long term resistance of insulation to dc	BS EN 50525-1	Table 1,5.0	BS EN 50395	9	F5	b
Marking legend	BS EN 50525-3-21	4.1.1.6/ 4.2.1.6	BS EN 50525-1	6	F100	a
Marking legibility/durability	BS EN 50525-1	6.6.1/6.6.2	BS EN 50396	5.1	F100	a
Overall diameter/Ovality	BS EN 50525-3-21	Annex B1/B2	BS EN 50396	4.4	F25	a
Ozone resistance (insulation & sheath)	BS EN 50363-5/-6	6	BS EN 50396	8.1.3	1/yr	o
Smoke emission	BS EN 50525-3-21	4.1.2/4.2.2	BS EN 61034-2	-	F5	c
Solerability Test (plain conductors)	BS EN 50396	8.2.6	BS EN 50396	2	F5	b
Surface resistance of sheath	BS EN 50525-1	Table 1,7.0	BS EN 50395	11	F5	b

11.30 BS EN 50525-3-21:2011 (Formerly BS 7919:2001 Tables 18 & 19) Continued

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Tensile strength & elongation before & after ageing in air (insulation)	BS EN 50363-5	1	BS EN 60811-401 BS EN 60811-501	- 4.2	F25	a
Tensile strength & elongation before & after ageing in air (sheath)	BS EN 50363-6	1	BS EN 60811-401 BS EN 60811-501	- 4.3	F25	a
Tensile strength & elongation of sheath before & after immersion in mineral oil	BS EN 50363-6	1.3	BS EN 60811-401 BS EN 60811-501	- 4.3	F5	b
Thickness of insulation	BS EN 50525-3-21 BS EN 50525-1	Annex B1/B2 5.3.3	BS EN 50396	4.1	F100	a
Thickness of sheath	BS EN 50525-3-21 BS EN 50525-1	Annex B1/B2 5.3.3	BS EN 50396	4.2/4.3	F100	a
Voltage test complete cable	BS EN 50525-1	Table 1,2.0	BS EN 50395	6	F25	a
Voltage test on cores	BS EN 50525-1	Table 1,3.0	BS EN 50395	7	F5	a

This is a full list of tests covering the requirements of all applicable Tables of the standard.
Not all are necessarily required for selected Tables. Reference should be made to the standard.
For an explanation of availability and frequency of tests codes, see 11.3 and 11.4.

11.30 BS EN 50525-3-21:2011 (Formerly BS 7919:2001 Tables 18 & 19) Continued

Schedule Of Samples For Type Approval Submission

Clause	Type of Cable	Number and size of samples
4.1 H07ZZ-F	Heat resistant Cables (90ºC) Heavy Duty	One sample minimum core size and minimum conductor size. One sample maximum core size and maximum conductor size.
4.2 H07ZZ-F	Heat resistant Cables (90ºC) Heavy Duty Multicore Cables	One sample minimum core size and minimum conductor size. One sample maximum core size and maximum conductor size.

11.30 BS EN 50525-3-21:2011 (Formerly BS 7919:2001 Tables 18 & 19) Continued

Sample requirements for smoke emission testing

Clauses 4.1,4.2	One sample of approximately maximum conductor size One sample of approximately minimum conductor size

Cables in which the insulation is in two layers will be accepted under this scheme, however, all tests shall be applied to the complete insulation, which must meet all the requirements of the specification.

Schedule Of Samples For Type Approval Submission (Fire and Assessment of Halogen Testing)

Two samples are required for each type of flame propagation test.

One sample is required for assessment of halogens testing.

One sample is required for ozone resistance testing.

11.31 BS EN 50525-3-31 (Formerly HD 21.15 S1:2006)

Electric Cables – Low Voltage energy cables of rated voltages up to and Including 450/750V (U_o/U)
Part 3-31: Cables with special fire performance – Single core non-sheathed cables with halogen-free thermoplastic insulation, and low emission of smoke

Tests, Facilities Required and Test Frequencies

Test description	**Requirement**		**Test method**		**Freq**	**Avail**
	Specification	**Clause**	**Specification**	**Clause**		
Absence of faults on insulation (spark test)	BS EN 50525-1	Table 1,6.1	BS EN 50395	10.2	man	a
Application of insulation	BS EN 50525-1	5.3.2	Visual Examination	-	F100	n/a
Assessment of halogens	BS EN 50525-1	Annex B	BS EN 60754-1 BS EN 60754-2 BS EN 50525-1 EN 60684-2	- - Annex C -	1/yr	b
Bending test at low temperature (insulation)	BS EN 50363-7	4	BS EN 60811-504	4.2	F5	b
Bi-colour combinations	BS EN 50525-1	5.4.4	BS EN 50396	5.2	F100	a
Cable construction	BS EN 50525-1	5.2.4	BS EN 60228	-	F100	n/a
Core Colour - clarity and durability of colour	BS EN 50525-1	5.4.1	BS EN 50396	5.1	F100	a
Conductor construction	BS EN 50525-1	5.2.1	BS EN 60228	-	F100	a
Conductor resistance	BS EN 50525-1	5.2.5	BS EN 50395	5	F100	a
Core I/D - Colour	BS EN 50525-1	5.4.2	Visual Exam	-	F100	n/a
Elongation at low temperature (insulation)	BS EN 50363-7	5	BS EN 60811-505	4.2	F5	b
Flame propagation single cable	BS EN 60332-1-2	Annex A	BS EN 60332-1-2	-	F25	b
Flame propagation on bunched wire	BS EN 60332-3-24	-	BS EN 60332-3-24	-	1/yr	c

11.31 BS EN 50525-3-31 (Formerly HD 21.15 S1:2006) Continued

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Impact test -5ºC	BS EN 50525-3-31	Annex A1	BS EN 60811-506	-	F5	b
Insulation resistance	BS EN 50525-3-31	Annex B1/B2/B3/B4	BS EN 50395	8.1	F5	a
Marking legend	BS EN 50525-3-31	4.1.1.4/ 4.2.1.4/ 4.3.1.4/ 4.4.1.4	BS EN 50525-1	6	F100	a
Marking legibility/durability	BS EN 50525-1	6.6.1/6.6.2	BS EN 50396	5.1	F100	a
Long term resistance to d.c.	BS EN 50525-1	Table 1,5.0	BS EN 50395	9	F5	b
Overall diameter	BS EN 50525-3-31	Annex B1/B2/B3/B4	BS EN 50396	4.4	F25	a
Pressure test at high temperature (insulation)	BS EN 50363-7	3	BS EN 60811-508	4.3	F5	b
Smoke emission	BS EN 50525-3-31	4.1.2/4.2.2/ 4.3.2/4.4.2	BS EN 61034-2	-	F5	c
Tensile strength & elongation before & after ageing in air	BS EN 50363-7	1	BS EN 60811-401 BS EN 60811-501	- 4.2	F25	a

11.31 BS EN 50525-3-31 (Formerly HD 21.15 S1:2006) Continued

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Thickness of insulation	BS EN 50525-3-31 BS EN 50525-1	Annex B1/B2/B3/B4 5.3.3	BS EN 50396	4.1	F100	a
Voltage test complete cable	BS EN 50525-1	Table 1,2.0	BS EN 50395	6	F25	a

This is a full list of tests covering the requirements of all applicable Tables of the standard.
Not all are necessarily required for selected Tables. Reference should be made to the standard.
For an explanation of availability and frequency of tests codes, see 11.3 and 11.4.

11.31 BS EN 50525-3-31 (Formerly HD 21.15 S1:2006) Continued

Schedule Of Samples For Type Approval Submission

Clause	Type of Cable	Number and size of samples
4.1 H07Z1-V H07Z1-R	Cables for fixed wiring Type 1 and Type 2	For each type (1 or 2) of solid and flexible conductor 1 sample of approx. minimum cross section. 1 sample of approx. maximum cross section
4.2 H07Z1-K	Cables for fixed wiring Type 1 and Type 2	For each type (1 or 2) of flexible conductor 1 sample of approx. minimum cross section. 1 sample of approx. maximum cross section
4.3 H05Z1-U H05Z1-R	Cables for internal wiring	For each solid and flexible conductor 1 sample of approx. minimum cross section. 1 sample of approx. maximum cross section
4.4 H05Z1-K	Cables for internal wiring	For each flexible conductor 1 sample of approx. minimum cross section. 1 sample of approx. maximum cross section

11.31 BS EN 50525-3-31 (Formerly HD 21.15 S1:2006) Continued

Sample requirements for smoke emission testing

Clauses 4.1,4.2,4.3,4.4	One sample of approximately maximum conductor size One sample of approximately minimum conductor size

Cables in which the insulation is in two layers will be accepted under this scheme, however, all tests shall be applied to the complete insulation, which must meet all the requirements of the specification.

Schedule Of Samples For Type Approval Submission (Fire and Assessment of Halogen Testing)

Two samples are required for each type of flame propagation test.

One sample is required for assessment of halogens testing.

11.32 BS EN 50525-3-41:2011 (Formerly BS 7211:1998 Tables 3a, 3b, 4a, 4b)

Electric Cables – Low Voltage energy cables of rated voltages up to and Including 450/750V (U_o/U)
Part 3-41: Cables with special fire performance – Single core non-sheathed cables with halogen-free crosslinked insulation, and low emission of smoke

Tests, Facilities Required and Test Frequencies

Test description	**Requirement**		**Test method**		**Freq**	**Avail**
	Specification	**Clause**	**Specification**	**Clause**		
Absence of faults on insulation (spark test)	BS EN 50525-1	Table 1,6.1	BS EN 50395	10.2	man	a
Application of insulation	BS EN 50525-1	5.3.2	Visual Examination	-	F100	n/a
Assessment of halogens	BS EN 50525-1	Annex B	BS EN 60754-1 BS EN 60754-2 BS EN 50525-1 EN 60684-2	- - Annex C -	1/yr	b
Bending test at low temperature (insulation)	BS EN 50363-5	4	BS EN 60811-504	4.2	F5	b
Bi-colour combinations	BS EN 50525-1	5.4.4	BS EN 50396	5.2	F100	a
Cable construction	BS EN 50525-1	5.2.4	BS EN 60228	-	F100	n/a
Core Colour - clarity and durability of colour	BS EN 50525-1	5.4.1	BS EN 50396	5.1	F100	a
Conductor construction	BS EN 50525-1	5.2.1	BS EN 60228	-	F100	a
Conductor resistance	BS EN 50525-1	5.2.5	BS EN 50395	5	F100	a
Core I/D - Colour	BS EN 50525-1	5.4.2	Visual Exam	-	F100	n/a
Elongation at low temperature (insulation)	BS EN 50363-5	5	BS EN 60811-505	4.2	F5	b
Flame propagation single cable	BS EN 60332-1-2	Annex A	BS EN 60332-1-2	-	F25	b
Hot set (insulation)	BS EN 50363-5	2	BS EN 60811-507	-	F5	a

11.32 BS EN 50525-3-41:2011 (Formerly BS 7211:1998 Tables 3a, 3b, 4a, 4b) Continued

Tests, Facilities Required and Test Frequencies

Test description	**Requirement**		**Test method**		**Freq**	**Avail**
	Specification	**Clause**	**Specification**	**Clause**		
Impact test -5ºC	BS EN 50525-3-41	Annex A1	BS EN 60811-506	-	F5	b
Insulation resistance	BS EN 50525-3-41	Annex B1/B2/B3/B4	BS EN 50395	8.1	F5	a
Marking legend	BS EN 50525-3-41	4.1.1.4/ 4.2.1.4/ 4.3.1.4/ 4.4.1.4	BS EN 50525-1	6	F100	a
Marking legibility/durability	BS EN 50525-1	6.6.1/6.6.2	BS EN 50396	5.1	F100	a
Overall diameter	BS EN 50525-3-41	Annex B1/B2/B3/B4	BS EN 50396	4.4.1	F25	a
Ozone resistance	BS EN 50363-5	6	BS EN 50396	8.1.3	1/yr	o
Pressure test at high temperature (insulation)	BS EN 50363-5	3	BS EN60811-508	4.3	F5	b
Smoke emission	BS EN 50525-3-41	4.1.2/4.2.2/ 4.3.2/4.4.2	BS EN 61034-2	-	F5	c
Tensile strength & elongation before & after ageing in air	BS EN 50363-5	1	BS EN 60811-401 BS EN 60811-501	- 4.2	F25	a

11.32 BS EN 50525-3-41:2011 (Formerly BS 7211:1998 Tables 3a, 3b, 4a, 4b) Continued

Tests, Facilities Required and Test Frequencies

Test description	**Requirement**		**Test method**		**Freq**	**Avail**
	Specification	**Clause**	**Specification**	**Clause**		
Thickness of insulation	BS EN 50525-3-41 BS EN 50525-1	Annex B1/B2/B3/B4 5.3.3	BS EN 50396	4.1	F100	a
Voltage test complete cable	BS EN 50525-1	Table 1,2.0	BS EN 50395	6	F25	a

This is a full list of tests covering the requirements of all applicable Tables of the standard.
Not all are necessarily required for selected Tables. Reference should be made to the standard.
For an explanation of availability and frequency of tests codes, see 11.3 and 11.4.

11.32 BS EN 50525-3-41 (Formerly BS 7211:1998 Tables 3a, 3b, 4a, 4b) Continued

Schedule Of Samples For Type Approval Submission

Clause	Type of Cable	Number and size of samples
4.1 H07Z-U H07Z-R	Heat Resistant Cables (90ºC) Cables for fixed wiring	For each solid and flexible conductor 1 sample of approx. minimum cross section. 1 sample of approx. maximum cross section
4.2 H07Z-K	Heat Resistant Cables (90ºC) Cables for fixed wiring	For each flexible conductor 1 sample of approx. minimum cross section. 1 sample of approx. maximum cross section
4.3 H05Z-U	Heat Resistant Cables (90ºC) Cables for internal wiring	For each solid conductor 1 sample of approx. minimum cross section. 1 sample of approx. maximum cross section
4.4 H05Z-K	Heat Resistant Cables (90ºC) Cables for internal wiring	For each flexible conductor 1 sample of approx. minimum cross section. 1 sample of approx. maximum cross section

11.32 BS EN 50525-3-41 (Formerly BS 7211:1998 Tables 3a, 3b, 4a, 4b) Continued

Sample requirements for smoke emission testing

Clauses 4.1,4.2,4.3,4.4	One sample of approximately maximum conductor size One sample of approximately minimum conductor size

Cables in which the insulation is in two layers will be accepted under this scheme, however, all tests shall be applied to the complete insulation, which must meet all the requirements of the specification.

Schedule Of Samples For Type Approval Submission (Fire and Assessment of Halogen Testing)

Two samples are required for flame propagation.

One sample is required for assessment of halogens testing.

One sample is required for ozone resistance testing.

11.33 BS 6004:2012

Electric Cables – PVC-Insulated, PVC Sheathed Cables For Voltages up to and Including 300/500V, For Electric Power and Lighting.

Tests, Facilities Required and Test Frequencies

Test description	**Requirement**		**Test method**		**Freq**	**Avail**
	Specification	**Clause**	**Specification**	**Clause**		
Absence of faults on insulation (voltage test) multicore	BS 6004	14.3.2	BS EN 50395	10.3	F100	a
Absence of faults on insulation (voltage test) multicore	BS 6004	14.3.2	BS EN 50395	10.3	man	a
Absence of faults on insulation (spark test) single core	BS 6004	14.3.1	BS EN 62230 BS 5099	-	man	a
Application of insulation/sheath	BS 6004	7.2/10.2	Visual Exam	-	F100	n/a
Bending test at low temperature (insulation)	BS EN 50363-3	5	BS EN 60811-504	4.2	F5	b
Bending test at low temperature (sheath)	BS 7655-4.2	-	BS EN 60811-504	4.3	F5	b
Bi-colour combinations	BS 6004	8.2	BS EN 50396	5.2	F100	a
Cable construction	BS 6004	5 & T 3-6	Visual Exam	-	F100	n/a
Core Colour - clarity and durability of colour	BS 6004	8.3	BS EN 50396	5.1	F100	a
Compatibility	BS 6004	16.5 & Annex D1	BS 6004	Annex D2	F25	a
Conductor construction	BS 6004	6	BS EN 60228	-	F100	a
Conductor resistance	BS 6004	14.2	BS EN 60228	-	F100	a
Core I/D - Colour	BS 6004	8.2	Visual Exam	-	F100	n/a
Core assembly and sequence	BS 6004	9 & T 3-6	Visual Exam	-	F100	n/a
Elongation at low temperature (insulation)	BS EN 50363-3	6	BS EN 60811-505	4.2	F5	b
Elongation at low temperature (sheath)	BS 7655-4.2	-	BS EN 60811-505	4.3	F5	b

11.33 BS 6004:2012 Continued

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Flame propagation single cable	BS 6004	16.6	BS EN 60332-1-2	Annex A	F25	b
Heat shock (insulation)	BS EN 50363-3	3	BS EN 60811-509	4.3	F50	a
Heat shock (sheath)	BS 7655-4.2	-	BS EN 60811-509	4.4	F50	a
Hot deformation (sheath)	BS 7655-4.2	-	BS 6469-99.1	10	F5	b
Impact test at low temperature (sheath)	BS 7655-4.2	-	BS EN 60811-506	-	F5	b
Insulation resistance	BS 6004	16.2 & T3-6	BS EN 50395	8.1	F5	a
Insulation resistance constant (sheath)	BS 7655-4.2	-	BS 6469-99.2	8	F5	a
Length of lay of assembled cores	BS 6004	9	BS 6004	15.5	F25	a
Long term resistance of insulation to d.c.	BS 6004	16.4	BS EN 50395	9	F5	b
Loss of mass (insulation)	BS EN 50363-3	2	BS EN 60811-409	4	F5	a
Loss of mass (sheath)	BS 7655-4.2	-	BS EN 60811-409	6	F5	a
Marking legend	BS 6004	11.0	Visual Exam	-	F100	a
Marking durability of printed information	BS 6004	11.4	BS EN 50396	5.1	F100	a
Mean overall dimensions	BS 6004	15.2	BS EN 50396	4.4	F25	a
Ovality	BS 6004	15.3	BS EN 50396	4.4	F25	a

11.33 BS 6004:2012 Continued

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Pressure test at high temperature (sheath)	BS 7655-4.2	-	BS EN 60811-508	4.4	F5	b
Pressure test at high temperature (insulation)	BS EN 50363-3	4	BS EN 60811-508	4.3	F5	b
Tensile & elongation before & after ageing (insulation)	BS EN 50363-3	1.1 & 1.2	BS EN 60811-401 BS EN 60811-501	- 4.2	F25	a
Tensile & elongation before & after ageing (sheath)	BS 7655-4.2	-	BS EN 60811-401 BS EN 60811-501	- 4.3	F25	a
Thickness (insulation)	BS 6004	7.3 & T 3-6	BS EN 50396	4.1	F100	a
Thickness(sheath)	BS 6004	10.3 & T 3-6	BS EN 50396	4.2/4.3	F100	a
Two pulley flex test	BS 6004	16.7	BS EN 50396 BS EN 50395	6.2 7	F5	b
Sheath colour	BS 6004	10.4 & T3-6	Visual Exam	-	F100	a
Voltage test complete cable (sheathed)	BS 6004	15.4	BS 6004	Annex E	F25	a
Voltage test cores	BS 6004	16.3	BS EN 50395	7	F5	a

This is a full list of tests covering the requirements of all applicable Tables of the standard.
Not all are necessarily required for selected Tables. Reference should be made to the standard.
For an explanation of availability and frequency of tests codes, see 11.3 and 11.4.

11.33 BS 6004:2012 Continued

Schedule of Samples for Type Approval Submission

Table	Type of Cable	Number and size of samples
3	PVC-insulated, PVC-sheathed cable, 300/500V single-core, flat twin and flat 3-core	Single core one sample smallest conductor size class 1 conductor and one sample maximum conductor size class 2 conductor. Multi-core: 1 sample smallest conductor size and smallest number of cores class 1 conductor. 1 sample maximum conductor size and maximum number of cores class 2 conductor.
4	PVC-insulated, PVC-sheathed cables with circuit protective conductor, 300/500V single-core, flat twin and flat 3-core	Single core one sample. Multi-core: 1 sample smallest conductor size and smallest number of cores class 1 conductor. 1 sample maximum conductor size and maximum number of cores class 2 conductor.
5	PVC-insulated, PVC-sheathed cable with or without circuit protective conductor, 300/500V, single core and flat twin (alternative conductor versions)	Single core one sample. Multi-core: 1 sample of 2 core with CPC. 1 sample of 2 core without CPC.
6	Ordinary duty low temperature PVC insulated and PVC sheathed flexible cable, flat twin, circular 2-core, 3-core, 4-core and 5-core 300/500V	1 sample smallest conductor size and smallest number of cores 1 sample maximum conductor size and maximum number of cores

11.34 BS 7211:2012

Electric Cables – Thermosetting insulated and thermoplastic sheathed cables for voltages up to and including 450/750V, for electric power and lighting and having low emission of smoke and corrosive gases when affected by fire.

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Absence of faults on insulation (voltage test) multicore	BS 7211	15.3.2	BS EN 50395	10.3	F100	a
Absence of faults on insulation (voltage test) multicore	BS 7211	15.3.2	BS EN 50395	10.3	man	a
Absence of faults on insulation (spark test) single core	BS 7211	15.3.1	BS EN 62230 BS 5099	-	man	a
Application of insulation/fillers & binders/inner covering/sheath	BS 7211	7.2/9.1/10.1/11.2	Visual Exam	-	F100	n/a
Assembly of fillers and binders	BS 7211	9.1	Visual Exam	-	F25	a
Bending test at low temperature (insulation)	BS EN 50363-5	4	BS EN 60811-504	4.2	F5	b
Bending test at low temperature (sheath)	BS 7655-6.1	-	BS EN 60811-504	4.3	F5	b
Bi-colour combinations	BS 7211	8.2	BS EN 50396	5.2	F100	a
Cable construction	BS 7211	5 & T 3-5	Visual Exam	-	F100	n/a
Core Colour - clarity and durability of colour	BS 7211	8.3	BS EN 50396	5.1	F100	a
Compatibility	BS 7211	17.4 & Table D1	BS 7211	Annex D2	F25	a
Conductor construction	BS 7211	6	BS EN 60228	-	F100	a
Conductor resistance	BS 7211	15.2	BS EN 60228	-	F100	a
Core I/D - Colour	BS 7211	8.2	Visual Exam	-	F100	n/a
Core assembly and sequence	BS 7211	9.1 & T 3-5	Visual Exam	-	F100	n/a
Corrosive & acid gas (insulation, fillers & binders, inner covering, sheath)	BS 7211	7.4/9.2/10.2/11.5	BS EN 60754-1	-	F5	b

11.34 BS 7211:2012 Continued

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Elongation at low temperature (insulation)	BS EN 50363-5	5	BS EN 60811-505	4.2	F5	b
Elongation at low temperature (sheath)	BS 7655-6.1	-	BS EN 60811-505	4.3	F5	b
Flame propagation single cable	BS 7211	16.5	BS EN 60332-1-2	Annex A	F25	b
Hot set (insulation)	BS 7655-1.3/BS EN 50363-5	3	BS EN 60811-507	-	F5	b
Impact test at low temperature (sheath)	BS 7655-6.1	-	BS EN 60811-506	-	F5	b
Insulation resistance	BS 7211	17.2 & T3-5	BS EN 50395	8.1	F5	a
Insulation resistance constant (insulation)	BS 7655-1.3	-	BS 6469-99.2	8	F5	a
Length of lay of assembled cores	BS 7211	9.1	BS 7211	16.7	F25	a
Marking legend	BS 7211	12.0	Visual Exam	-	F100	a
Marking durability of printed information	BS 7211	12.4	BS EN 50396	5.1	F100	a
Mean overall dimensions	BS 7211	16.2	BS EN 50396	4.4	F25	a
Ovality	BS 7211	16.3	BS EN 50396	4.4	F25	a
Ozone resistance (low concentration) (insulation)	BS EN 50363-5	6	BS EN 50396	8.1.3	1/YR	o
Pressure test at high temperature (sheath)	BS 7655-6.1	-	BS EN 60811-508	4.4	F5	b
Pressure test at high temperature (insulation)	BS EN 50363-5	3	BS EN 60811-508	4.3	F5	b

11.34 BS 7211:2012 Continued

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Tensile & elongation before & after ageing (insulation)	BS EN 50363-5/BS 7655-1.3	1.1 & 1.2	BS EN 60811-401 BS EN 60811-501	- 4.2	F25	a
Tensile & elongation before & after ageing (sheath)	BS 7655-6.1	-	BS EN 60811-401 BS EN 60811-501	- 4.3	F25	a
Thickness (insulation)	BS 7211	7.3 & T 3-5	BS EN 50396	4.1	F100	a
Thickness (inner covering)	BS 7211	10.1 & T 3-5	-	-	F5	a
Thickness(sheath)	BS 7211	11.3 & T 3-5	BS EN 50396	4.2/4.3	F100	a
Sheath colour	BS 7211	11.4 & T3-5	Visual Exam	-	F100	a
Shrinkage of insulation	BS 7211	17.6	BS EN 60811-502	-	F5	a
Smoke emission	BS 7211	16.6	BS EN 61034-2	-	F5	c
Vertical flame spread of bunched wires & cables	BS 7211	17.5	BS EN 60332-3-24	-	F5	c
Voltage test complete cable (sheathed)	BS 7211	16.4	BS 7211	Annex E	F25	a
Voltage test cores	BS 7211	17.3	BS EN 50395	7	F5	a
Water absorption (insulation)	BS 7655-1.3	-	BS EN 60811-402	-	F5	a
Water immersion (sheath)	BS 7655-6.1	-	BS 6469-99.1	14	F5	a

This is a full list of tests covering the requirements of all applicable Tables of the standard.
Not all are necessarily required for selected Tables. Reference should be made to the standard.
For an explanation of availability and frequency of tests codes, see 11.3 and 11.4

11.34 BS 7211:2012 Continued

Schedule of Samples for Type Approval Submission

Table	Type of Cable	Number and size of samples
3	Thermosetting insulated, single-core sheathed cables, 450/750V	Single core one sample smallest conductor size with class 1 conductor and one sample maximum conductor size with class 2 conductor.
4	Thermosetting insulated, circular 2-core, 3-core, 4-core, 5-core sheathed cables, 450/750V	1 sample smallest conductor size and smallest number of cores class 1 conductor. 1 sample maximum conductor size and maximum number of cores class 2 conductor.
5	Thermosetting insulated, single core, flat twin, flat 3-core sheathed cables with circuit protective conductor (CPC) 300/500V	Single core one sample. Multi-core: 1 sample smallest conductor size and smallest number of cores class 1 conductor. 1 sample maximum conductor size and maximum number of cores class 2 conductor.

Cables in which the insulation is in two layers will be accepted under this scheme, however, all tests shall be applied to the complete insulation, which must meet all the requirements of the specification.

11.34 BS 7211:2012 Continued

Schedule Of Samples For Type Approval Submission (Fire, Smoke Emission, Corrosive & Acid Gas Testing and Ozone Testing)

Flame propagation of bunched wires or cables:

One size multicore cable diameter <=15mm tested in touching formation.

One size multicore cable diameter between 26mm and 40mm in spaced formation.

Corrosive and acid gas emission testing: One sample of each of the relevant cable components.

Ozone resistance testing: One sample is required.

Sample requirements for smoke emission testing

Tables 3	One sample of approximately maximum conductor size One sample of approximately minimum conductor size
Tables 4	1 sample approximately minimum conductor size and approximately minimum number of cores 1 sample approximately maximum conductor size and approximately maximum number of cores
Table 5	1 sample approximately minimum conductor size and approximately minimum number of cores 1 sample approximately maximum conductor size and approximately maximum number of cores

11.35 BS EN 50618:2014 + Corrigendum 1

Electric Cables – For Photovoltaic Systems (BT(DE/NOT)258)

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Absence of faults on insulation (spark test on insulation)	BS EN 50618	7.2.2	BS EN 62230	Annex A	man	a
Absence of faults on insulation (spark test on complete cable)	BS EN 50618	7.2.2	BS EN 62230	Annex A	man	a
Application of insulation and sheath	BS EN 50618	5.2.2/5.3.2	Visual Examination	-	F100	n/a
Assessment of halogens	BS EN 50525-1	Annex B	BS EN 60754-1 BS EN 60754-2 BS EN 50525-1 EN 60684-2	- - Annex C -	1/yr	b
Bending test at -40°C (cables O.D.</=12.5mm)	BS EN 50618	7.3.6/ Table 2	BS EN 60811-504	4.2	F5	b
Bi-colour combinations	BS EN 50618	-	BS EN 50396	5.2	F100	a
Cable construction	BS EN 50618	5	BS EN 60228	-	F100	n/a
Conductor maximum diameter of wires	BS EN 50618	5.1.2	BS EN 60228	-	F100	a
Conductor resistance	BS EN 50618	5.1.5	BS EN 50395	5	F100	a
Conductor construction continuity of tinning	BS EN 50618	5.1.1	Visual Exam	-	F5	a
Conductor construction separator between conductor and insulation (if applicable)	BS EN 50618	5.1.3	Visual exam	-	F5	a
Compatibility	BS EN 50618	7.3.4/ Table B1	BS EN 60811-401	4.2.3.4	F5	a

11.35 BS EN 50618:2014 + Corrigendum 1 Continued

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Core Colour - clarity and durability of colour	BS EN 50618	5.1	BS EN 50396	5.1	F100	a
Core I/D - Colour	BS EN 50618	-	Visual Exam	-	F100	n/a
Damp heat test	BS EN 50618	7.3.11/ Table 2	EN 60068-2-78/Table 2	-	F5	c
Dynamic penetration test	BS EN 50618	7.3.10/ Annex D	BS EN 50618	Annex D	F5	b
Elongation at low temperature (cables O.D.>12.5mm)	BS EN 50618	7.3.7/ Table 2	BS EN 60811-505	4.2	F5	b
Flame propagation single cable	BS EN 60332-1-2	Annex A	BS EN 60332-1-2	-	F25	b
Hot set (insulation and sheath)	BS EN 50618	Table B1	BS EN 60811-507	-	F5	a
Impact test -40ºC	BS EN 50618	7.3.5/ Annex C	BS EN 60811-506	-	F5	b
Insulation resistance at 20ºC and 90ºC	BS EN 50618	7.2.3	BS EN 50395	8.1	F25	a
Marking on sheath	BS EN 50618	6.1-6.6 /7.3.2	Visual exam	-	F100	a
Marking legibility/durability	BS EN 50618	6.7.1/6.7.2	BS EN 50396	5.1	F100	a
Overall diameter/Ovality	BS EN 50618	7.3.3/ Table 1	BS EN 50618	7.3.3	F25	a
Ozone resistance (Method B)	BS EN 50618	7.3.8/ Table 2	BS EN 50396	8.1.3	1/yr	o
Smoke emission	BS EN 50618	7.3.14/ Table 2	BS EN 61034-2	-	F5	c

11.35 BS EN 50618:2014 + Corrigendum 1 Continued

Tests, Facilities Required and Test Frequencies

Test description	**Requirement**		**Test method**		**Freq**	**Avail**
	Specification	**Clause**	**Specification**	**Clause**		
Sheath colour	BS EN 50618	5.3.4/7.3.1	Visual exam	-	F100	n/a
Sheath resistance against acid & alkaline solution	BS EN 50618	Table B1	BS EN 60811-404	-	F5	b
Shrinkage of sheath	BS EN 50618	7.3.13/ Table 2	BS EN 60811-503 /Table 2	-	F5	a
Surface resistance of sheath	BS EN 50618	7.2.5	BS EN 50395	11	F5	b
Tensile strength & elongation of insulation & sheath before & after ageing in air	BS EN 50618	Table B1	BS EN 60811-401 BS EN 60811-501	- 4.2/4.3	F25	a
Thermal endurance (insulation & sheath) **Note 1 & 3**	BS EN 50618	Table B1	EN 60216-1 EN 60216-2	-	1/5yr	c
Thickness of insulation	BS EN 50618	5.2.3/ Table 1	BS EN 50396	4.1	F100	a
Thickness of sheath	BS EN 50618	5.3.3/ Table 1	BS EN 50396	4.2	F100	a
Voltage test complete cable with a.c. or d.c.	BS EN 50618	7.2.1	BS EN 50395	6	F25	a
Weathering/UV resistance of sheath **Note 2 & 3**	BS EN 50618	7.3.9/ Annex E	Annex E BS EN 60811-501 EN 50289-4-17	- - Annex A	1/yr	c

Note 1 The test shall be repeated once every 5 years. BASEC to decide if the test is to be repeated at a shorter period, this decision must be motivated and based on results obtained in surveillance test (for example for comparison of results with the values of the initial type test).

Note 2 The test shall be repeated once per year in normal surveillance.

11.35 BS EN 50618:2014 + Corrigendum 1 Continued

Note 3 In the event of a failure classified as minor or Major, an investigation into the causes must be launched, the corrective action process must be monitored by BASEC, including usually the repetition of the test, once corrective actions have been implemented.

This is a full list of tests covering the requirements of all applicable Tables of the standard.
Not all are necessarily required for selected Tables. Reference should be made to the standard.
For an explanation of availability and frequency of tests codes, see 11.3 and 11.4.

Schedule Of Samples For Type Approval Submission

Clause	Type of Cable	Number and size of samples
Table 1 H1Z2Z2-K	Single core sheathed electric cables for photovoltaic systems	1 sample of approx. minimum cross section. 1 sample of approx. maximum cross section

11.35 BS EN 50618:2014 + Corrigendum 1 Continued

Sample requirements for smoke emission testing, damp heat test, dynamic penetration test, sheath resistance against acid & alkaline solution, surface resistance of sheath and weathering/UV resistance of sheath.

Table 1	One sample of approximately maximum conductor size One sample of approximately minimum conductor size

Cables in which the insulation is in two layers will be accepted under this scheme, however, all tests shall be applied to the complete insulation, which must meet all the requirements of the specification.

Schedule Of Samples For Type Approval Submission (Fire and Assessment of Halogen Testing)

Two samples are required for flame propagation.

One sample is required for assessment of halogens testing.

One sample is required for ozone resistance testing.

12. SCHEME B REQUIREMENTS

12.1 SCOPE

Scheme B covers cable or cord types (cables) complying with British Standards that have not been harmonized to CENELEC requirements.

Scheme B is divided into Power and Non-Power cables the cable standards that fall into these two categories are:

Power: BS 4553, BS 5467, BS 6346, BS 6724, BS 7846, BS 7870, BS 7889, BS 8573

Non-Power: BS 5839, BS 6231, BS 7629, BS 8436, BS 8592

Where a cable type listed in this scheme is technically similar to a cable type listed in another scheme, the manufacturer's production of these cables may, at BASEC's discretion, be treated for sampling purposes as part of the other scheme (except for HAR scheme approvals).

12.2 TRANSFER FROM SCHEME B TO HARMONIZED SCHEME, I.E. SCHEME A

If any of the standards listed as Scheme B are individually harmonized to CENELEC requirements and are reissued in a new form they may no longer come within the scope of Scheme B. In such cases suitable Harmonized Schemes will be devised. A manufacturer licensed to such standards will be given the opportunity of transferring to Harmonized Schemes if it wishes to retain BASEC approval.

From an agreed date with the manufacturer the surveillance testing carried out by BASEC will then be to the requirements of the Harmonized Schemes.

In instances where cables which are classified as being within the scope of Scheme B, are being produced at the same location as cables of similar constructions under a Harmonized Scheme (Scheme A), the Licensee may apply to BASEC for consideration of a reduced level of sampling under Scheme B.

12.3 AVAILABILITY OF TEST EQUIPMENT

Each table of tests includes a code a, b, c or o, which indicates the requirement for availability of test equipment as follows:

a Test or measurement which must be conducted at the place of manufacture.

b Test or measurement which if not conducted at the place of manufacture may be conducted at any laboratory of the Licensee.

o Test or measurement which if not conducted at a laboratory of the Licensee may be conducted by any BASEC approved laboratory.

c Test or measurement which may be carried out at an external laboratory under a written agreement.

Any deviations from the specified test equipment availability must be authorised by BASEC, by the manufacturer applying for a BASEC concession using form BSF 238.

12.4 FREQUENCY OF TESTS

Each table of tests includes a frequency at which each test will be conducted on the samples selected by BASEC.

F100 Test is conducted on 100% of the samples selected.

F50 Test is conducted on 50% of the samples selected.

F25 Test is conducted on 25% of the samples selected.

F5 Test is conducted on 5% of the samples selected.

1/1y Test is conducted once per year.

1/3y Test is conducted every three years.

man Test is conducted on every product by the manufacturer.

12.5 BS 4553-1:1998 Amendment Nos 1 & 2
Specification for 600/1000V single-phase split concentric electric cables.
Part 1: Cables having PVC insulation

Tests, Facilities Required And Test Frequencies

Test description	**Requirement**		**Test Method**		**Freq**	**Avail**
	Specification	Clause	Specification	Clause		
Absence of faults on insulation Spark Test	BS 4553-1	6.3	BS EN 62230	-	man	a
Absence of faults on sheath Spark Test	BS 4553-1	11.3	BS EN 62230	-	man	a
Bedding application	BS 4553-1	8	Visual	-	F100	n/a
Bending test at low temperature (insulation)	BS EN 50363-3	5	BS EN 60811-504	4.2	F5	b
Bending test at low temperature (sheath)	BS EN 50363-4.1	5	BS EN 60811-504	4.3	F5	b
Binder application	BS 4553-1	10	Visual	-	F100	n/a
Core colour/number clarity and durability	BS 4553-1	7.2	BS 4553-1	7.2	F100	a
Compatibility	BS 4553-1	Table 2	Annex G2 BS EN 60811-401 BS EN 60811-501	- -	F25	a
Concentric layer application	BS 4553-1	9.4	Visual	-	F100	n/a
Conductor construction	BS 4553-1	Table 3 & 4	BS EN 60228	-	F100	a
Earth continuity conductor resistance	BS 4553-1	16.2	BS EN 60228	-	F100	a
Earth continuity conductor construction	BS 4553-1	9.2	Visual	-	F100	n/a
Elongation test at low temperature (insulation)	BS EN 50363-3	6	BS 60811-505	4.2	F5	b
Elongation test at low temperature (sheath)	BS EN 50363-4.1	6	BS 60811-505	4.3	F5	b
End sealing	BS 4553-1	13	Visual examination	-	man	n/a
Flame propagation of a single cable	BS 4553-1	17.2	BS EN 60332-1-2	Annex A	F25	b
Heat shock (sheath)	BS EN 50363-4.1	3	BS EN 60811-509	4.4	F50	a
Heat shock (insulation)	BS EN 50363-3	3	BS EN 60811-509	4.3	F50	a

12.5 BS 4553-1:1998 Incorporating Amendment 1 & 2 - Continued

Tests, Facilities Required and Test Frequencies – Continued

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
Identification phase core	BS 4553-1	7.1	Visual examination	-	F100	n/a
Insulation resistance	BS EN 50363-3	8	BS EN 50395	8	F5	a
Insulation resistance on complete cable	BS 4553-1	16.4	BS 4553-1	Annex F	F5	a
Loss of mass (insulation)	BS EN 50363-3	Table 2	BS EN 60811-409	4	F5	a
Loss of mass (sheath)	BS EN 50363-4.1	Table 2	BS EN 60811-409	6	F5	a
Marking -external marking	BS 4553-1	12.1/12.2/12.3 /12.4	Visual examination	-	F100	a
Neutral conductor construction	BS 4553-1	9.1	Visual examination	-	F100	n/a
Neutral conductor covering colour	BS 4553-1	9.1	Visual examination	-	F100	n/a
Neutral conductor covering physical properties	BS 4553-1	9.1	BS EN 60811-501	-	F25	a
Neutral conductor resistance	BS 4553-1	16.2	BS EN 60228	-	F100	a
Phase conductor construction	BS 4553-1	5	BS EN 60228	-	F100	a
Phase conductor resistance	BS 4553-1	16.2	BS EN 60228	-	F100	a
Pressure test at high temperature (insulation)	BS EN 50363-3	4	BS EN 60811-508	4.3	F5	b
Pressure test at high temperature (sheath)	BS EN 50363-4.1	4	BS EN 60811-508	4.4	F5	b
String separation diameter	BS 4553-1	9.3	BS 4553-1	9.3	F100	a
Tensile Strength & Elongation before/after ageing in air (insulation)	BS EN 50363-3	1	BS EN 60811-401 BS EN 60811-501	- 4.2	F25	a
Tensile Strength & Elongation of bedding	BS 4553-1	8	BS EN 60811-401	-	F5	a

12.5 BS 4553:1998 Incorporating Amendment 1 & 2 - Continued

Tests, Facilities Required And Test Frequencies

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
Tensile Strength & Elongation before/after ageing in air (sheath)	BS EN 50363-4.1	1	BS EN 60811-401 BS EN 60811-501	- 4.3	F25	a
Thickness of insulation (phase conductor)	BS 4553-1	6.2	BS EN 60811-201	BS 4553-1 Annex D	F100	a
Thickness of sheath	BS 4553-1	Table 3 & 4	BS EN 60811-201	BS 4553-1 Annex D	F100	a
Voltage withstand on complete cable	BS 4553-1	16.3	BS 4553-1	Annex E	F100	a

The table above is a full list of tests covering the requirements of all applicable Tables of the standard. Not all are necessarily required for selected Tables. Reference should be made to the standard.
For an explanation of availability and frequency of tests codes, see section 12.3 and 12.4.

Schedule of Samples for Type Approval Submission

Type approval is normally granted either for the sizes 16sqmm, 25sqmm and 35sqmm only, or for the complete range of Table 3. For a restricted Licence covering the three larger sizes, one sample of any of these sizes is required. For a complete Licence, a further sample of the smallest size, i.e., 4 sqmm, is also required to be submitted. If approval is required for both copper and aluminium conductors at least one sample of each conductor type will be required.

12.6 BS 5467:1997 Incorporating Amendment 1 & 2

Electric cables- Thermosetting insulated, armoured cables for voltages of 600/1000 V and 1900/3300 V

Tests, Facilities Required And Test Frequencies

Test description	**Requirement**		**Test Method**		**Freq**	**Avail**
	Specification	Clause	Specification	Clause		
Absence of faults on insulation Spark Test	BS 5467	6.3	BS EN 62230	-	man	a
Absence of faults on sheath Spark Test	BS 5467	11.3	BS EN 62230	-	man	a
Armour aluminium strip dimensions	BS 5467	10.2	BS 5467	Annex G6	F5	a
Armour aluminium strip tensile test	BS 5467	10.2	BS 5467	Annex G4	F5	a
Armour resistance	BS 5467	Table H1,2,3	BS 5467	Annex G5	F50	a
Armour wire tensile test (aluminium armour wire)	BS 5467	10.3d	BS 5467	Annex G4	F5	a
Armour wire diameter	BS 5467	10.3a	BS 5467	Annex G1	F5	a
Armour wire mass of zinc coating	BS 5467	10.3b	BS 5467	Annex G2	F5	a
Armour wire wrapping test	BS 5467	10.3c	BS 5467	Annex G3	F5	a
Armour wire joints	BS 5467	10.4	Visual Exam	-	F5	a
Bending test at low temperature (sheath)	BS 7655-4.2	Table 2	BS EN 60811-504	4.3	F5	b
Bi-colour combination	BS 5467	7.2	BS EN 50396	5.2	F100	a
Core colour/number clarity and durability	BS 5467	7.3	BS 5467	7.3	F100	a
Compatibility	BS 5467	Table 3	Annex M BS EN 60811-401 BS EN 60811-501	- -	F25	a
Conductor construction	BS 5467	5	BS EN 60228	-	F100	a
Conductor resistance	BS 5467	16.2	BS EN 60228	-	F100	a
Core lay up direction and sequence	BS 5467	7.1 & 8.1	Visual Exam	-	F100	a
Core identification colour, sequence/number	BS 5467	7.1	Visual Exam	-	F100	a

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12.6 BS 5467:1997 Incorporating Amendment 1 & 2 - Continued

Tests, Facilities Required and Test Frequencies – Continued

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
Elongation test at low temperature (sheath)	BS 7655-4.2	Table 2	BS 60811-505	4.3	F5	b
End sealing	BS 5467	13	Visual examination	-	man	n/a
Flame propagation of a single cable	BS 5467	17.2	BS EN 60332-1-2	Annex A	F25	b
Fillers and Binders	BS 5467	8.1	Visual examination	-	F25	n/a
Gaps in taped bedding	BS 5467	9.1b)	BS 5467	17.3	F100	a
Hardness (insulation)	BS 7655-1.2	Table 2	BS 903:Part A26	-	F5	b
Heat shock (sheath)	BS 7655-4.2	Table 2	BS EN 60811-509	4.4	F50	a
Hot deformation (sheath)	BS 7655-4.2	Table 2	BS 6469-99.1	10	F5	b
Hot set test (insulation)	BS 7655-1.2/-1.3	Table 2	BS EN 60811-507	-	F5	b
Impact test at low temperature -15ºC (sheath)	BS 7655-4.2	Table 2	BS 60811-506	-	F5	b
Insulation resistance constant (insulation)	BS 7655-1.2/1.3	Table 2	BS 6469-99.2	8	F5	a
Insulation resistance constant (sheath)	BS 7655-4.2	Table 2	BS 6469-99.2	8	F5	a
Loss of mass	BS 7655-4.2	Table 2	BS EN 60811-409	6	F5	a
Marking - end marking	BS 5467	12.1	Visual Examination	-	F100	n/a
Marking -external marking	BS 5467	12.2/12.3/12.4 /12.5	Visual examination	-	F100	a
Ozone resistance	BS 7655-1.2	Table 2	BS EN 50396	8.1.3	1/yr	o
Pressure test at high temperature (sheath)	BS 7655-4.2	Table 2	BS EN 60811-508	4.4	F5	b
Properties of bedding	BS 5467	9.1	BS EN 60811-501	4.3	F5	a

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12.6 BS 5467:1997 Incorporating Amendment 1 & 2 - Continued

Tests, Facilities Required And Test Frequencies

Test description	**Requirement**		**Test Method**		**Freq**	**Avail**
	Specification	Clause	Specification	Clause		
Shrinkage of insulation	BS 5467	18.3	BS EN 60811-502	-	F50	a
Tensile Strength & Elongation before/after ageing in air (insulation)	BS 7655-1.2/1.3	Table 2	BS EN 60811-401 BS EN 60811-501	- 4.2	F25	a
Tensile Strength & Elongation before/after ageing in air bomb (insulation)	BS 7655-1.2	Table 2	BS EN 60811-412 BS EN 60811-501	- 4.2	F5	b
Tensile Strength & Elongation before/after ageing in air (sheath)	BS 7655-4.2	Table 2	BS EN 60811-401 BS EN 60811-501	- 4.3	F25	a
Thickness of insulation	BS 5467	6.2	BS EN 60811-201	BS 5467 Annex D	F100	a
Thickness of bedding	BS 5467	9.2	BS EN 60811-202	BS 5467 Annex D	F100	a
Thickness of sheath	BS 5467	11.2	BS EN 60811-201	BS 5467 Annex D	F100	a
Voltage withstand on complete cable	BS 5467	16.3	BS 5467	Annex K	F100	a
Water absorption (gravimetric) test insulation	BS 7655-1.2/1.3	Table 2	BS EN 60811-402	4.4	F5	a

The table above is a full list of tests covering the requirements of all applicable Tables of the standard. Not all are necessarily required for selected Tables. Reference should be made to the standard.
For an explanation of availability and frequency of tests codes, see section 12.3 and 12.4.

12.6 BS 5467:1997 Amendments Nos 1 & 2 – Continued

Schedule of samples for type approval submission

Table	Type Of Cable	Number And Size Of Samples
4	Single-core 600/1000V cables with circular stranded copper conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
5	Single-core 600/1000V cables with solid aluminium conductor - circular solid conductor (Class 1)	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
5	Single-core 600/1000V cables with solid aluminium conductor - circular sectoral conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
6	Two-core 600/1000V cables with stranded copper conductors	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
7	Two-core 600/1000V cables with solid aluminium conductors	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
8	Three-core 600/1000V cables with stranded copper conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
9	Three-core 600/1000V cables with solid aluminium conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
10	Four-core 600/1000V cables with stranded copper conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size

12.6 BS5467:1997 Amendments Nos 1 & 2 – Continued

Schedule of Samples for Type Approval Submission – Continued

Table	Type of cable	Number and size of samples
11	Four-core 600/1000V cables with solid aluminium conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
13	Five-core 600/1000V cables with stranded copper conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
14	Single-core 1900/3300V cables with circular stranded copper conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
15	Single-core 1900/3300V cables with solid aluminium conductors - circular solid conductor (Class 1)	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
15	Single core 1900/3300V cables with solid aluminium conductors - circular sectoral conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
16	Three-core 1900/3300V cables with stranded copper conductors	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
17	Three-core 1900/3300V cables with solid aluminium conductors	One sample of approximately minimum conductor size One sample approximately maximum conductor size
18	600/1000V armoured auxiliary cables with stranded copper conductors	One sample of any size of approximately minimum number of cores One sample of any size of approximately maximum number of cores

12.6 BS5467:1997 Amendments Nos 1 & 2 – Continued

Notes:

Single core and auxiliary cables will always be considered separately

For two, three and four core cables with the same type of conductors, three samples only will be required as follows:

- Two-core. Approximately maximum cross-sectional area of conductor.
- Three-core. Approximately mid-way between the minimum and maximum cross-sectional areas of conductor.
- Four-core. Approximately minimum cross-sectional area of conductor.

For two, three, four and five core cables with the same type of conductors, four samples only will be required as follows:

- Two-core. Approximately maximum cross-sectional area of conductor.
- Three-core. Approximately mid-way between the minimum and maximum cross-sectional areas of conductor, but not the same as the five core.
- Four-core. Approximately minimum cross-sectional area of conductor.
- Five-core. Approximately mid-way between the minimum and maximum cross-sectional areas of conductor, but not the same as the three-core.

12.7 BS 6231:1998 Incorporating Amendment No.1

Specification for PVC-insulated cables for switchgear and control gear wiring

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
Application of insulation	BS 6231	9.2	Visual examination	-	F100	n/a
Absence of faults on insulation Spark Test	BS 6231	12.1.1/12.1.2/ 12.2.2	BS EN 62230	-	man	a
Bending test at low temperature (insulation)	BS EN 50363-3/BS 7655-3.2	Table 2	BS EN 60811-504	4.2	F5	b
Bi-colour combination	BS 6231	6.2/6.3	BS 6231	6.2/6.3	F100	a
Cable construction	BS 6231	Tables 5-9	BS 6231	-	F100	a
Core colour clarity and durability	BS 6231	6.4	BS 6231	13	F100	a
Conductor construction	BS 6231	8.1-8.6 & Table 1	BS EN 60228	-	F100	a
Conductor resistance	BS EN 60228	-	BS EN 60228	-	F100	a
Core identification colour number	BS 6231	Tables 5-9	Visual examination	-	F100	a
Elongation at low temperature	BS EN 50363-3/BS 7655-3.2	Table 2	BS EN 60811-505	4.2	F5	b
Flame propagation of a single cable	BS 6231	14	BS EN 60332-1-2	-	F25	b
Hot deformation	BS 7655-3.2	Table 2	BS 6469-99.1	10	F5	b
Insulation resistance	BS 6231	Tables 5-9	BS 6231	12.2.4.1/12 .2.4.2/12.2. 4.3	F5	a
Insulation resistance constant (TI1 & TI3)	BS EN 50363-3	Table 2	BS EN 50395	8	F5	a
Insulation resistance constant (Type 2)	BS 7655-3.2		BS 6469-99.2	8	F5	a
Long term resistance of insulation to dc	BS 6231	12.1.2	BS 6231	12.2.5	F5	b

12.7 BS 6231:1998 Incorporating Amendment No.1

Specification for PVC-insulated cables for switchgear and control gear wiring

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
Loss of mass	BS EN 50363-3/BS 7655-3.2	Table 2	BS EN 60811-409	4	F5	a
Marking legend	BS 6231	7.1/7.2/7.3/7.4	Visual examination	-	F100	a
Marking durability	BS 6231	7.5	BS 6231	13	F100	a
Overall dimensions	BS 6231	Tables 5-9	BS EN 60811-203 BS 6231	- 11.2	F25	a
Pressure test at high temperature	BS EN 50363-3/BS 7655-3.2	Table 2	BS EN 60811-508	4.3	F5	b
Resistance to cracking (heat shock)	BS EN 50363-3/BS 7655-3.2	Table 2	BS EN 60811-509	4.3	F50	a
Solderability	BS 6231	8.5	BS 2011-2.1T:1981	-	F5	b
Tensile strength & elongation as manufactured (Type 2)	BS 7655-3.2	Table 2	BS EN 60811-401	-	F25	a
Tensile strength & elongation before/after ageing in air (Types TI1 & TI3)	BS EN 50363-3	Table 2	BS EN 60811-401	-	F25	a
Thermal endurance	BS 6231	12.1.1	BS 6231	12.2.6	F5	a
Thermal stability (TI3)	BS EN 50363-3	Table 2	BS EN 60811-405	-	F5	a
Thickness of insulation	BS 6231	9.3 & Tables 5-9	BS EN 60811-201 BS 6231	- 11.1	F100	a
Voltage test on complete cable - unsheathed	BS 6231	12.2.3	BS 6231	12.2.3.1/12.2.3.2	F100	a

12.7 BS 6231:1998 Incorporating Amendment No.1

Specification for PVC-insulated cables for switchgear and control gear wiring

This is a full list of tests covering the requirements of all applicable Tables of the standard. Not all are necessarily required for selected Tables. Reference should be made to the standard. For an explanation of availability and frequency of tests codes, see points 12.3 and 12.4.

Notes

The colour fastness to daylight and bleeding and blooming of colour tests for Type 2 PVC compounds are purchaser requirements tests only and are not included in this Scheme.

Schedule of Samples for Type Approval Submission

Cable type	Number and size of samples
Type AU	One sample
Type AK	One sample of 0.22sqmm or 0.5sqmm and one sample of 0.75sqmm
Type BU/BR	Two samples, one large and one small, depending upon the range sought
Type BK	Two samples, one large and one small, depending upon the range sought
Type CU/CR	Two samples, one large and one small, depending upon the range sought
Type CK	Two samples, one large and one small, depending upon the range sought

12.8 BS 6231: 2006 Incorporating Corrigendum No. 1

Specification for PVC-insulated cables for switchgear and control gear wiring

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
Application of insulation	BS 6231	6.2	Visual examination	-	F100	n/a
Absence of faults on insulation Spark Test	BS 6231	6.4	BS EN 62230	-	man	a
Bending test at low temperature (insulation)	BS EN 50363-3	Table 2	BS EN 60811-504	4.2	F5	b
Bi-colour combination	BS 6231	7	BS EN 50396	5.2	F100	a
Cable construction	BS 6231	5 & 6	BS 6231	-	F100	a
Core colour clarity and durability	BS 6231	7	BS 6231	13	F100	a
Conductor construction	BS 6231	5	BS EN 60228	-	F100	a
Conductor resistance	BS 6231	10.2	BS EN 60228	-	F100	a
Core identification colour	BS 6231	7	Visual examination	-	F100	a
Elongation at low temperature	BS EN 50363-3	Table 2	BS EN 60811-505	4.2	F5	b
Flame propagation of a single cable	BS 6231	10.6	BS EN 60332-1-2	-	F25	b
Insulation resistance	BS 6231	Table 1-2	BS EN 50395	8.1	F5	a
Long term resistance of insulation to dc	BS 6231	11.2	BS EN 50395	9	F5	b
Loss of mass	BS EN 50363-3	Table 2	BS EN 60811-409	4	F5	a
Marking legend	BS 6231	8	Visual examination	-	F100	a
Marking durability	BS 6231	8	BS 6231	8	F100	a
Overall dimensions	BS 6231	Tables 1-2	BS EN 60811-203	-	F25	a
Pressure test at high temperature	BS EN 50363-3	Table 2	BS EN 60811-508	4.3	F5	b
Resistance to cracking (heat shock)	BS EN 50363-3	Table 2	BS EN 60811-509	4.3	F50	a

12.8 BS 6231: 2006 Incorporating Corrigendum No. 1

Specification for PVC-insulated cables for switchgear and control gear wiring

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
Tensile strength & elongation before/after ageing in air (Types TI1 & TI3)	BS EN 50363-3	Table 2	BS EN 60811-401	-	F25	a
Thermal stability (TI3)	BS EN 50363-3	Table 2	BS EN 60811-405	-	F5	a
Thickness of insulation	BS 6231	Tables 1-2	BS EN 60811-201	-	F100	a
Voltage test on complete cable - unsheathed	BS 6231	10.3	BS 6231	Annex D	F100	a

This is a full list of tests covering the requirements of all applicable Tables of the standard. Not all are necessarily required for selected Tables. Reference should be made to the standard. For an explanation of availability and frequency of tests codes, see points12.3 and 12.4.

Schedule Of Samples For Type Approval Submission

Cable type	Number and size of samples
Type BK	Two samples, one large and one small, depending upon the range sought
Type CK	Two samples, one large and one small, depending upon the range sought

12.9 BS 6346:1997 Incorporating Amendment No. 1 & 2

Electric cables – PVC insulated, armoured cables for voltages of 600/1000 V and 1900/3300 V

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
Absence of faults on insulation Spark Test	BS 6346	6.3	BS 5099	-	man	a
Absence of faults on sheath Spark Test	BS 6346	11.3	BS 5099	-	man	a
Armour aluminium strip dimensions	BS 6346	10.2, T 5-19	BS 6346	Annex G6	F5	a
Armour aluminium strip tensile test	BS 6346	10.2	BS 6346	Annex G4	F5	a
Armour resistance	BS 6346	10.5,T H1-5	BS 6346	Annex G5	F50	a
Armour wire tensile test (aluminium armour wire)	BS 6346	10.3d	BS 6346	Annex G4	F5	a
Armour wire diameter	BS 6346	10.3a	BS 6346	Annex G1	F5	a
Armour wire mass of zinc coating	BS 6346	10.3b, T1	BS 6346	Annex G2	F5	a
Armour wire wrapping test	BS 6346	10.3c	BS 6346	Annex G3	F5	a
Armour wire joints	BS 6346	10.4	Visual Exam	-	F5	a
Armour wire lay direction	BS 6346	10.1	Visual Exam	-	F5	a
Application of bedding and fillers	BS 6346	8.1/9.1	Visual Exam	-	F100	a
Bending test at low temperature (insulation)	BS 7655-3.1	Table 2	BS EN 60811-504	4.2	F5	b
Bending test at low temperature (sheath)	BS 7655-4.1	Table 2	BS EN 60811-504	4.3	F5	b
Bi-colour combination	BS 6346	7.2	BS EN 50396	5.2	F100	a
Cable construction	BS 6346	Tables 5-19	Visual Exam	-	F100	a
Core colour clarity and durability	BS 6346	7.3	BS 6346	7.3	F100	a
Compatibility	BS 6346	18.2,Table 4	BS 6346	Annex M2	F25	a
Conductor construction	BS 6346	5	BS EN 60228	-	F100	a
Conductor resistance	BS 6346	16.2	BS EN 60228	-	F100	a
Core lay up direction and sequence	BS 6346	8.1	Visual Exam	-	F100	a
Core identification colour /number	BS 6346	7.1	Visual Exam	-	F100	a

12.9 BS 6346:1997 Incorporating Amendment No. 1 & 2

Electric cables – PVC insulated, armoured cables for voltages of 600/1000 V and 1900/3300 V

Tests, Facilities Required and Test Frequencies – Continued

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
Elongation test at low temperature (insulation)	BS 7655-3.1	Table 2	BS EN 60811-505	4.2	F5	b
Elongation test at low temperature (sheath)	BS 7655-4.1	Table 2	BS EN 60811-505	4.3	F5	b
End sealing	BS 6346	13	Visual examination	-	man	n/a
Flame propagation of a single cable	BS 6346	17.2 & BS EN 60332-1-2 Annex A	BS EN 60332-1-2	-	F25	b
Fillers and Binders	BS 6346	8.1	Visual examination	-	F100	n/a
Gaps in taped bedding	BS 6346	9.1b)	BS 6346	17.3	F100	a
Heat shock (insulation)	BS 7655-3.1	Table 2	BS EN 60811-509	4.3	F5	a
Insulation resistance	BS 6346	16.4, Table 3	BS 6346	Annex L	F5	a
Loss of mass (insulation)	BS 7655-3.1	Table 2	BS EN 60811-409	4	F5	a
Loss of mass (sheath)	BS 7655-4.1	Table 2	BS EN 60811-409	6	F5	a
Marking - end marking	BS 6346	12.1	Visual Examination	-	F100	n/a
Marking -external marking & legibility	BS 6346	12.2/12.3/12.4 /12.5	Visual examination	-	F100	a
Pressure test at high temperature (insulation)	BS 7655-3.1	Table 2	BS EN 60811-508	4.3	F5	b
Pressure test at high temperature (sheath)	BS 7655-4.1	Table 2	BS EN 60811-508	4.4	F5	b
Properties of bedding	BS 6346	9.1	BS EN 60811-501	4.3	F5	a

12.9 BS 6346:1997 Incorporating Amendment No. 1 & 2

Electric cables – PVC insulated, armoured cables for voltages of 600/1000 V and 1900/3300 V

Tests, Facilities Required And Test Frequencies

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
Tensile Strength & Elongation before/after ageing in air (insulation)	BS 7655-3.1	Table 2	BS EN 60811-401 BS EN 60811-501	- 4.2	F25	a
Tensile Strength & Elongation before/after ageing in air (sheath)	BS 7655-4.1	Table 2	BS EN 60811-401 BS EN 60811-501	- 4.3	F25	a
Thickness of insulation	BS 6346	6.2, T 5-19	BS 6346	Annex D	F100	a
Thickness of taped bedding	BS 6346	9.2	BS 6346	Annex D	F100	a
Thickness of extruded bedding	BS 6346	9.2, T 5-19	BS 6346	Annex D	F100	a
Thickness of sheath	BS 6346	11.2, T 5-19	BS 6346	Annex D	F100	a
Voltage test on complete cable	BS 6346	16.3	BS 6346	Annex K	F100	a

This is a full list of tests covering the requirements of all applicable Tables of the standard. Not all are necessarily required for selected Tables. Reference should be made to the standard.

For an explanation of availability and frequency of tests codes, see sections 12.3 and 12.4.

12.9 BS 6346:1997 Incorporating Amendment No.1 & 2 – Continued

Schedule of samples for type approval submission

Table	Type of cable	Number and size of samples
5	Single-core 600/1000v cables with circular stranded copper conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
6	Single-core 600/1000v cables with solid aluminium conductor – circular solid conductor (class 1)	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
6	Single-core 600/1000v cables with solid aluminium conductor – circular sectoral conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
7	Two-core 600/1000v cables with stranded copper conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
8	Two-core 600/1000v cables with solid aluminium conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
9	Three-core 600/1000v cables with stranded copper conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
10	Three-core 600/1000v cables with solid aluminium conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
11	Four-core 600/1000v cables with stranded copper conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
12	Four-core 600/1000v cables with solid aluminium conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
14	Five-core 600/1000v cables with stranded copper conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
15	Single-core 1900/3300v cables with circular stranded copper conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size

12.9 BS 6346:1997 Incorporating Amendment No.1 & 2 – Continued

Schedule of Samples for Type Approval Submission – Continued

Table	Type Of Cable	Number And Size Of Samples
16	Single-core 1900/3300v cables with solid aluminium conductor - circular solid conductor (class 1)	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
16	Single-core 1900/3300v cables with solid aluminium conductor – circular sectoral conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
17	Three-core 1900/3300 v cables with stranded copper conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
18	Three-core 1900/3300 v cables with solid aluminium conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
19	600/1000v armoured auxiliary cables with stranded copper conductors	One sample of any size of approximately minimum number of cores One sample of any size of approximately maximum number of cores

Notes:

1. Single core and auxiliary cables will always be considered separately

2. For two, three and four core cables with the same type of conductors, three samples only will be required as follows:

   - Two-core. Approximately maximum cross-sectional area of conductor.
   - Three-core. Approximately mid-way between the minimum and maximum.
   - Cross-sectional areas of conductor, but not the same as the five-core.
   - Four-core. Approximately minimum cross-sectional area of conductor.

12.9 BS 6346:1997 Incorporating Amendment No.1 & 2 – Continued

3. For two, three, four and five core cables with the same type of conductors, four samples only will be required as follows:

- Two-core. Approximately maximum cross-sectional area of conductor.
- Three-core. Approximately mid-way between the minimum and maximum cross-sectional areas of conductor, but not the same as the five core.
- Four-core. Approximately minimum cross-sectional area of conductor.
- Five-core. Approximately mid-way between the minimum and maximum cross-sectional areas of conductor, but not the same as the three-core.

12.11 BS 7629-1:1997 + Amds 1 & 2

Specification for 300/500V fire resistant electric cables having low emission of smoke and corrosive gases when affected by fire. Part 1 Multicore and Multipair cables

Tests, Facilities Required And Test Frequencies

Test description	**Requirement**		**Test Method**		**Freq**	**Avail**
	Specification	Clause	Specification	Clause		
Absence of faults on insulation Spark Test	BS 7629-1	6.4	BS 5099 & BS EN 62230	-	man	a
Absence of faults on insulation Voltage Test	BS 7629-1	14.2.1	BS 7629-1	14.2.2	man	a
Absence of faults on insulation Voltage Test	BS 7629-1	14.2.1	BS 7629-1	14.2.2	F100	a
Absence of faults on sheath Spark Test	BS 7629-1	10.4	BS 5099 / BS EN 62230	-	man	a
Application of insulation	BS 7629-1	6.2	Visual Examination	-	F100	n/a
Application of sheath	BS 7629-1	10.2	Visual Examination	-	F100	n/a
Bending characteristics complete cable at 0ºC	BS 7629-1	16.2	BS 7629-1	Annex B	F5	a
Bending test at low temperature -15ºC insulation	BS 7655-5.1	Table 2	BS EN 60811-504	4.2	F5	b
Bending test at low temperature -15ºC sheath	BS 7655-6.1	-	BS EN 60811-504	4.3	F5	b
Core identification colour -colour & number	BS 7629-1	7.1	Visual Examination	-	F100	a
Core identification - clarity and durability	BS 7629-1	7.2	Visual Examination	7.2	F100	a
Conductor construction	BS 7629-1	5.1 & 5.2	BS EN 60228	-	F100	a
Conductor resistance	BS 7629-1	15.3	BS EN 60228	-	F100	a
Core lay, direction and sequence	BS 7629-1	8.1	Visual Examination	-	F100	a
Corrosive and acid gas emission	BS 7629-1	6.5/8.2/10.5	BS EN 60754-1	-	F5	o

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12.11 BS 7629-1:1997 + Amds 1 & 2

Specification for 300/500V fire resistant electric cables having low emission of smoke and corrosive gases when affected by fire. Part 1 Multicore and Multipair cables

Tests, Facilities Required And Test Frequencies

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
Drain wire	BS 7629-1	5.3	BS EN 60228	-	F25	a
Elongation test at low temperature (-15ºC) insulation	BS 7655-5.1	5	BS EN 60811-505	4.2	F5	b
Elongation test at low temperature (-15ºC)sheath	BS 7655-6.1	Table 2	BS EN 60811-505	4.3	F5	b
Flame propagation of a single cable	BS 7629-1	15.5	BS EN 60332-1-2	-	F25	b
Hardness (insulation)	BS 7655-1.2	Table 2	BS 903	Part A26	F5	b
Hot set test (Insulation)	BS 7655-1.1/1.2/5.1	2	BS EN 60811-507	-	F5	b
Impact resistance complete cable at 20ºC	BS 7629-1	16.3	BS 7629-1	Annex C	F5	b
Impact test at low temperature -15ºC insulation	BS 7655-5.1	Table 2	BS EN 60811-506	-	F5	b
Impact test at low temperature -15ºC sheath	BS 7655-6.1	Table 2	BS EN 60811-506	-	F5	b
Insulation resistance constant (insulation)	BS 7655-1.2	Table 2	BS 6469-99.2	8	F5	a
Marking - legend	BS 7629-1	11	Visual Examination	-	F100	a
Ozone resistance	BS 7655-1.2/ 5.1	Table 2	BS 6496:99.1	13	1/yr	o
Pressure test at high temperature (insulation)	BS 7655-1.1/5.1	Table 2	BS EN 60811-508	4.3	F5	b
Pressure test at high temperature (sheath)	BS 7655-6.1	Table 2	BS EN 60811-508	4.4	F5	b
Resistance to fire	BS 7629-1	15.6	BS 6387 Cat C	D2	1/yr	o
Resistance to fire with water	BS 7629-1	16.4	BS 6387 Cat W BS 7629-1	D3 Annex E1	1/yr	o
Resistance to fire with mechanical shock	BS 7629-1	16.5	BS 6387 Cat Z BS 7629-1	D4 Annex E2	1/yr	o

12.11 BS 7629-1:1997 + Amds 1 & 2

Specification for 300/500V fire resistant electric cables having low emission of smoke and corrosive gases when affected by fire. Part 1 Multicore and Multipair cables

Tests, Facilities Required and Test Frequencies - Continued

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
Screen minimum thickness & overlap	BS 7629-1	9	Visual Examination	-	F50	a
Smoke emission	BS 7629-1	15.7	BS EN 61034-2	-	F5	o
Tensile Strength & Elongation before/after ageing in air (insulation)	BS 7655-1.1/1.2/5.1	Table 2	BS EN 60811-401 BS EN 60811-501	4.2 4.2	F25	a
Tensile Strength & Elongation before/after ageing in air bomb (insulation)	BS 7655-.1/1.2	Table 2	BS EN 60811-401 BS EN 60811-501	- 4.2	F25	a
Tensile Strength & Elongation before/after ageing in air (sheath)	BS 7655-6.1	Table 2	BS EN 60811-401 BS EN 60811-501	4.2 4.3	F25	a
Thickness of insulation	BS 7629-1	6.3	BS 7629-1	15.2	F100	a
Thickness of sheath	BS 7629-1	10.3	BS 7629-1	15.2	F100	a
Voltage withstand on complete cable	BS 7629-1	15.4.1	BS 7629-1	15.4.2	F25	a
Water immersion test	BS 7655-6.1	Table 2	BS 6469:99.1	14	F5	a
Water absorption (gravimetric) test	BS 7655-1.2	Table 2	BS EN 60811-402	-	F5	a
Water absorption (capacitance) test	BS 7655-1.2	Table 2	BS 6469:99.2	10	F5	a

The above table is a full list of tests covering the requirements of all applicable Tables of the standard. Not all are necessarily required for selected Tables. Reference should be made to the standard.

For an explanation of availability and frequency of tests codes, see sections 12.3 and 12.4.

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12.11 BS 7629-1:1997 + Amds 1 & 2

Specification for 300/500V fire resistant electric cables having low emission of smoke and corrosive gases when affected by fire. Part 1 Multicore and Multipair cables

Schedule of samples for type approval submission

For full approval to BS 7629 Table 1 only, three samples including the following:

- one of minimum conductor size and maximum number of cores.
- one of maximum conductor size and minimum number of cores.
- one of any conductor size with an intermediate number of cores.

For limited approvals covering up to three ranges in the number of cores, then only two samples are required:

- one of minimum conductor size and maximum number of cores.
- one of maximum conductor size and minimum number of cores.

For both full and limited approval the smallest and largest cables shall be subjected to fire resistance tests.

Cables which contain a “sacrificial” layer will be allowed under this scheme, however, the layer shall be disregarded in both the physical and material testing on the underlying construction, e.g., it shall be removed before testing for compliance to the tests required by the specification. The exception to this shall be core identification since it may be the layer that contains the means of identification.

Dual approvals to BS 7629 and BS 6387 will be subject to the implementation of the Note to Clause 1 of BS 6387, and the following conditions:

- All the requirements of BS 6387 see 12.24 must be met.
- Approvals to all categories of BS 6387 may be awarded.

12.11 BS 7629-1:1997 + Amds 1 & 2

Specification for 300/500V fire resistant electric cables having low emission of smoke and corrosive gases when affected by fire. Part 1 Multicore and Multipair cables

- The cables shall be dual marked BS 7629 and BS 6387. The markings shall also include the categories of BS 6387 for which approval is granted.

Two additional type approval samples shall be submitted. One sample shall be of approximately maximum conductor size and minimum number of cores, and the other approximately minimum conductor size and maximum number of cores. These two samples shall meet all the requirements of BS 7629, and the relevant categories of BS 6387.

12.13 BS 7870-3.20:2001 Incorporating Amendment No 1

LV and MV polymeric insulated cables for use by distribution and generation utilities. Part 3 Specification for distribution cables of rated voltage 0.6/1kV. Section 3.20 PVC insulated split concentric cables with copper or aluminium conductors

Tests, Facilities Required And Test Frequencies

Test description	Cross Reference	Freq	Avail
Absence of faults on insulation	BS 5099 & BS EN 50356	man	a
Absence of faults on sheath	BS 5099 & BS EN 50356	man	a
Application of insulation & sheath	BS 7870-3.20	F100	a
Bending test at low temperature (Insulation)	BS 7655-3.1	F5	b
Bending test at low temperature (Sheath)	BS 50363-4-1	F5	b
Cable construction	BS 7870-3.20	F100	a
Colour - clarity and durability of colour	BS 7870-2	F100	a
Compatibility	BS 7870-3.20	F25	a
Core identification - colour	BS 7870-3.20	F100	a
Earth continuity conductor – construction	BS 7870-3.20	F100	a
Earth continuity conductor - resistance	BS 6360 & BS EN 60228	F100	a
Elongation test at low temperature (insulation)	BS 7655-3.1	F5	b
Elongation test at low temperature (sheath)	BS 7655-4.1	F5	b
Flame propagation of a single cable	BS EN 60332-1-2	F25	b
Impact test at low temperature (Insulation)	BS 7655-3.1	F5	b
Impact test at low temperature (Sheath)	BS 7655-4.1	F5	b
Insulation resistance at 20°C	BS 7870-3.20	F5	a
Insulation resistance 70°C	BS 7655-3.1	F5	a
Loss of mass (Insulation)	BS 7655-3.1	F5	a
Loss of mass (Sheath)	BS 7655-4.1	F5	a
Marking - legend	BS 7870-3.20	F100	a
Marking - legibility	BS 7870-3.20	F100	a

Test description	Cross Reference	Freq	Avail
Neutral conductor covering - construction	BS 7870-3.20	F100	a
Neutral conductor covering - physical properties	BS EN 60811-1-1	F25	a
Neutral conductor resistance	BS 6360 & BS EN 60228	F100	a
Phase conductor construction	BS 6360 &BS EN 60228	F100	a
Phase conductor resistance	BS 6360 & BS EN 60228	F100	a
Pressure test at high temperature (Insulation)	BS 7655-3.1	F5	b
Pressure test at high temperature (Sheath)	BS 7655-4.1	F5	b
Resistance to cracking (Insulation)	BS 7655-3.1	F50	a
Resistance to cracking (Sheath)	BS 7655-4.1	F50	a
Tensile Strength & Elongation before/after ageing in air (Insulation)	BS 7655-3.1	F25	a
Tensile Strength & Elongation before/after ageing in air (Sheath)	BS 7655-4.1	F25	a
Thickness of insulation	BS EN 60811-1-1	F100	a
Thickness of sheath	BS EN 60811-1-1	F100	a
Voltage test on completed cable	BS 7870-3.20	F100	a

For an explanation of availability and frequency of tests codes, see sections 12.3 and 12.4.

SCHEDULE OF SAMPLES FOR TYPE APPROVAL SUBMISSION

Copper conductor - two samples will be required for type approval as follows:

- One sample approximately the maximum conductor size.
- One sample approximately the minimum conductor size.

Aluminium conductor – one sample.

12.14 BS 7889:1997 Incorporating Amendment Nos 1, 2 & 3 and Corrigendum 1

Electric cables – Thermosetting insulated, unarmoured cables for a voltage of 600/1000V

Test, Facilities Required And Test Frequencies

Test description	Cross Reference	Freq	Avail
Absence of faults on insulation (spark test)	BS 5099 & BS EN 50356	man	a
Bending test at low temperature (Sheath)	BS 7655-4.2	F5	b
Cable construction	BS 7889	F100	a
Colour - clarity and durability of colour	BS 7889	F100	a
Compatibility	BS 7889	F25	a
Conductor construction	BS 6360 & BS EN 60228	F100	a
Conductor resistance	BS 6360 & BS EN 60228	F100	a
Core identification - colour/number	BS 7889	F100	a
Determination of hardness (Insulation)	BS 7655-1.2	F5	b
Elongation test at low temperature (Sheath)	BS 7655-4.2	F5	b
Flame propagation of a single cable	BS EN 60332-1-2	F25	b
Hot deformation (Sheath)	BS 7655-4.2	F5	b
Hot set test (Insulation)	BS 7655-1.2/1.3	F5	b
Impact test at low temperature (Sheath)	BS 7655-4.2	F5	b
Insulation resistance constant (Insulation)	BS 7655-1.2/1.3	F5	a
Insulation resistance constant (Sheath)	BS 7655-4.2	F5	a
Loss of mass (Sheath)	BS 7655-4.2	F5	a
Marking - legend	BS 7889	F100	a
Marking - legibility	BS 7889	F100	a
Ozone resistance test -Alternative low concentration (Insulation)	BS 7655-1.2	1/y	o
Pressure test at high temperature (Sheath)	BS 7655-4.2	F5	b
Resistance to cracking (Sheath)	BS 7655-4.2	F50	a
Shrinkage test on insulation	BS 7889	F50	a
Tensile Strength & Elongation before/after ageing in	BS 7655-1.2/1.3	F25	a

Test description	Cross Reference	Freq	Avail
air (Insulation)			
Tensile Strength & Elongation before/after ageing in air (Sheath)	BS 7655-4.2	F25	a
Tensile Strength & Elongation. before/after ageing in air bomb (Insulation)	BS 7655-1.2	F5	b
Thickness of insulation	BS EN 60811-1.1	F100	a
Thickness of sheath	BS EN 60811-1.1	F100	a
Voltage test on completed cable (spark test)	BS 7889 Annex E	man	a
Water absorption test - Gravimetric (Insulation)	BS 7655-1.2/1/3	F5	a

For an explanation of availability and frequency of tests codes, see sections 12.3 and 12.4.

Schedule of Samples for Type Approval Submission

Table	Type of cable	Number and size of samples
3	Single-core 600/1000V cables with circular stranded copper conductor	One sample of approximately minimum conductor size. One sample of approximately maximum conductor size
4	Single-core 600/1000V cables with solid aluminium conductor – circular solid conductor (Class 1)	One sample of approximately minimum conductor size. One sample of approximately maximum conductor size
4	Single-core 600/1000V cables with solid aluminium conductor – circular sectoral conductor	One sample of approximately minimum conductor size. One sample of approximately maximum conductor size

12.18 BS 5467:1997 Incorporating Amendment 3:2008

Electric cables- Thermosetting insulated, armoured cables for voltages of 600/1000 V and 1900/3300 V

Tests, Facilities Required And Test Frequencies

Test description	**Requirement**		**Test Method**		**Freq**	**Avail**
	Specification	Clause	Specification	Clause		
Absence of faults on insulation Spark Test	BS 5467	6.3	BS EN 62230 & BS EN 50356	-	man	a
Absence of faults on sheath Spark Test	BS 5467	11.3	BS EN 62230 & BS EN 50356	-	man	a
Armour resistance	BS 5467	Table H1,2,3	BS 5467	Annex G5	F50	a
Armour wire tensile test (aluminium armour wire)	BS 5467	10.3d	BS 5467	Annex G4	F5	a
Armour wire diameter	BS 5467	10.3a	BS 5467	Annex G1	F5	a
Armour wire mass of zinc coating	BS 5467	10.3b	BS 5467	Annex G2	F5	a
Armour wire wrapping test	BS 5467	10.3c	BS 5467	Annex G3	F5	a
Armour wire joints	BS 5467	10.4	Visual Exam	-	F5	a
Bending test at low temperature (sheath)	BS 7655-4.2	Table 2	BS EN 60811-504	4.3	F5	b
Bi-colour combination	BS 5467	7.2	BS EN 50396	5.2	F100	a
Core colour/number clarity and durability	BS 5467	7.3	BS 5467	7.3	F100	a
Compatibility	BS 5467	Table 3	Annex M BS EN 60811-401 BS EN 60811-501	- - 	F25	a
Conductor construction	BS 5467	5	BS EN 60228	-	F100	a
Conductor resistance	BS 5467	16.2	BS EN 60228	-	F100	a
Core lay up direction and sequence	BS 5467	7.1 & 8.1	Visual Exam	-	F100	a
Core identification colour, sequence/number	BS 5467	7.1	Visual Exam	-	F100	a

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12.18 BS 5467:1997 Incorporating Amendment 3:2008 - Continued

Tests, Facilities Required and Test Frequencies – Continued

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
Elongation test at low temperature (sheath)	BS 7655-4.2	Table 2	BS 60811-505	4.3	F5	b
End sealing	BS 5467	13	Visual examination	-	man	n/a
Flame propagation of a single cable	BS 5467	17.2	BS EN 60332-1-2	Annex A	F25	b
Fillers and Binders	BS 5467	8.1	Visual examination	-	F100	n/a
Hardness (insulation)	BS 7655-1.2	Table 2	BS 903:Part A26	-	F5	b
Heat shock (sheath)	BS 7655-4.2	Table 2	BS EN 60811-509	4.4	F50	a
Hot deformation (sheath)	BS 7655-4.2	Table 2	BS 6469-99.1	10	F5	b
Hot set test (insulation)	BS 7655-1.2/-1.3	Table 2	BS EN 60811-507	-	F5	b
Impact test at low temperature -15ºC (sheath)	BS 7655-4.2	Table 2	BS 60811-506	-	F5	b
Insulation resistance constant (insulation)	BS 7655-1.2/1.3	Table 2	BS 6469-99.2	8	F5	a
Insulation resistance constant (sheath)	BS 7655-4.2	Table 2	BS 6469-99.2	8	F5	a
Loss of mass	BS 7655-4.2	Table 2	BS EN 60811-409	6	F5	a
Marking - end marking	BS 5467	12.1	Visual Examination	-	F100	n/a
Marking -external marking	BS 5467	12.2/12.3/12.4 /12.5	Visual examination	-	F100	a
Ozone resistance	BS 7655-1.2	Table 2	BS EN 50396	8.1.3	1/yr	o
Pressure test at high temperature (sheath)	BS 7655-4.2	Table 2	BS EN 60811-508	4.4	F5	b
Properties of bedding	BS 5467	9.1	BS EN 60811-501	4.3	F5	a

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12.18 BS 5467:1997 Incorporating Amendment 3:2008 - Continued

Tests, Facilities Required And Test Frequencies

Test description	**Requirement**		**Test Method**		**Freq**	**Avail**
	Specification	Clause	Specification	Clause		
Shrinkage of insulation	BS 5467	18.3	BS EN 60811-502	-	F50	a
Tensile Strength & Elongation before/after ageing in air (insulation)	BS 7655-1.2/1.3	Table 2	BS EN 60811-401 BS EN 60811-501	- 4.2	F25	a
Tensile Strength & Elongation before/after ageing in air bomb (insulation)	BS 7655-1.2	Table 2	BS EN 60811-412 BS EN 60811-501	- 4.2	F5	b
Tensile Strength & Elongation before/after ageing in air (sheath)	BS 7655-4.2	Table 2	BS EN 60811-401 BS EN 60811-501	- 4.3	F25	a
Thickness of insulation	BS 5467	6.2	BS EN 60811-201	BS 5467 Annex D	F100	a
Thickness of bedding	BS 5467	9.2	BS EN 60811-202	BS 5467 Annex D	F100	a
Thickness of sheath	BS 5467	11.2	BS EN 60811-201	BS 5467 Annex D	F100	a
Voltage withstand on complete cable	BS 5467	16.3	BS 5467	Annex K	F100	a
Water absorption (gravimetric) test insulation	BS 7655-1.2/1.3	Table 2	BS EN 60811-402	4.4	F5	a

The table above is a full list of tests covering the requirements of all applicable Tables of the standard. Not all are necessarily required for selected Tables. Reference should be made to the standard.
For an explanation of availability and frequency of tests codes, see section 12.3 and 12.4.

12.18 BS 5467:1997 Amendment 3:2008 – Continued

Schedule of samples for type approval submission

Table	Type Of Cable	Number And Size Of Samples
4	Single-core 600/1000V cables with circular stranded copper conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
5	Single-core 600/1000V cables with solid aluminium conductor - circular solid conductor (Class 1)	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
5	Single-core 600/1000V cables with solid aluminium conductor - circular sectoral conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
6	Two-core 600/1000V cables with stranded copper conductors	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
7	Two-core 600/1000V cables with solid aluminium conductors	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
8	Three-core 600/1000V cables with stranded copper conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
9	Three-core 600/1000V cables with solid aluminium conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
10	Four-core 600/1000V cables with stranded copper conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size

12.18 BS5467:1997 Amendment 3:2008 – Continued

Schedule of Samples for Type Approval Submission – Continued

Table	Type of cable	Number and size of samples
11	Four-core 600/1000V cables with solid aluminium conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
13	Five-core 600/1000V cables with stranded copper conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
14	Single-core 1900/3300V cables with circular stranded copper conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
15	Single-core 1900/3300V cables with solid aluminium conductors - circular solid conductor (Class 1)	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
15	Single core 1900/3300V cables with solid aluminium conductors - circular sectoral conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
16	Three-core 1900/3300V cables with stranded copper conductors	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
17	Three-core 1900/3300V cables with solid aluminium conductors	One sample of approximately minimum conductor size One sample approximately maximum conductor size
18	600/1000V armoured auxiliary cables with stranded copper conductors	One sample of any size of approximately minimum number of cores One sample of any size of approximately maximum number of cores

12.18 BS5467:1997 Amendment 3:2008 – Continued

Notes:

Single core and auxiliary cables will always be considered separately

For two, three and four core cables with the same type of conductors, three samples only will be required as follows:

- Two-core. Approximately maximum cross-sectional area of conductor.
- Three-core. Approximately mid-way between the minimum and maximum cross-sectional areas of conductor, but not the same as the five-core.
- Four-core. Approximately minimum cross-sectional area of conductor.

For two, three, four and five core cables with the same type of conductors, four samples only will be required as follows:

- Two-core. Approximately maximum cross-sectional area of conductor.
- Three-core. Approximately mid-way between the minimum and maximum cross-sectional areas of conductor, but not the same as the five core.
- Four-core. Approximately minimum cross-sectional area of conductor.
- Five-core. Approximately mid-way between the minimum and maximum cross-sectional areas of conductor, but not the same as the three-core.

12.19 BS 6724:1997 Incorporating Amendment 3:2008

Electric cables- Thermosetting insulated, armoured cables for voltages of 600/1000 V and 1900/3300 V, having low emission of smoke and corrosive gases when affected by fire.

Tests, Facilities Required And Test Frequencies

Test description	**Requirement**		**Test Method**		**Freq**	**Avail**
	Specification	Clause	Specification	Clause		
Abrasion test	BS 6724	18.4	BS 6724	Annex E	F25	o
Absence of faults on insulation Spark Test	BS 6724	6.3	BS EN 62230 & BS EN 50356	-	man	a
Absence of faults on sheath Spark Test	BS 6724	11.3	BS EN 62230 & BS EN 50356	-	man	a
Armour resistance	BS 6724	Table H1,2,3	BS 6724	Annex G5	F50	a
Armour wire tensile test (aluminium armour wire)	BS 6724	10.3d	BS 6724	Annex G4	F5	a
Armour wire diameter	BS 6724	10.3a	BS 6724	Annex G1	F5	a
Armour wire mass of zinc coating	BS 6724	10.3b	BS 6724	Annex G2	F5	a
Armour wire wrapping test	BS 6724	10.3c	BS 6724	Annex G3	F5	a
Armour wire joints	BS 6724	10.4	Visual Exam	-	F5	a
Bending test at low temperature (insulation)	BS EN 50363-5	Table 2	BS EN 60811-504	4.2	F5	b
Bending test at low temperature (sheath)	BS 7655-6.1	-	BS EN 60811-504	4.3	F5	b
Bi-colour combination	BS 6724	7.2	BS EN 50396	5.2	F100	a
Core colour/number clarity and durability	BS 6724	7.3	BS 6724	7.3	F100	a
Compatibility	BS 6724	Table 3	Annex M BS EN 60811-401 BS EN 60811-501	- - 	F25	a
Conductor construction	BS 6724	5	BS EN 60228	-	F100	a
Conductor resistance	BS 6724	16.2	BS EN 60228	-	F100	a
Core lay up direction and sequence	BS 6724	7.1 & 8.1	Visual Exam	-	F100	a
Core identification colour, sequence/number	BS 6724	7.1	Visual Exam	-	F100	a

12.19 BS6724:1997 Incorporating Amendment 3:2008 - Continued

Tests, Facilities Required and Test Frequencies – Continued

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
Corrosive and acid gas emission	BS 6724	6.4/8.2/9.3/11.4	BS EN 60754-1	-	F5	o
Determination of hardness	BS 7655-1.2	Table 2	BS 903	Part A26	F5	b
Elongation test at low temperature (insulation)	BS EN 50363-5	Table 2	BS 60811-505	4.2	F5	b
Elongation test at low temperature (sheath)	BS 7655-6.1	Table 2	BS 60811-505	4.3	F5	b
End sealing	BS 6724	13	Visual examination	-	man	n/a
Flame propagation of a single cable	BS 6724	17.2	BS EN 60332-1-2	Annex A	F25	b
Flame propagation of multiple cables	BS 6724	18.5	BS EN 60332-3-24	Annex B	1/yr	o
Fillers and Binders	BS 6724	8.1	Visual examination	-	F100	n/a
Hot set test (Insulation)	BS 7655-1.2/-1.3 BS EN 50363-5	Table 2	BS EN 60811-507	-	F5	b
Impact test at low temperature -15ºC sheath	BS 7655-6.1	Table 2	BS 60811-506	-	F5	b
Insulation resistance constant (insulation)	BS 7655-1.2/1.3	Table 2	BS 6469-99.2	8	F5	a
Insulation resistance constant (sheath)	BS 6724	18.7	BS 6724	Annex F	F5	a
Marking - end marking	BS 6724	12.1	Visual Examination	-	F100	n/a
Marking -external marking	BS 6724	12.2/12.3/12.4/12.5	Visual examination	-	F100	a
Ozone resistance	BS 7655-1.2/ BS EN 50363-5	Table 2	BS EN 50396	8.1.3	1/yr	o
Pressure test at high temperature (insulation)	BS EN 50363-5	Table 3	BS EN 60811-508	4.3	F5	b
Pressure test at high temperature (sheath)	BS 7655-6.1	Table 3	BS EN 60811-508	4.4	F5	b
Properties of bedding	BS 6724	9.1	BS EN 60811-501	4.3	F5	a

12.19 BS6724:1997 Incorporating Amendment 3:2008 - Continued

Tests, Facilities Required And Test Frequencies

Test description	**Requirement**		**Test Method**		**Freq**	**Avail**
	Specification	Clause	Specification	Clause		
Shrinkage of insulation	BS 6724	18.3	BS EN 60811-502	-	F50	a
Shrinkage of sheath	BS 6724	18.6	BS 6724	Annex J	F5	a
Smoke emission	BS 6724	17.3	BS EN 61034-2	-	F5	o
Tear resistance sheath	BS 7655-6.1	Table 2	BS 6469:99.1	9	F25	a
Tensile Strength & Elongation before/after ageing in air (insulation)	BS 7655-1.2/1.3 BS EN 50363-5	Table 2 & 1	BS EN 60811-401 BS EN 60811-501	- 4.2	F25	a
Tensile Strength & Elongation before/after ageing in air bomb (insulation)	BS 7655-1.2	Table 2	BS EN 60811-412 BS EN 60811-501	- 4.2	F5	b
Tensile Strength & Elongation before/after ageing in air (sheath)	BS 7655-6.1	Table 2	BS EN 60811-401 BS EN 60811-501	- 4.3	F25	a
Thickness of insulation	BS 6724	6.2	BS EN 60811-201	BS 6724 Annex D	F100	a
Thickness of bedding	BS 6724	9.2	BS EN 60811-202	BS 6724 Annex D	F100	a
Thickness of sheath	BS 6724	11.2	BS EN 60811-201	BS 6724 Annex D	F100	a
Voltage withstand on complete cable	BS 6724	16.3	BS 6724	Annex K	F100	a
Water immersion test sheath	BS 7655-6.1	Table 2	BS 6469:99.1	14	F5	a
Water absorption (gravimetric) test insulation	BS 7655-1.2/1.3	Table 2	BS EN 60811-402	4.4	F5	a

The table above is a full list of tests covering the requirements of all applicable Tables of the standard. Not all are necessarily required for selected Tables. Reference should be made to the standard.
For an explanation of availability and frequency of tests codes, see section 12.3 and 12.4.

12.19 BS 6724:1997 Incorporating Amendment 3:2008 - Continued

Schedule Of Samples For Type Approval Submission

Table	Type Of Cable	Number and size of samples
4	Single-core 600/1000v cables with circular stranded copper conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
5	Single-core 600/1000v cables with solid aluminium conductor – circular solid conductor (class 1)	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
5	Single-core 600/1000v cables with solid aluminium conductor – circular sectoral conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
6	Two-core 600/1000v cables with stranded copper conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
7	Two-core 600/1000v cables with solid aluminium conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
8	Three-core 600/1000v cables with stranded copper conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
9	Three-core 600/1000v cables with solid aluminium copper conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
10	Four-core 600/1000v cables with stranded copper conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
11	Four-core 600/1000v cables with solid aluminium conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size

12.19 BS 6724:1997 Incorporating Amendment 3:2008 - Continued

Schedule Of Samples For Type Approval Submission – Continued

Table	Type Of Cable	Number And Size Of Samples
13	Five-core 600/1000v cables with stranded copper conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
14	Single-core 1900/3300v cables with circular stranded copper conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
15	Single-core 1900/3300v cables with solid aluminium conductor – circular solid conductor (class 1)	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
15	Single-core 1900/3300v cables with solid aluminium conductor – circular sectoral conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
16	Three-core 1900/3300v cables with stranded copper conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
17	Three-core 1900/3300v cables with solid aluminium conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
18	600/1000v armoured auxiliary cables with stranded copper conductor	One sample of any size approximately minimum number of cores One sample of any size approximately maximum number of cores

12.19 BS 6724:1997 Incorporating Amendment 3:2008 - Continued

Schedule of Samples for Type Approval Submission - Continued

Notes

1. Single core and auxiliary cables will always be considered separately.

2. For two, three and four core cables with the same type of conductors, three samples only will be required as follows:

- Two-core. Approximately minimum cross-sectional area of conductor.
- Three-core. Approximately mid-way between the minimum and maximum cross-sectional areas of conductor.
-
- Four-core. Approximately maximum cross-sectional area of conductor.

3. For two, three, four and five core cables with the same type of conductors, four samples only will be required as follows:

- Two-core. Approximately minimum cross-sectional area of conductor.
- Three-core. Approximately mid-way between the minimum and maximum cross-sectional areas of conductor, but not the same as the five-core.
- Four-core. Approximately maximum cross-sectional area of conductor.
- Five-core. Approximately mid-way between the minimum and maximum cross-sectional areas of conductor, but not the same as the three core.

4. Sample requirements for flame propagation on multiple cables to BS EN 60332-3-24:

One sample for which the overall diameter is >10mm and =<15mm. Note: BASEC will test the smallest conductor size in the range of approval.

One sample for which the overall diameter is >25mm and <40mm.

The above samples may be any size and from any Table providing the requirements stated are met.

5 Sample requirements for test for Smoke Emission to BS EN 61034-2

Size range for which conformity is required to be established	Number of samples for each test(see 17.3 of BS 7846)
Complete A)	3 and 1
Core sizes=< 16mm²B)	3 and 2
Core sizes > 16mm²c)	2 and 1

A) For “Complete” approval, 2 samples should be selected to give respectively 3 lengths and 1 length.
B) For “ Cores sizes=<16mm²” approval, 2 samples should be selected to give respectively 3 lengths and 2 lengths.
c) For “Cores sizes >16mm²” approval, 2 samples should be selected to give respectively 2 lengths and 1 length.

6 Sample requirements for test for Corrosive and Acid Gas Emissions

One sample of each of the relevant cable components.

12.20 BS 7629-1:2008

Electric cables - Specification for 300/500V fire resistant electric cables having low emission of smoke and corrosive gases when affected by fire. Part 1 Multicore and Multipair cables

Tests, Facilities Required And Test Frequencies

Test description	**Requirement**		**Test Method**		**Freq**	**Avail**
	Specification	Clause	Specification	Clause		
Absence of faults on insulation Spark Test	BS 7629-1	6.4	BS 5099 & BS EN 62230	-	man	a
Absence of faults on insulation Voltage Test	BS 7629-1	12.2	BS 7629-1	Annex E	man	a
Absence of faults on insulation Voltage Test	BS 7629-1	12.2	BS 7629-1	Annex E	F100	a
Absence of faults on sheath Spark Test	BS 7629-1	10.4	BS 5099 / BS EN 62230	-	man	a
Application of insulation	BS 7629-1	6.2	Visual Examination	-	F100	n/a
Application of sheath	BS 7629-1	10.2	Visual Examination	-	F100	n/a
Bending characteristics complete cable at 0ºC	BS 7629-1	14.2	BS 7629-1	Annex G	F5	a
Bending test at low temperature -15ºC insulation	BS EN 50363-1/-5	4	BS 60811-1-4	8.1.4	F5	b
Bending test at low temperature -35ºC insulation	BS EN 50363-1	4	BS 60811-1-4	8.1.4	F5	b
Bending test at low temperature -15ºC sheath	BS 7655-6.1	-	BS 60811-1-4	8.2	F5	b
Core identification colour -colour & number	BS 7629-1	7.1	Visual Examination	-	F100	a
Core identification - clarity and durability	BS 7629-1	7.2	Visual Examination	7.2	F100	a
Conductor construction	BS 7629-1	5.1	BS EN 60228	-	F100	a
Conductor resistance	BS 7629-1	13.2	BS EN 60228	-	F100	a
Continuity of tin coating, conductor & drain wire	BS 7629-1	5.1/5.2	BS EN 13603	5	F5	b
Core lay, direction and sequence	BS 7629-1	8.1/8.2	Visual Examination	-	F100	a
Corrosive and acid gas emission	BS 7629-1	6.5/8.3/10.5	BS EN 60754-1	-	F5	o

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12.20 BS 7629-1:2008

Electric cables - Specification for 300/500V fire resistant electric cables having low emission of smoke and corrosive gases when affected by fire. Part 1 Multicore and Multipair cables

Tests, Facilities Required And Test Frequencies

Test description	**Requirement**		**Test Method**		**Freq**	**Avail**
	Specification	Clause	Specification	Clause		
Drain wire	BS 7629-1	5.2	BS EN 60228	-	F25	a
Elongation test at low temperature (-15ºC) insulation	BS EN 50363-1/-5	5	BS 60811-1-4	8.3.4	F5	b
Elongation test at low temperature (-35ºC)insulation	BS EN 50363-1	5	BS 60811-1-4	8.3.4	F5	b
Elongation test at low temperature (-15ºC)sheath	BS 7655-6.1	-	BS 60811-1-4	8.2	F5	b
Flame propagation of a single cable	BS 7629-1	13.4	BS EN 60332-1-2	-	F25	b
Hardness (insulation)	BS 7655-1.2	Table3	BS 903	Part A26	F5	b
Hot set test (Insulation)	BS 7655-1.2 BS EN 50363-1/-5	2	BS EN 60811-1-2	9	F5	b
Impact resistance complete cable at 20ºC	BS 7629-1	14.3	BS 7629-1	Annex H	F5	b
Impact test at low temperature -15ºC sheath	BS 7655-6.1	Table 2	BS 60811-1-4	8.5	F5	b
Insulation resistance constant (insulation)	BS 7655-1.2	Table 3	BS 6469-99.2	8	F5	a
Marking - legend	BS 7629-1	11	Visual Examination	-	F100	a
Ozone resistance	BS 7655-1.2/ BS EN 50363-5	Table 3	BS EN 50396	8.1.3	1/yr	o
Pressure test at high temperature (insulation)	BS EN 50363-1/-5	3	BS 60811-3-1	8.1	F5	b
Pressure test at high temperature (sheath)	BS 7655-6.1	Table 2	BS 60811-3-1	8.2	F5	b
Resistance to fire	BS 7629-1	14.4	BS 6387 Cat C	D2	1/yr	o
Resistance to fire with water	BS 7629-1	14.4	BS 6387 Cat W	D3	1/yr	o
Resistance to fire with mechanical shock	BS 7629-1	14.4	BS 6387 Cat Z	D4	1/yr	o
Resistance to fire with mechanical shock	BS 7629-1	14.4	BS EN 50200	-	1/yr	o
Resistance to fire with mechanical shock and water	BS 7629-1	14.4	BS EN 50200	Annex E	1/yr	o

12.20 BS 7629-1:2008

Electric cables - Specification for 300/500V fire resistant electric cables having low emission of smoke and corrosive gases when affected by fire. Part 1 Multicore and Multipair cables

Tests, Facilities Required and Test Frequencies - Continued

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
Screen minimum thickness & overlap	BS 7629-1	9	Visual Examination	-	F50	a
Smoke emission	BS 7629-1	13.6	BS EN 61034-2	-	F5	o
Tensile Strength & Elongation before/after ageing in air (insulation)	BS 7655-1.2 BS EN 50363-1/-5	Table 3 & 1	BS EN 60811-1-1/1-2	9.1/8.1	F25	a
Tensile Strength & Elongation before/after ageing in air bomb (insulation)	BS 7655-1.2	Table 3	BS EN 60811-1-1/1-2	9.1/8.2	F25	a
Tensile Strength & Elongation before/after ageing in air (sheath)	BS 7655-6.1	Table 2	BS EN 60811-1-1/1-2	9.2/8.1	F25	a
Thickness of insulation	BS 7629-1	6.3	BS 7629-1	Annex C	F100	a
Thickness of sheath	BS 7629-1	10.3	BS 7629-1	Annex C	F100	a
Voltage withstand on complete cable	BS 7629-1	13.3	BS 7629-1	Annex F	F25	a
Water immersion test	BS 7655-6.1	Table 2	BS 6469:99.1	14	F5	a
Water absorption (gravimetric) test	BS 7655-1.2	Table 3	BS 60811-1-3	9.2	F5	a
Water absorption (capacitance) test	BS 7655-1.2	Table 3	BS 6469:99.2	10	F5	a

The above table is a full list of tests covering the requirements of all applicable Tables of the standard. Not all are necessarily required for selected Tables. Reference should be made to the standard.

For an explanation of availability and frequency of tests codes, see sections 12.3 and 12.4.

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12.20 BS 7629-1:2008 - Continued

Schedule of samples for type approval submission

For full approval to BS 7629 Table 1 only, three samples including the following:

- one of minimum conductor size and maximum number of cores.
- one of maximum conductor size and minimum number of cores.
- one of any conductor size with an intermediate number of cores.

For limited approvals covering up to three ranges in the number of cores, then only two samples are required:

- one of minimum conductor size and maximum number of cores.
- one of maximum conductor size and minimum number of cores.

For both full and limited approval the smallest and largest cables shall be subjected to fire resistance tests.

Cables which contain a “sacrificial” layer will be allowed under this scheme, however, the layer shall be disregarded in both the physical and material testing on the underlying construction, e.g., it shall be removed before testing for compliance to the tests required by the specification. The exception to this shall be core identification since it may be the layer that contains the means of identification.

Dual approvals to BS 7629 and BS 6387 will be subject to the implementation of the Note to Clause 1 of BS 6387, and the following conditions:

- All the requirements of BS 6387 see 12.24 must be met.
- Approvals to all categories of BS 6387 may be awarded.

- The cables shall be dual marked BS 7629 and BS 6387. The markings shall also include the categories of BS 6387 for which approval is granted.

Two additional type approval samples shall be submitted. One sample shall be of approximately maximum conductor size and minimum number of cores, and the other approximately minimum conductor size and maximum number of cores. These two samples shall meet all the requirements of BS 7629, and the relevant categories of BS 6387.

12.22 BS 7846:2009

Electric cables – Thermosetting insulated, armoured, fire-resistant cables of rated voltage 600/1000V, having low emission of smoke and corrosive gases when affected by fire.

Tests, Facilities Required And Test Frequencies

Test description	**Requirement**		**Test Method**		**Freq**	**Avail**
	Specification	Clause	Specification	Clause		
Abrasion test	BS 7846	18.4	BS 7846	Annex E	F25	o
Absence of faults on insulation Spark Test	BS 7846	6.3	BS EN 62230 & BS EN 50356	-	man	a
Absence of faults on sheath Spark Test	BS 7846	11.3	BS EN 62230 & BS EN 50356	-	man	a
Armour resistance	BS 7846	10.6	BS 7846	Annex G4	F50	a
Armour wire diameter	BS 7846	10.3a	BS 7846	Annex G1	F5	a
Armour wire mass of zinc coating	BS 7846	10.3b	BS 7846	Annex G2	F5	a
Armour wire wrapping test	BS 7846	10.3c	BS 7846	Annex G3	F5	a
Armour interlocked steel tape thickness	BS 7846	10.4a	BS 7846	Annex G5	F5	a
Armour interlocked steel tape mass of zinc coating	BS 7846	10.4b	BS 7846	Annex G6	F5	a
Armour interlocked steel tape flexibility	BS 7846	10.4c	BS 7846	Annex G7	F5	a
Bending test at low temperature (insulation)	BS EN 50363-5	4	BS EN 60811-504	4.2	F5	b
Bending test at low temperature (sheath)	BS 7655-6.1	-	BS EN 60811-504	4.3	F5	b
Bi-colour combination	BS 7846	7.2	BS 7846	2	F100	a
Compatibility	BS 7846	Table 3	BS 7846	Annex M2	F25	a
Conductor construction	BS 7846	5	BS EN 60228	-	F100	a
Conductor resistance	BS 7846	16.2	BS EN 60228	-	F100	a
Corrosive and acid gas emission	BS 7846	6.4/8.2/9.3/10.2	BS EN 60754-1	-	F5	o

12.22 BS 7846:2009

Electric cables – Thermosetting insulated, armoured, fire-resistant cables of rated voltage 600/1000V, having low emission of smoke and corrosive gases when affected by fire.

Tests, Facilities Required And Test Frequencies

Test description	**Requirement**		**Test Method**		**Freq**	**Avail**
	Specification	Clause	Specification	Clause		
Determination of hardness	BS 7655-1.2	-	BS 903	Part A26	F5	b
Elongation test at low temperature (insulation)	BS EN 50363-5	5	BS 60811-505	4.2	F5	b
Elongation test at low temperature (sheath)	BS 7655-6.1	-	BS 60811-505	4.3	F5	b
End sealing	BS 7846	13	Visual examination	-	man	n/a
Flame propagation of a single cable	BS 7846	17.2	BS EN 60332-1-2	Annex A	F25	b
Flame propagation of multiple cables	BS 7846	18.5	BS EN 60332-3-24	Annex B	1/yr	o
Fillers and Binders	BS 7846	8.1	Visual examination	-	F100	n/a
Hot set test (Insulation)	BS 7655-1.2/-1.3 BS EN 50363-5	2	BS EN 60811-507	-	F5	b
Identification of cores colour/number	BS 7846	7.1	Visual examination	-	F100	a
Identification of cores colour sequence	BS 7846	7.1	Visual examination	-	F100	a
Identification of cores			Visual examination	-	F100	a
Impact test at low temperature -15ºC sheath	BS 7655-6.1	Table 2	BS 60811-506	-	F5	b
Insulation resistance constant (insulation)	BS 7655-1.2/1.3	Table 2	BS 6469-99.2	8	F5	a
Insulation resistance constant (sheath)	BS 7846	18.7	BS 7846	Annex F	F5	a
Joints in steel wire/steel tape armour	BS 7846	10.5	Visual examination	-	F5	n/a
Lay up of cores direction & sequence	BS 7846	8.1	Visual examination	-	F100	n/a
Marking - end marking	BS 7846	12.1	Visual Examination	-	F100	n/a
Marking -external marking	BS 7846	12.2/12.3/12.4 /12.5	Visual examination	-	F100	a

12.22 BS 7846:2009

Electric cables – Thermosetting insulated, armoured, fire-resistant cables of rated voltage 600/1000V, having low emission of smoke and corrosive gases when affected by fire.

Tests, Facilities Required And Test Frequencies

Test description	**Requirement**		**Test Method**		**Freq**	**Avail**
	Specification	Clause	Specification	Clause		
Ozone resistance	BS 7655-1.2/ BS EN 50363-5	Table 3	BS EN 50396	8.1.3	1/yr	o
Pressure test at high temperature (insulation)	BS EN 50363-5	3	BS EN 60811-508	4.3	F5	b
Pressure test at high temperature (sheath)	BS 7655-6.1	Table 3	BS EN 60811-508	4.4	F5	b
Properties of bedding	BS 7846	9.1	BS EN 60811-501	4.3	F5	a
Resistance to fire Category F2	BS 7846	17.4.2	BS 6387 Cat C	D2	1/yr	b
Resistance to fire with water Category F2	BS 7846	17.4.2	BS 6387 Cat W	D3	1/yr	b
Resistance to fire with mechanical shock Categ F2	BS 7846	17.4.2	BS 6387 Cat Z	D4	1/yr	b
Resistance to fire Category F30/F60/F120	BS 7846	17.4.3-17.4.5	BS 8491/BS 6387	-	1/yr	o
Shrinkage of insulation	BS 7846	18.3	BS EN 60811-502	-	F50	a
Shrinkage of sheath	BS 7846	18.6	BS 7846	Annex J	F5	a
Smoke emission	BS 7846	17.3	BS EN 61034-2	-	F5	o
Tear resistance sheath	BS 7655-6.1	-	BS 6469:99.1	9	F25	a

12.22 BS 7846:2009

Electric cables – Thermosetting insulated, armoured, fire-resistant cables of rated voltage 600/1000V, having low emission of smoke and corrosive gases when affected by fire.

Tests, Facilities Required and Test Frequencies - Continued

Test description	**Requirement**		**Test Method**		**Freq**	**Avail**
	Specification	Clause	Specification	Clause		
Tensile Strength & Elongation before/after ageing in air (insulation)	BS 7655-1.2/1.3 BS EN 50363-5	Table 2 & 1	BS EN 60811-401 BS EN 60811-501	- 4.2	F25	a
Tensile Strength & Elongation before/after ageing in air bomb (insulation)	BS 7655-1.2	Table 2	BS EN 60811-412 BS EN 60811-501	- 4.2	F5	b
Tensile Strength & Elongation before/after ageing in air (sheath)	BS 7655-6.1	Table 2	BS EN 60811-401 BS EN 60811-501	- 4.3	F25	a
Thickness of insulation	BS 7846	6.2	BS 7846	Annex D	F100	a
Thickness of bedding	BS 7846	9.2	BS 7846	Annex D	F100	a
Thickness of sheath	BS 7846	11.2	BS 7846	Annex D	F100	a
Voltage withstand on complete cable	BS 7846	16.3	BS 7846	Annex K	F100	a
Water immersion test sheath	BS 7655-6.1	Table 2	BS 6469:99.1	14	F5	a
Water absorption (gravimetric) test insulation	BS 7655-1.2/1.3	Table 2	BS EN 60811-402	4.2	F5	a

The above table is a full list of tests covering the requirements of all applicable Tables of the standard. Not all are necessarily required for selected Tables. Reference should be made to the standard.

For an explanation of availability and frequency of tests codes, see sections 12.3 and 12.4.

12.22 BS 7846:2009 - Continued

Schedule of Samples for Type Approval Submission

Table	Type of cable	Number and size of samples
4	Two-core 600/1000V cables with stranded copper conductors & steel wire armour.	One sample of approximately minimum conductor size. One sample of approximately maximum conductor size.
5	Three-core 600/1000 V cables with stranded copper conductors & steel wire armour.	One sample of approximately minimum conductor size. One sample of approximately maximum conductor size.
6	Four-core 600/1000 V cables with stranded copper conductors & steel wire armour.	One sample of approximately minimum conductor size. One sample of approximately maximum conductor size.
7	Five-core 600/1000V cables with stranded copper conductors & steel wire armour.	One sample of approximately minimum conductor size. One sample of approximately maximum conductor size.
8	600/1000V armoured auxiliary cables with stranded copper conductors & steel wire armour.	One sample of approximately minimum conductor size. One sample of approximately maximum conductor size.
9	Two-core 600/1000V cables with stranded copper conductors & interlocked steel tape armour.	One sample of approximately minimum conductor size. One sample of approximately maximum conductor size.
10	Three-core 600/1000 V cables with stranded copper conductors & interlocked steel tape armour.	One sample of approximately minimum conductor size. One sample of approximately maximum conductor size.
11	Four-core 600/1000 V cables with stranded copper conductors & interlocked steel tape armour.	One sample of approximately minimum conductor size. One sample of approximately maximum conductor size.
12	Five-core 600/1000V cables with stranded copper conductors & interlocked steel tape armour.	One sample of approximately minimum conductor size. One sample of approximately maximum conductor size.

12.22 BS 7846:2009 - Continued

Type Test Requirement Notes:

1. Auxiliary cables will always be considered separately.

2. For two, three and four core cables with the same type of conductors, three samples only will be required as follows:

- Two-core. Approximately minimum conductor size.

- Three-core. Approximately mid-way between the minimum and maximum conductor size.

- Four-core. Approximately maximum conductor size.

3. For two, three, four and five core cables with the same type of conductors, four samples only will be required as follows:

  - Two-core. Approximately minimum conductor size.

  - Three-core. Approximately mid-way between the minimum and maximum conductor size, but not the same as the five-core.

  - Four-core. Approximately maximum conductor size.

  - Five-core. Approximately mid-way between the minimum and maximum conductor size, but not the same as the three-core.

4 Test for Flame Propagation to BS EN 60332-3-24

- One sample =<35mm² tested in touching formation. Note: BASEC will test the smallest conductor size in the range of approval.
- One sample >35mm² tested in spaced formation.

12.22 BS 7846:2009 - Continued

Type Test Requirement Notes:

5 Test for Smoke Emission to BS EN 61034-2

Size range for which conformity is required to be established	Number of samples for each test(see 17.3 of BS 7846)
Complete A)	3 and 1
Core sizes=< 16mm²B)	3 and 2
Core sizes > 16mm²c)	2 and 1

A) For “Complete” approval, 2 samples should be selected to give respectively 3 lengths and 1 length.
B) For “ Cores sizes=<16mm²” approval, 2 samples should be selected to give respectively 3 lengths and 2 lengths.
c) For “Cores sizes >16mm²” approval, 2 samples should be selected to give respectively 2 lengths and 1 length.

6 Fire Resistance Tests to BS 6387 and BS 8491

For multicore power and auxiliary cables, the smallest conductor size with the smallest number of cores and the largest conductor size with the largest number of cores should be tested.

7 Test for Corrosive and Acid Gas Emissions

One sample of each of the relevant cable components.

12.24 BS 6387:1994

Performance requirements for cables required to maintain circuit integrity under fire conditions

Note: This approval is only available as an “add-on” approval to supplement a pre-existing BASEC approval of a cable to a recognised cable standard calling up BS 6387.

Tests, Facilities Required and Test Frequencies

Test description	Cross Reference	Freq	Avail
Bending test complete cable (ambient)	BS 6387 Annex B1/B3	F5	a
Bending test complete cable (0°C)	BS 6387 Annex B1/B2	F5	a
Conductor resistance	BS EN 60228	F100	a
Flame propagation of a single cable	BS EN 60332-1-2	F25	b
Impact test at ambient temperature	BS 6387 Annex C	F5	b
Impact test at low temperature (Sheath)	BS 6387 9.2	F5	b
Resistance to fire	BS 6387 D1 & D2	1/yr	o
Resistance to fire with water	BS 6387 D1 & D3	1/yr	o
Resistance to fire with mechanical shock	BS 6387 D1 & D4	1/yr	o
Voltage test complete cable	BS 6387 Annex A1 & A2	F100	a
Voltage test complete cable	BS 6387 Annex A1 & A3	F25	a

The above table is a full list of tests covering the requirements of all applicable Tables of the standard. Not all are necessarily required for selected Tables. Reference should be made to the standard.

For an explanation of availability and frequency of tests codes, see sections 12.3 and 12.4.

12.24 BS 6387:1994 - Continued

Schedule of samples for type approval submission

For full approval to BS 6387, three samples including the following:

- one of minimum conductor size and maximum number of cores.
- one of maximum conductor size and minimum number of cores.
- one of any conductor size with an intermediate number of cores.

For limited approvals covering up to three ranges in the number of cores, then only two samples are required:

- one of minimum conductor size and maximum number of cores.
- one of maximum conductor size and minimum number of cores.

For both full and limited approval the smallest and largest cables shall be subjected to fire resistance tests.

Cables which contain a “sacrificial” layer will be allowed under this scheme, however, the layer shall be disregarded in both the physical and material testing on the underlying construction, e.g., it shall be removed before testing for compliance to the tests required by the specification. The exception to this shall be core identification since it may be the layer that contains the means of identification.

Dual approvals to BS 7629 and BS 6387 will be subject to the implementation of the Note to Clause 1 of BS 6387, and the following conditions:

- All the requirements of BS 6387 see 12.24 must be met.
- Approvals to any or all categories of BS 6387 may be awarded (C, W, Z).
- The cables shall be dual marked BS 7629 and BS 6387. The markings shall also include the categories of BS 6387 for which approval is granted (these marking to immediately follow BS 6387).

Two additional type approval samples shall be submitted. One sample shall be of approximately maximum conductor size and minimum number of cores, and the other approximately minimum conductor size and maximum number of cores. These two samples shall meet all the requirements of BS 7629, and the relevant categories of BS 6387.

12.29 BS 8436:2011

Electric cables – 300/500 V screened electric cables having low emission of smoke and corrosive gases when affected by fire, for use in walls, partitions and building voids – Multicore cables

Tests, Facilities Required And Test Frequencies

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
Absence of faults on insulation Spark Test	BS 8436	6.4	BS 5099 & BS EN 62230	-	man	a
Absence of faults on insulation Voltage Test	BS 8436	14.2	BS 8436	Annex D	man	a
Absence of faults on insulation Voltage Test	BS 8436	14.2	BS 8436	Annex D	F100	a
Absence of faults on sheath Spark Test	BS 8436	10.4	BS 5099 / BS EN 62230	-	man	a
Application of insulation, screen & sheath	BS 8436	6.2 & 10.2	Visual Examination	-	F100	a
Bending characteristics at 0ºC	BS 8436	16.2	BS 8436	Annex F	F5	a
Bending test at low temperature -15ºC	BS 7655-6.1/ BS EN 50363-5	Table 3	BS 60811-1-4	8.1/8.2	F5	b
Cable construction	BS 8436	-	-	-	F100	a
Core Identification Colour - Sequence	BS 8436	7	Visual Examination	-	F100	a
Conductor construction	BS 8436	5	BS EN 60228	-	F100	a
Conductor resistance	BS 8436	5	BS EN 60228	-	F100	a
Continuity of Tin Coating	BS 8436	5	BS EN 13603	5	F5	b
Core lay, direction and sequence	BS 8436	8.1	BS 8436	9	F100	a
Core identification - clarity and durability	BS 8436	7.2	BS 8436	7.2	F100	a
Corrosive and acid gas emission	BS 8436	6.5/8.2/10.5	BS EN 60754-1	-	F5	o
Elongation test at low temperature	BS 7655-6.1/ BS EN 50363-5	Table 3	BS 60811-1-4	8.4/8.3	F5	b
Flame propagation of a single cable	BS 8436	15.4	BS EN 60332-1-2	-	F25	b

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12.29 BS 8436:2011

Electric cables – 300/500 V screened electric cables having low emission of smoke and corrosive gases when affected by fire, for use in walls, partitions and building voids – Multicore cables

Tests, Facilities Required And Test Frequencies

Test description	**Requirement**		**Test Method**		**Freq**	**Avail**
	Specification	Clause	Specification	Clause		
Hardness (insulation)	BS 7655-1.2	Table3	BS 903	Part A26	F5	b
Hot set test (Insulation)	BS 7655-1.2/1.3/ BS EN 50363-5	Table 3	BS EN 60811-1-2	9	F5	b
Impact test at low temperature -15ºC	BS 7655-6.1	Table 3	BS 60811-1-4	8.5	F5	b
Insulation resistance constant	BS 7655-1.2/1.3	Table 3	BS 6469-99.2	8	F5	a
Marking - legend	BS 8436	11	Visual Examination	-	F100	a
Nail penetration test	BS 8436	16.4	BS 8436	Annex H	1/3yr	o
Ozone resistance	BS 7655-1.2/ BS EN 50363-5	Table 3	BS EN 50396	8.1.3	F5	o
Pressure test at high temperature	BS 7655-6.1/BS EN 50363-5	Table 3	BS 60811-3-1	8.2/8.1	F5	b
Resistance to impact complete cable at 20ºC	BS 8436	16.3	BS 8436	Annex G	F5	a
Shrinkage of insulation	BS 8436	16.5	BS EN 60811-1-3	10	F5	a
Screen minimum overlap	BS 8436	9	Visual Examination	-	F50	a
Smoke emission	BS 8436	15.5	BS EN 61034-2	-	F5	o
Tensile Strength & Elongation before/after ageing in air (insulation)	BS 7655-1.2/1.3/ BS EN 50363-5	Table 3	BS EN 60811-1-1/1-2	9.1/8.1	F25	a
Tensile Strength & Elongation before/after ageing in air bomb (insulation)	BS 7655-1.2	Table 3	BS EN 60811-1-1/1-2	9.1/8.2	F25	a

12.29 BS 8436:2011 - Continued

Tests, Facilities Required and Test Frequencies - Continued

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
Tensile Strength & Elongation before/after ageing in air (sheath)	BS 7655-6.1	Table 3	BS EN 60811-1-1/1-2	9.2/8.1	F25	a
Thickness of insulation	BS 8436	6.3	BS EN 60811-1.1	-	F100	a
Thickness of sheath	BS 8436	10.3	BS EN 60811-1.1	-	F100	a
Voltage withstand on complete cable	BS 8436	15.3	BS 8436	Annex E	F25	a
Water immersion test	BS 7655-6.1	Table 3	BS 6469:99.1	14	F5	a
Water absorption (gravimetric) test	BS 7655-1.3	Table 3	BS 60811-1-3	9.2	F5	a
Water absorption (capacitance) test	BS 7655-1.2	Table 3	BS 6469:99.2	10	F5	a

This is a full list of tests covering the requirements of all applicable Tables of the standard. Not all are necessarily required for selected Tables. Reference should be made to the standard.

For an explanation of availability and frequency of tests codes, see sections 12.3 and 12.4.

Schedule Of Samples For Type Approval Submission

Cable type	Number and size of samples
2, 3 and 4 core cables	1 sample approximately minimum conductor size and approximately maximum number of cores 1 sample approximately maximum conductor size and approximately minimum number of cores

Note: Cable marking for voltage rating.
If a client has dual approval to IS 273 and/or cable has been tested to 600/1000V, then the marking should state “600/1000V” in place of the BS 8436:20011 requirement to mark the cable “300/500V”.

12.30 BS 8519:2010 Category 1 Based on BS 7846:2009

Electric cables – Thermosetting insulated, armoured, fire-resistant cables of rated voltage 600/1000V, having low emission of smoke and corrosive gases when affected by fire.

Tests, Facilities Required And Test Frequencies

Test description	**Requirement**		**Test Method**		**Freq**	**Avail**
	Specification	Clause	Specification	Clause	F25	o
Abrasion test	BS 7846	18.4	BS 7846	Annex E		
Absence of faults on insulation Spark Test	BS 7846	6.3	BS EN 62230 & BS EN 50356	-	man	a
Absence of faults on sheath Spark Test	BS 7846	11.3	BS EN 62230 & BS EN 50356	-	man	a
Armour resistance	BS 7846	10.6	BS 7846	Annex G4	F50	a
Armour wire diameter	BS 7846	10.3a	BS 7846	Annex G1	F5	a
Armour wire mass of zinc coating	BS 7846	10.3b	BS 7846	Annex G2	F5	a
Armour wire wrapping test	BS 7846	10.3c	BS 7846	Annex G3	F5	a
Armour interlocked steel tape thickness	BS 7846	10.4a	BS 7846	Annex G5	F5	a
Armour interlocked steel tape mass of zinc coating	BS 7846	10.4b	BS 7846	Annex G6	F5	a
Armour interlocked steel tape flexibility	BS 7846	10.4c	BS 7846	Annex G7	F5	a
Bending test at low temperature (insulation)	BS EN 50363-5	4	BS EN 60811-1-4	8.1	F5	b
Bending test at low temperature (sheath)	BS 7655-6.1	-	BS EN 60811-1-4	8.2	F5	b
Bi-colour combination	BS 7846	7.2	BS 7846	2	F100	a
Compatibility	BS 7846	Table 3	BS 7846	Annex M2	F25	a
Conductor construction	BS 7846	5	BS EN 60228	-	F100	a
Conductor resistance	BS 7846	16.2	BS EN 60228	-	F100	a
Corrosive and acid gas emission	BS 7846	6.4/8.2/9.3/10.2	BS EN 60754-1	-	F5	o

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12.30 BS 8519:2010 Category 1 Based on BS 7846:2009

Electric cables – Thermosetting insulated, armoured, fire-resistant cables of rated voltage 600/1000V, having low emission of smoke and corrosive gases when affected by fire.

Tests, Facilities Required And Test Frequencies

Test description	**Requirement**		**Test Method**		**Freq**	**Avail**
	Specification	Clause	Specification	Clause		
Determination of hardness	BS 7655-1.2	-	BS 903	Part A26	F5	b
Elongation test at low temperature (insulation)	BS EN 50363-5	5	BS 60811-1-4	8.3	F5	b
Elongation test at low temperature (sheath)	BS 7655-6.1	-	BS 60811-1-4	8.4	F5	b
End sealing	BS 7846	13	Visual examination	-	man	n/a
Flame propagation of a single cable	BS 7846	17.2	BS EN 60332-1-2	Annex A	F25	b
Flame propagation of multiple cables	BS 7846	18.5	BS EN 60332-3-24	Annex B	1/yr	o
Fillers and Binders	BS 7846	8.1	Visual examination	-	F100	n/a
Hot set test (Insulation)	BS 7655-1.2/-1.3 BS EN 50363-5	2	BS EN 60811-2-1	9	F5	b
Identification of cores colour/number	BS 7846	7.1	Visual examination	-	F100	a
Identification of cores colour sequence	BS 7846	7.1	Visual examination	-	F100	a
Identification of cores			Visual examination	-	F100	a
Impact test at low temperature -15ºC sheath	BS 7655-6.1	Table 3	BS 60811-1-4	8.5	F5	b
Insulation resistance constant (insulation)	BS 7655-1.2/1.3	Table 3	BS 6469-99.2	8	F5	a
Insulation resistance constant (sheath)	BS 7846	18.7	BS 7846	Annex F	F5	a
Joints in steel wire/steel tape armour	BS 7846	10.5	Visual examination	-	F5	n/a
Lay up of cores direction & sequence	BS 7846	8.1	Visual examination	-	F100	n/a
Marking - end marking	BS 7846	12.1	Visual Examination	-	F100	n/a
Marking -external marking	BS 7846	12.2/12.3/12.4 /12.5	Visual examination	-	F100	a

12.30 BS 8519:2010 Category 1 Based on BS 7846:2009

Electric cables – Thermosetting insulated, armoured, fire-resistant cables of rated voltage 600/1000V, having low emission of smoke and corrosive gases when affected by fire.

Tests, Facilities Required And Test Frequencies

Test description	**Requirement**		**Test Method**		**Freq**	**Avail**
	Specification	Clause	Specification	Clause		
Ozone resistance	BS 7655-1.2/ BS EN 50363-5	Table 3	BS EN 50396	8.1.3	1/yr	o
Pressure test at high temperature (insulation)	BS EN 50363-5	3	BS 60811-3-1	8.1	F5	b
Pressure test at high temperature (sheath)	BS 7655-6.1	Table 3	BS 60811-3-1	8.2	F5	b
Properties of bedding	BS 7846	9.1	BS EN 60811-1-1	9.2	F5	a
Resistance to fire Category F2	BS 7846	17.4.2	BS 6387 Cat C	D2	1/yr	b
Resistance to fire with water Category F2	BS 7846	17.4.2	BS 6387 Cat W	D3	1/yr	b
Resistance to fire with mechanical shock Categ F2	BS 7846	17.4.2	BS 6387 Cat Z	D4	1/yr	b
Resistance to fire Category F30/F60/F120	BS 7846	17.4.3-17.4.5	BS 8491	-	1/yr	b
Resistance to fire Category 1 30 minutes	BS 8519	11 1)	BS 8491	-	1/yr	b
Shrinkage of insulation	BS 7846	18.3	BS EN 60811-1-3	10	F50	a
Shrinkage of sheath	BS 7846	18.6	BS 7846	Annex J	F5	a
Smoke emission	BS 7846	17.3	BS EN 61034-2	-	F5	o
Tear resistance sheath	BS 7655-6.1	-	BS 6469:99.1	9	F25	a

12.30 BS 8519:2010 Category 1 Based on BS 7846:2009

Electric cables – Thermosetting insulated, armoured, fire-resistant cables of rated voltage 600/1000V, having low emission of smoke and corrosive gases when affected by fire.

Tests, Facilities Required and Test Frequencies - Continued

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
Tensile Strength & Elongation before/after ageing in air (insulation)	BS 7655-1.2/1.3 BS EN 50363-5	Table 3 & 1	BS EN 60811-1-1/1-2	9.1/8.1	F25	a
Tensile Strength & Elongation before/after ageing in air bomb (insulation)	BS 7655-1.2	Table 3	BS EN 60811-1-1/1-2	9.1/8.2	F5	b
Tensile Strength & Elongation before/after ageing in air (sheath)	BS 7655-6.1	Table 3	BS EN 60811-1-1/1-2	9.2/8.1	F25	a
Thickness of insulation	BS 7846	6.2	BS 7846	Annex D	F100	a
Thickness of bedding	BS 7846	9.2	BS 7846	Annex D	F100	a
Thickness of sheath	BS 7846	11.2	BS 7846	Annex D	F100	a
Voltage withstand on complete cable	BS 7846	16.3	BS 7846	Annex K	F100	a
Water immersion test sheath	BS 7655-6.1	Table 3	BS 6469:99.1	14	F5	a
Water absorption (gravimetric) test insulation	BS 7655-1.2/1.3	Table 3	BS 60811-1-3	9.2	F5	a

The above table is a full list of tests covering the requirements of all applicable Tables of the standard. Not all are necessarily required for selected Tables. Reference should be made to the standard.

For an explanation of availability and frequency of tests codes, see sections 12.3 and 12.4.

12.30 BS 8519:2010 Category 1 Based on BS 7846:2009

Schedule of Samples for Type Approval Submission

Table	Type of cable	Number and size of samples
4	Two-core 600/1000V cables with stranded copper conductors & steel wire armour.	One sample of approximately minimum conductor size. One sample of approximately maximum conductor size.
5	Three-core 600/1000 V cables with stranded copper conductors & steel wire armour.	One sample of approximately minimum conductor size. One sample of approximately maximum conductor size.
6	Four-core 600/1000 V cables with stranded copper conductors & steel wire armour.	One sample of approximately minimum conductor size. One sample of approximately maximum conductor size.
7	Five-core 600/1000V cables with stranded copper conductors & steel wire armour.	One sample of approximately minimum conductor size. One sample of approximately maximum conductor size.
8	600/1000V armoured auxiliary cables with stranded copper conductors & steel wire armour.	One sample of approximately minimum conductor size. One sample of approximately maximum conductor size.
9	Two-core 600/1000V cables with stranded copper conductors & interlocked steel tape armour.	One sample of approximately minimum conductor size. One sample of approximately maximum conductor size.
10	Three-core 600/1000 V cables with stranded copper conductors & interlocked steel tape armour.	One sample of approximately minimum conductor size. One sample of approximately maximum conductor size.
11	Four-core 600/1000 V cables with stranded copper conductors & interlocked steel tape armour.	One sample of approximately minimum conductor size. One sample of approximately maximum conductor size.
12	Five-core 600/1000V cables with stranded copper conductors & interlocked steel tape armour.	One sample of approximately minimum conductor size. One sample of approximately maximum conductor size.

12.30 BS 8519:2010 Category 1 Based on BS 7846:2009

Type Test Requirement Notes:

1. Auxiliary cables will always be considered separately.

2. For two, three and four core cables with the same type of conductors, three samples only will be required as follows:

- Two-core. Approximately minimum conductor size.

- Three-core. Approximately mid-way between the minimum and maximum conductor size.

- Four-core. Approximately maximum conductor size.

3. For two, three, four and five core cables with the same type of conductors, four samples only will be required as follows:

  - Two-core. Approximately minimum conductor size.

  - Three-core. Approximately mid-way between the minimum and maximum conductor size.

  - Four-core. Approximately maximum conductor size.

  - Five-core. Approximately mid-way between the minimum and maximum conductor size, but not the same as the three-core.

4 Test for Flame Propagation to BS EN 60332-3-24

- One sample =<35mm² tested in touching formation.
- One sample >35mm² tested in spaced formation.

5 Test for Smoke Emission to BS EN 61034-2

Size range for which conformity is required to be established	Number of samples for each test(see 17.3 of BS 7846)
Complete A)	3 and 1
Core sizes=< 16mm²B)	3 and 2
Core sizes > 16mm²c)	2 and 1

A) For “Complete” approval, 2 samples should be selected to give respectively 3 lengths and 1 length.
B) For “ Cores sizes=<16mm²” approval, 2 samples should be selected to give respectively 3 lengths and 2 lengths.
c) For “Cores sizes >16mm²” approval, 2 samples should be selected to give respectively 2 lengths and 1 length.

6 Fire Resistance Tests to BS 6387 and BS 8491

For multicore power and auxiliary cables, the smallest conductor size with the smallest number of cores and the largest conductor size with the largest number of cores should be tested.

12.31 BS 8519:2010 Category 1 Based on BS 7629-1:2008

Selection and installation of fire- resistant power and control cable systems for life safety and fire – fighting applications – Code of practice.

Tests, Facilities Required And Test Frequencies

Test description	**Requirement**		**Test Method**		**Freq**	**Avail**
	Specification	Clause	Specification	Clause		
Absence of faults on insulation Spark Test	BS 7629-1	6.4	BS 5099 & BS EN 62230	-	man	a
Absence of faults on insulation Voltage Test	BS 7629-1	12.2	BS 7629-1	Annex E	man	a
Absence of faults on insulation Voltage Test	BS 7629-1	12.2	BS 7629-1	Annex E	F100	a
Absence of faults on sheath Spark Test	BS 7629-1	10.4	BS 5099 / BS EN 62230	-	man	a
Application of insulation	BS 7629-1	6.2	Visual Examination	-	F100	n/a
Application of sheath	BS 7629-1	10.2	Visual Examination	-	F100	n/a
Bending characteristics complete cable at 0ºC	BS 7629-1	14.2	BS 7629-1	Annex G	F5	a
Bending test at low temperature -15ºC insulation	BS EN 50363-1/-5	4	BS 60811-1-4	8.1.4	F5	b
Bending test at low temperature -35ºC insulation	BS EN 50363-1	4	BS 60811-1-4	8.1.4	F5	b
Bending test at low temperature -15ºC sheath	BS 7655-6.1	-	BS 60811-1-4	8.2	F5	b
Core identification colour -colour & number	BS 7629-1	7.1	Visual Examination	-	F100	a
Core identification - clarity and durability	BS 7629-1	7.2	Visual Examination	7.2	F100	a
Conductor construction	BS 7629-1	5.1	BS EN 60228	-	F100	a
Conductor resistance	BS 7629-1	13.2	BS EN 60228	-	F100	a
Continuity of tin coating, conductor & drain wire	BS 7629-1	5.1/5.2	BS EN 13603	5	F5	b
Core lay, direction and sequence	BS 7629-1	8.1/8.2	Visual Examination	-	F100	a
Corrosive and acid gas emission	BS 7629-1	6.5/8.3/10.5	BS EN 60754-1	-	F5	o

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12.31 BS 8519:2010 Category 1 Based on BS 7629-1:2008

Selection and installation of fire- resistant power and control cable systems for life safety and fire – fighting applications – Code of practice.

Tests, Facilities Required And Test Frequencies

Test description	**Requirement**		**Test Method**		**Freq**	**Avail**
	Specification	Clause	Specification	Clause		
Drain wire	BS 7629-1	5.2	BS EN 60228	-	F25	a
Elongation test at low temperature (-15ºC) insulation	BS EN 50363-1/-5	5	BS 60811-1-4	8.3.4	F5	b
Elongation test at low temperature (-35ºC)insulation	BS EN 50363-1	5	BS 60811-1-4	8.3.4	F5	b
Elongation test at low temperature (-15ºC)sheath	BS 7655-6.1	-	BS 60811-1-4	8.2	F5	b
Flame propagation of a single cable	BS 7629-1	13.4	BS EN 60332-1-2	-	F25	b
Hardness (insulation)	BS 7655-1.2	Table3	BS 903	Part A26	F5	b
Hot set test (Insulation)	BS 7655-1.2 BS EN 50363-1/-5	2	BS EN 60811-1-2	9	F5	b
Impact resistance complete cable at 20ºC	BS 7629-1	14.3	BS 7629-1	Annex H	F5	b
Impact test at low temperature -15ºC sheath	BS 7655-6.1	Table 3	BS 60811-1-4	8.5	F5	b
Insulation resistance constant (insulation)	BS 7655-1.2	Table 3	BS 6469-99.2	8	F5	a
Marking - legend	BS 7629-1	11	Visual Examination	-	F100	a
Ozone resistance	BS 7655-1.2/ BS EN 50363-5	Table 3	BS EN 50396	8.1.3	1/yr	o
Pressure test at high temperature (insulation)	BS EN 50363-1/-5	3	BS 60811-3-1	8.1	F5	b
Pressure test at high temperature (sheath)	BS 7655-6.1	Table 3	BS 60811-3-1	8.2	F5	b
Resistance to fire	BS 7629-1	14.4	BS 6387 Cat C	D2	1/yr	o
Resistance to fire with water	BS 7629-1	14.4	BS 6387 Cat W	D3	1/yr	o
Resistance to fire with mechanical shock	BS 7629-1	14.4	BS 6387 Cat Z	D4	1/yr	o
Resistance to fire with mechanical shock PH30	BS 7629-1	14.4	BS EN 50200	-	1/yr	o
Resistance to fire with mechanical shock and water 30 minutes survival	BS 7629-1	14.4	BS EN 50200	Annex E	1/yr	o

12.31 BS 8519:2010 Category 1 Based on BS 7629-1:2008

Selection and installation of fire- resistant power and control cable systems for life safety and fire – fighting applications – Code of practice.

Tests, Facilities Required and Test Frequencies - Continued

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
Screen minimum thickness & overlap	BS 7629-1	9	Visual Examination	-	F50	a
Smoke emission	BS 7629-1	13.6	BS EN 61034-2	-	F5	o
Tensile Strength & Elongation before/after ageing in air (insulation)	BS 7655-1.2 BS EN 50363-1/-5	Table 3 & 1	BS EN 60811-1-1/1-2	9.1/8.1	F25	a
Tensile Strength & Elongation before/after ageing in air bomb (insulation)	BS 7655-1.2	Table 3	BS EN 60811-1-1/1-2	9.1/8.2	F25	a
Tensile Strength & Elongation before/after ageing in air (sheath)	BS 7655-6.1	Table 3	BS EN 60811-1-1/1-2	9.2/8.1	F25	a
Thickness of insulation	BS 7629-1	6.3	BS 7629-1	Annex C	F100	a
Thickness of sheath	BS 7629-1	10.3	BS 7629-1	Annex C	F100	a
Voltage withstand on complete cable	BS 7629-1	13.3	BS 7629-1	Annex F	F25	a
Water immersion test	BS 7655-6.1	Table 3	BS 6469:99.1	14	F5	a
Water absorption (gravimetric) test	BS 7655-1.2	Table 3	BS 60811-1-3	9.2	F5	a
Water absorption (capacitance) test	BS 7655-1.2	Table 3	BS 6469:99.2	10	F5	a

The above table is a full list of tests covering the requirements of all applicable Tables of the standard. Not all are necessarily required for selected Tables. Reference should be made to the standard.

For an explanation of availability and frequency of tests codes, see sections 12.3 and 12.4.

12.31 BS 8519:2010 Category 1 Based on BS 7629-1:2008

Selection and installation of fire- resistant power and control cable systems for life safety and fire – fighting applications – Code of practice.

Schedule of samples of BS 7629-1 for type approval submission

For full approval to BS 7629 part 1 only, three samples including the following:

- one of minimum conductor size and maximum number of cores.
- one of maximum conductor size and minimum number of cores.
- one of any conductor size with an intermediate number of cores.

For limited approvals covering up to three ranges in the number of cores, then only two samples are required:

- one of minimum conductor size and maximum number of cores.
- one of maximum conductor size and minimum number of cores.

For both full and limited approval the smallest and largest cables shall be subjected to fire resistance tests.

Cables which contain a “sacrificial” layer will be allowed under this scheme, however, the layer shall be disregarded in both the physical and material testing on the underlying construction, e.g., it shall be removed before testing for compliance to the tests required by the specification. The exception to this shall be core identification since it may be the layer that contains the means of identification.

12.31 BS 8519:2010 Category 1 Based on BS 7629-1:2008

Selection and installation of fire- resistant power and control cable systems for life safety and fire – fighting applications – Code of practice.

Schedule of samples of BS 7629-1 for type approval submission

Dual approvals to BS 7629 and BS 6387 will be subject to the implementation of the Note to Clause 1 of BS 6387, and the following conditions:

- All the requirements of BS 6387 see 12.24 must be met.
- Approvals to all categories of BS 6387 may be awarded.
- The cables shall be dual marked BS 7629 and BS 6387. The markings shall also include the categories of BS 6387 for which approval is granted.

Two additional type approval samples shall be submitted. One sample shall be of approximately maximum conductor size and minimum number of cores, and the other approximately minimum conductor size and maximum number of cores. These two samples shall meet all the requirements of BS 7629, and the relevant categories of BS 6387.

12.32 BS 8519:2010 Category 2 Based on BS 7846:2009

Electric cables – Thermosetting insulated, armoured, fire-resistant cables of rated voltage 600/1000V, having low emission of smoke and corrosive gases when affected by fire.

Tests, Facilities Required And Test Frequencies

Test description	**Requirement**		**Test Method**		**Freq**	**Avail**
	Specification	Clause	Specification	Clause	F25	o
Abrasion test	BS 7846	18.4	BS 7846	Annex E		
Absence of faults on insulation Spark Test	BS 7846	6.3	BS EN 62230 & BS EN 50356	-	man	a
Absence of faults on sheath Spark Test	BS 7846	11.3	BS EN 62230 & BS EN 50356	-	man	a
Armour resistance	BS 7846	10.6	BS 7846	Annex G4	F50	a
Armour wire diameter	BS 7846	10.3a	BS 7846	Annex G1	F5	a
Armour wire mass of zinc coating	BS 7846	10.3b	BS 7846	Annex G2	F5	a
Armour wire wrapping test	BS 7846	10.3c	BS 7846	Annex G3	F5	a
Armour interlocked steel tape thickness	BS 7846	10.4a	BS 7846	Annex G5	F5	a
Armour interlocked steel tape mass of zinc coating	BS 7846	10.4b	BS 7846	Annex G6	F5	a
Armour interlocked steel tape flexibility	BS 7846	10.4c	BS 7846	Annex G7	F5	a
Bending test at low temperature (insulation)	BS EN 50363-5	4	BS EN 60811-1-4	8.1	F5	b
Bending test at low temperature (sheath)	BS 7655-6.1	-	BS EN 60811-1-4	8.2	F5	b
Bi-colour combination	BS 7846	7.2	BS 7846	2	F100	a
Compatibility	BS 7846	Table 3	BS 7846	Annex M2	F25	a
Conductor construction	BS 7846	5	BS EN 60228	-	F100	a
Conductor resistance	BS 7846	16.2	BS EN 60228	-	F100	a
Corrosive and acid gas emission	BS 7846	6.4/8.2/9.3/10.2	BS EN 60754-1	-	F5	o

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12.32 BS 8519:2010 Category 2 Based on BS 7846:2009

Electric cables – Thermosetting insulated, armoured, fire-resistant cables of rated voltage 600/1000V, having low emission of smoke and corrosive gases when affected by fire.

Tests, Facilities Required And Test Frequencies

Test description	**Requirement**		**Test Method**		**Freq**	**Avail**
	Specification	Clause	Specification	Clause		
Determination of hardness	BS 7655-1.2	-	BS 903	Part A26	F5	b
Elongation test at low temperature (insulation)	BS EN 50363-5	5	BS 60811-1-4	8.3	F5	b
Elongation test at low temperature (sheath)	BS 7655-6.1	-	BS 60811-1-4	8.4	F5	b
End sealing	BS 7846	13	Visual examination	-	man	n/a
Flame propagation of a single cable	BS 7846	17.2	BS EN 60332-1-2	Annex A	F25	b
Flame propagation of multiple cables	BS 7846	18.5	BS EN 60332-3-24	Annex B	1/yr	o
Fillers and Binders	BS 7846	8.1	Visual examination	-	F100	n/a
Hot set test (Insulation)	BS 7655-1.2/-1.3 BS EN 50363-5	2	BS EN 60811-2-1	9	F5	b
Identification of cores colour/number	BS 7846	7.1	Visual examination	-	F100	a
Identification of cores colour sequence	BS 7846	7.1	Visual examination	-	F100	a
Identification of cores			Visual examination	-	F100	a
Impact test at low temperature -15ºC sheath	BS 7655-6.1	Table 3	BS 60811-1-4	8.5	F5	b
Insulation resistance constant (insulation)	BS 7655-1.2/1.3	Table 3	BS 6469-99.2	8	F5	a
Insulation resistance constant (sheath)	BS 7846	18.7	BS 7846	Annex F	F5	a
Joints in steel wire/steel tape armour	BS 7846	10.5	Visual examination	-	F5	n/a
Lay up of cores direction & sequence	BS 7846	8.1	Visual examination	-	F100	n/a
Marking - end marking	BS 7846	12.1	Visual Examination	-	F100	n/a
Marking -external marking	BS 7846	12.2/12.3/12.4 /12.5	Visual examination	-	F100	a

12.32 BS 8519:2010 Category 2 Based on BS 7846:2009

Electric cables – Thermosetting insulated, armoured, fire-resistant cables of rated voltage 600/1000V, having low emission of smoke and corrosive gases when affected by fire.

Tests, Facilities Required And Test Frequencies

Test description	**Requirement**		**Test Method**		**Freq**	**Avail**
	Specification	Clause	Specification	Clause		
Ozone resistance	BS 7655-1.2/ BS EN 50363-5	Table 3	BS EN 50396	8.1.3	1/yr	o
Pressure test at high temperature (insulation)	BS EN 50363-5	3	BS 60811-3-1	8.1	F5	b
Pressure test at high temperature (sheath)	BS 7655-6.1	Table 3	BS 60811-3-1	8.2	F5	b
Properties of bedding	BS 7846	9.1	BS EN 60811-1-1	9.2	F5	a
Resistance to fire Category F2	BS 7846	17.4.2	BS 6387 Cat C	D2	1/yr	b
Resistance to fire with water Category F2	BS 7846	17.4.2	BS 6387 Cat W	D3	1/yr	b
Resistance to fire with mechanical shock Categ F2	BS 7846	17.4.2	BS 6387 Cat Z	D4	1/yr	b
Resistance to fire Category F30/F60/F120	BS 7846	17.4.3-17.4.5	BS 8491	-	1/yr	b
Resistance to fire Category 1 60 minutes	BS 8519	11 2)	BS 8491	-	1/yr	b
Shrinkage of insulation	BS 7846	18.3	BS EN 60811-1-3	10	F50	a
Shrinkage of sheath	BS 7846	18.6	BS 7846	Annex J	F5	a
Smoke emission	BS 7846	17.3	BS EN 61034-2	-	F5	o
Tear resistance sheath	BS 7655-6.1	-	BS 6469:99.1	9	F25	a

12.32 BS 8519:2010 Category 2 Based on BS 7846:2009

Electric cables – Thermosetting insulated, armoured, fire-resistant cables of rated voltage 600/1000V, having low emission of smoke and corrosive gases when affected by fire.

Tests, Facilities Required and Test Frequencies - Continued

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
Tensile Strength & Elongation before/after ageing in air (insulation)	BS 7655-1.2/1.3 BS EN 50363-5	Table 3 & 1	BS EN 60811-1-1/1-2	9.1/8.1	F25	a
Tensile Strength & Elongation before/after ageing in air bomb (insulation)	BS 7655-1.2	Table 3	BS EN 60811-1-1/1-2	9.1/8.2	F5	b
Tensile Strength & Elongation before/after ageing in air (sheath)	BS 7655-6.1	Table 3	BS EN 60811-1-1/1-2	9.2/8.1	F25	a
Thickness of insulation	BS 7846	6.2	BS 7846	Annex D	F100	a
Thickness of bedding	BS 7846	9.2	BS 7846	Annex D	F100	a
Thickness of sheath	BS 7846	11.2	BS 7846	Annex D	F100	a
Voltage withstand on complete cable	BS 7846	16.3	BS 7846	Annex K	F100	a
Water immersion test sheath	BS 7655-6.1	Table 3	BS 6469:99.1	14	F5	a
Water absorption (gravimetric) test insulation	BS 7655-1.2/1.3	Table 3	BS 60811-1-3	9.2	F5	a

The above table is a full list of tests covering the requirements of all applicable Tables of the standard. Not all are necessarily required for selected Tables. Reference should be made to the standard.

For an explanation of availability and frequency of tests codes, see sections 12.3 and 12.4.

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12.32 BS 8519:2010 Category 2 Based on BS 7846:2009

Schedule of Samples for Type Approval Submission

Table	Type of cable	Number and size of samples
4	Two-core 600/1000V cables with stranded copper conductors & steel wire armour.	One sample of approximately minimum conductor size. One sample of approximately maximum conductor size.
5	Three-core 600/1000 V cables with stranded copper conductors & steel wire armour.	One sample of approximately minimum conductor size. One sample of approximately maximum conductor size.
6	Four-core 600/1000 V cables with stranded copper conductors & steel wire armour.	One sample of approximately minimum conductor size. One sample of approximately maximum conductor size.
7	Five-core 600/1000V cables with stranded copper conductors & steel wire armour.	One sample of approximately minimum conductor size. One sample of approximately maximum conductor size.
8	600/1000V armoured auxiliary cables with stranded copper conductors & steel wire armour.	One sample of approximately minimum conductor size. One sample of approximately maximum conductor size.
9	Two-core 600/1000V cables with stranded copper conductors & interlocked steel tape armour.	One sample of approximately minimum conductor size. One sample of approximately maximum conductor size.
10	Three-core 600/1000 V cables with stranded copper conductors & interlocked steel tape armour.	One sample of approximately minimum conductor size. One sample of approximately maximum conductor size.
11	Four-core 600/1000 V cables with stranded copper conductors & interlocked steel tape armour.	One sample of approximately minimum conductor size. One sample of approximately maximum conductor size.
12	Five-core 600/1000V cables with stranded copper conductors & interlocked steel tape armour.	One sample of approximately minimum conductor size. One sample of approximately maximum conductor size.

12.32 BS 8519:2010 Category 2 Based on BS 7846:2009

Type Test Requirement Notes:

1. Auxiliary cables will always be considered separately.

2. For two, three and four core cables with the same type of conductors, three samples only will be required as follows:

- Two-core. Approximately minimum conductor size.

- Three-core. Approximately mid-way between the minimum and maximum conductor size.

- Four-core. Approximately maximum conductor size.

3. For two, three, four and five core cables with the same type of conductors, four samples only will be required as follows:

  - Two-core. Approximately minimum conductor size.

  - Three-core. Approximately mid-way between the minimum and maximum conductor size.

  - Four-core. Approximately maximum conductor size.

  - Five-core. Approximately mid-way between the minimum and maximum conductor size, but not the same as the three-core.

4 Test for Flame Propagation to BS EN 60332-3-24

- One sample =<35mm² tested in touching formation.
- One sample >35mm² tested in spaced formation.

5 Test for Smoke Emission to BS EN 61034-2

Size range for which conformity is required to be established	Number of samples for each test(see 17.3 of BS 7846)
Complete A)	3 and 1
Core sizes=< 16mm²B)	3 and 2
Core sizes > 16mm²c)	2 and 1

A) For “Complete” approval, 2 samples should be selected to give respectively 3 lengths and 1 length.
B) For “ Cores sizes=<16mm²” approval, 2 samples should be selected to give respectively 3 lengths and 2 lengths.
c) For “Cores sizes >16mm²” approval, 2 samples should be selected to give respectively 2 lengths and 1 length.

6 Fire Resistance Tests to BS 6387 and BS 8491

For multicore power and auxiliary cables, the smallest conductor size with the smallest number of cores and the largest conductor size with the largest number of cores should be tested.

12.33 BS 8519:2010 Category 2 Based on BS 7629-1:2008

Selection and installation of fire- resistant power and control cable systems for life safety and fire – fighting applications – Code of practice.

Tests, Facilities Required And Test Frequencies

Test description	**Requirement**		**Test Method**		**Freq**	**Avail**
	Specification	Clause	Specification	Clause		
Absence of faults on insulation Spark Test	BS 7629-1	6.4	BS 5099 & BS EN 62230	-	man	a
Absence of faults on insulation Voltage Test	BS 7629-1	12.2	BS 7629-1	Annex E	man	a
Absence of faults on insulation Voltage Test	BS 7629-1	12.2	BS 7629-1	Annex E	F100	a
Absence of faults on sheath Spark Test	BS 7629-1	10.4	BS 5099 / BS EN 62230	-	man	a
Application of insulation	BS 7629-1	6.2	Visual Examination	-	F100	n/a
Application of sheath	BS 7629-1	10.2	Visual Examination	-	F100	n/a
Bending characteristics complete cable at 0ºC	BS 7629-1	14.2	BS 7629-1	Annex G	F5	a
Bending test at low temperature -15ºC insulation	BS EN 50363-1/-5	4	BS 60811-1-4	8.1.4	F5	b
Bending test at low temperature -35ºC insulation	BS EN 50363-1	4	BS 60811-1-4	8.1.4	F5	b
Bending test at low temperature -15ºC sheath	BS 7655-6.1	-	BS 60811-1-4	8.2	F5	b
Core identification colour -colour & number	BS 7629-1	7.1	Visual Examination	-	F100	a
Core identification - clarity and durability	BS 7629-1	7.2	Visual Examination	7.2	F100	a
Conductor construction	BS 7629-1	5.1	BS EN 60228	-	F100	a
Conductor resistance	BS 7629-1	13.2	BS EN 60228	-	F100	a
Continuity of tin coating, conductor & drain wire	BS 7629-1	5.1/5.2	BS EN 13603	5	F5	b
Core lay, direction and sequence	BS 7629-1	8.1/8.2	Visual Examination	-	F100	a
Corrosive and acid gas emission	BS 7629-1	6.5/8.3/10.5	BS EN 60754-1	-	F5	o

12.33 BS 8519:2010 Category 2 Based on BS 7629-1:2008

Selection and installation of fire- resistant power and control cable systems for life safety and fire – fighting applications – Code of practice.

Tests, Facilities Required And Test Frequencies

Test description	**Requirement**		**Test Method**		**Freq**	**Avail**
	Specification	Clause	Specification	Clause		
Drain wire	BS 7629-1	5.2	BS EN 60228	-	F25	a
Elongation test at low temperature (-15ºC) insulation	BS EN 50363-1/-5	5	BS 60811-1-4	8.3.4	F5	b
Elongation test at low temperature (-35ºC)insulation	BS EN 50363-1	5	BS 60811-1-4	8.3.4	F5	b
Elongation test at low temperature (-15ºC)sheath	BS 7655-6.1	-	BS 60811-1-4	8.2	F5	b
Flame propagation of a single cable	BS 7629-1	13.4	BS EN 60332-1-2	-	F25	b
Hardness (insulation)	BS 7655-1.2	Table3	BS 903	Part A26	F5	b
Hot set test (Insulation)	BS 7655-1.2 BS EN 50363-1/-5	2	BS EN 60811-1-2	9	F5	b
Impact resistance complete cable at 20ºC	BS 7629-1	14.3	BS 7629-1	Annex H	F5	b
Impact test at low temperature -15ºC sheath	BS 7655-6.1	Table 3	BS 60811-1-4	8.5	F5	b
Insulation resistance constant (insulation)	BS 7655-1.2	Table 3	BS 6469-99.2	8	F5	a
Marking - legend	BS 7629-1	11	Visual Examination	-	F100	a
Ozone resistance	BS 7655-1.2/ BS EN 50363-5	Table 3	BS EN 50396	8.1.3	1/yr	o
Pressure test at high temperature (insulation)	BS EN 50363-1/-5	3	BS 60811-3-1	8.1	F5	b
Pressure test at high temperature (sheath)	BS 7655-6.1	Table 3	BS 60811-3-1	8.2	F5	b
Resistance to fire	BS 7629-1	14.4	BS 6387 Cat C	D2	1/yr	o
Resistance to fire with water	BS 7629-1	14.4	BS 6387 Cat W	D3	1/yr	o
Resistance to fire with mechanical shock	BS 7629-1	14.4	BS 6387 Cat Z	D4	1/yr	o
Resistance to fire with mechanical shock PH30	BS 7629-1	14.4	BS EN 50200	-	1/yr	o
Resistance to fire with mechanical shock and water 30 minutes survival	BS 7629-1	14.4	BS EN 50200	Annex E	1/yr	o

12.33 BS 8519:2010 Category 2 Based on BS 7629-1:2008

Selection and installation of fire- resistant power and control cable systems for life safety and fire – fighting applications – Code of practice.

Tests, Facilities Required and Test Frequencies - Continued

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
Resistance to fire with mechanical shock PH60	BS 8519	11 2)	BS EN 50200	-	1/yr	o
Resistance to fire with mechanical shock and water 120 minutes survival	BS 8519	11 2)	BS 8434-2	-	1/yr	o
Screen minimum thickness & overlap	BS 7629-1	9	Visual Examination	-	F50	a
Smoke emission	BS 7629-1	13.6	BS EN 61034-2	-	F5	o
Tensile Strength & Elongation before/after ageing in air (insulation)	BS 7655-1.2 BS EN 50363-1/-5	Table 3 & 1	BS EN 60811-1-1/1-2	9.1/8.1	F25	a
Tensile Strength & Elongation before/after ageing in air bomb (insulation)	BS 7655-1.2	Table 3	BS EN 60811-1-1/1-2	9.1/8.2	F25	a
Tensile Strength & Elongation before/after ageing in air (sheath)	BS 7655-6.1	Table 3	BS EN 60811-1-1/1-2	9.2/8.1	F25	a
Thickness of insulation	BS 7629-1	6.3	BS 7629-1	Annex C	F100	a
Thickness of sheath	BS 7629-1	10.3	BS 7629-1	Annex C	F100	a
Voltage withstand on complete cable	BS 7629-1	13.3	BS 7629-1	Annex F	F25	a
Water immersion test	BS 7655-6.1	Table 3	BS 6469:99.1	14	F5	a
Water absorption (gravimetric) test	BS 7655-1.2	Table 3	BS 60811-1-3	9.2	F5	a
Water absorption (capacitance) test	BS 7655-1.2	Table 3	BS 6469:99.2	10	F5	a

The above table is a full list of tests covering the requirements of all applicable Tables of the standard. Not all are necessarily required for selected Tables. Reference should be made to the standard.

For an explanation of availability and frequency of tests codes, see sections 12.3 and 12.4.[INDEX]

12.33 BS 8519:2010 Category 2 Based on BS 7629-1:2008

Selection and installation of fire- resistant power and control cable systems for life safety and fire – fighting applications – Code of practice.

Schedule of samples of BS 7629-1 for type approval submission

For full approval to BS 7629 part 1 only, three samples including the following:

- one of minimum conductor size and maximum number of cores.
- one of maximum conductor size and minimum number of cores.
- one of any conductor size with an intermediate number of cores.

For limited approvals covering up to three ranges in the number of cores, then only two samples are required:

- one of minimum conductor size and maximum number of cores.
- one of maximum conductor size and minimum number of cores.

For both full and limited approval the smallest and largest cables shall be subjected to fire resistance tests.

Cables which contain a “sacrificial” layer will be allowed under this scheme, however, the layer shall be disregarded in both the physical and material testing on the underlying construction, e.g., it shall be removed before testing for compliance to the tests required by the specification. The exception to this shall be core identification since it may be the layer that contains the means of identification.

12.33 BS 8519:2010 Category 2 Based on BS 7629-1:2008

Selection and installation of fire- resistant power and control cable systems for life safety and fire – fighting applications – Code of practice.

Schedule of samples of BS 7629-1 for type approval submission

Dual approvals to BS 7629 and BS 6387 will be subject to the implementation of the Note to Clause 1 of BS 6387, and the following conditions:

- All the requirements of BS 6387 see 12.24 must be met.
- Approvals to all categories of BS 6387 may be awarded.
- The cables shall be dual marked BS 7629 and BS 6387. The markings shall also include the categories of BS 6387 for which approval is granted.

Two additional type approval samples shall be submitted. One sample shall be of approximately maximum conductor size and minimum number of cores, and the other approximately minimum conductor size and maximum number of cores. These two samples shall meet all the requirements of BS 7629, and the relevant categories of BS 6387.

12.34 BS 8519:2010 Category 3 Based on BS 7846:2009

Electric cables – Thermosetting insulated, armoured, fire-resistant cables of rated voltage 600/1000V, having low emission of smoke and corrosive gases when affected by fire.

Tests, Facilities Required And Test Frequencies

Test description	**Requirement**		**Test Method**		**Freq**	**Avail**
	Specification	Clause	Specification	Clause	F25	o
Abrasion test	BS 7846	18.4	BS 7846	Annex E		
Absence of faults on insulation Spark Test	BS 7846	6.3	BS EN 62230 & BS EN 50356	-	man	a
Absence of faults on sheath Spark Test	BS 7846	11.3	BS EN 62230 & BS EN 50356	-	man	a
Armour resistance	BS 7846	10.6	BS 7846	Annex G4	F50	a
Armour wire diameter	BS 7846	10.3a	BS 7846	Annex G1	F5	a
Armour wire mass of zinc coating	BS 7846	10.3b	BS 7846	Annex G2	F5	a
Armour wire wrapping test	BS 7846	10.3c	BS 7846	Annex G3	F5	a
Armour interlocked steel tape thickness	BS 7846	10.4a	BS 7846	Annex G5	F5	a
Armour interlocked steel tape mass of zinc coating	BS 7846	10.4b	BS 7846	Annex G6	F5	a
Armour interlocked steel tape flexibility	BS 7846	10.4c	BS 7846	Annex G7	F5	a
Bending test at low temperature (insulation)	BS EN 50363-5	4	BS EN 60811-1-4	8.1	F5	b
Bending test at low temperature (sheath)	BS 7655-6.1	-	BS EN 60811-1-4	8.2	F5	b
Bi-colour combination	BS 7846	7.2	BS 7846	2	F100	a
Compatibility	BS 7846	Table 3	BS 7846	Annex M2	F25	a
Conductor construction	BS 7846	5	BS EN 60228	-	F100	a
Conductor resistance	BS 7846	16.2	BS EN 60228	-	F100	a
Corrosive and acid gas emission	BS 7846	6.4/8.2/9.3/10.2	BS EN 60754-1	-	F5	o

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12.34 BS 8519:2010 Category 3 Based on BS 7846:2009

Electric cables – Thermosetting insulated, armoured, fire-resistant cables of rated voltage 600/1000V, having low emission of smoke and corrosive gases when affected by fire.

Tests, Facilities Required And Test Frequencies

Test description	**Requirement**		**Test Method**		**Freq**	**Avail**
	Specification	Clause	Specification	Clause		
Determination of hardness	BS 7655-1.2	-	BS 903	Part A26	F5	b
Elongation test at low temperature (insulation)	BS EN 50363-5	5	BS 60811-1-4	8.3	F5	b
Elongation test at low temperature (sheath)	BS 7655-6.1	-	BS 60811-1-4	8.4	F5	b
End sealing	BS 7846	13	Visual examination	-	man	n/a
Flame propagation of a single cable	BS 7846	17.2	BS EN 60332-1-2	Annex A	F25	b
Flame propagation of multiple cables	BS 7846	18.5	BS EN 60332-3-24	Annex B	1/yr	o
Fillers and Binders	BS 7846	8.1	Visual examination	-	F100	n/a
Hot set test (Insulation)	BS 7655-1.2/-1.3 BS EN 50363-5	2	BS EN 60811-2-1	9	F5	b
Identification of cores colour/number	BS 7846	7.1	Visual examination	-	F100	a
Identification of cores colour sequence	BS 7846	7.1	Visual examination	-	F100	a
Identification of cores			Visual examination	-	F100	a
Impact test at low temperature -15ºC sheath	BS 7655-6.1	Table 3	BS 60811-1-4	8.5	F5	b
Insulation resistance constant (insulation)	BS 7655-1.2/1.3	Table 3	BS 6469-99.2	8	F5	a
Insulation resistance constant (sheath)	BS 7846	18.7	BS 7846	Annex F	F5	a
Joints in steel wire/steel tape armour	BS 7846	10.5	Visual examination	-	F5	n/a
Lay up of cores direction & sequence	BS 7846	8.1	Visual examination	-	F100	n/a
Marking - end marking	BS 7846	12.1	Visual Examination	-	F100	n/a
Marking -external marking	BS 7846	12.2/12.3/12.4 /12.5	Visual examination	-	F100	a

12.34 BS 8519:2010 Category 3 Based on BS 7846:2009

Electric cables – Thermosetting insulated, armoured, fire-resistant cables of rated voltage 600/1000V, having low emission of smoke and corrosive gases when affected by fire.

Tests, Facilities Required And Test Frequencies

Test description	**Requirement**		**Test Method**		**Freq**	**Avail**
	Specification	Clause	Specification	Clause		
Ozone resistance	BS 7655-1.2/ BS EN 50363-5	Table 3	BS EN 50396	8.1.3	1/yr	o
Pressure test at high temperature (insulation)	BS EN 50363-5	3	BS 60811-3-1	8.1	F5	b
Pressure test at high temperature (sheath)	BS 7655-6.1	Table 3	BS 60811-3-1	8.2	F5	b
Properties of bedding	BS 7846	9.1	BS EN 60811-1-1	9.2	F5	a
Resistance to fire Category F2	BS 7846	17.4.2	BS 6387 Cat C	D2	1/yr	b
Resistance to fire with water Category F2	BS 7846	17.4.2	BS 6387 Cat W	D3	1/yr	b
Resistance to fire with mechanical shock Categ F2	BS 7846	17.4.2	BS 6387 Cat Z	D4	1/yr	b
Resistance to fire Category F30/F60/F120	BS 7846	17.4.3-17.4.5	BS 8491	-	1/yr	b
Resistance to fire Category 1 120 minutes	BS 8519	11 3)	BS 8491	-	1/yr	b
Shrinkage of insulation	BS 7846	18.3	BS EN 60811-1-3	10	F50	a
Shrinkage of sheath	BS 7846	18.6	BS 7846	Annex J	F5	a
Smoke emission	BS 7846	17.3	BS EN 61034-2	-	F5	o
Tear resistance sheath	BS 7655-6.1	-	BS 6469:99.1	9	F25	a

12.34 BS 8519:2010 Category 3 Based on BS 7846:2009

Electric cables – Thermosetting insulated, armoured, fire-resistant cables of rated voltage 600/1000V, having low emission of smoke and corrosive gases when affected by fire.

Tests, Facilities Required and Test Frequencies - Continued

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
Tensile Strength & Elongation before/after ageing in air (insulation)	BS 7655-1.2/1.3 BS EN 50363-5	Table 3 & 1	BS EN 60811-1-1/1-2	9.1/8.1	F25	a
Tensile Strength & Elongation before/after ageing in air bomb (insulation)	BS 7655-1.2	Table 3	BS EN 60811-1-1/1-2	9.1/8.2	F5	b
Tensile Strength & Elongation before/after ageing in air (sheath)	BS 7655-6.1	Table 3	BS EN 60811-1-1/1-2	9.2/8.1	F25	a
Thickness of insulation	BS 7846	6.2	BS 7846	Annex D	F100	a
Thickness of bedding	BS 7846	9.2	BS 7846	Annex D	F100	a
Thickness of sheath	BS 7846	11.2	BS 7846	Annex D	F100	a
Voltage withstand on complete cable	BS 7846	16.3	BS 7846	Annex K	F100	a
Water immersion test sheath	BS 7655-6.1	Table 3	BS 6469:99.1	14	F5	a
Water absorption (gravimetric) test insulation	BS 7655-1.2/1.3	Table 3	BS 60811-1-3	9.2	F5	a

The above table is a full list of tests covering the requirements of all applicable Tables of the standard. Not all are necessarily required for selected Tables. Reference should be made to the standard.

For an explanation of availability and frequency of tests codes, see sections 12.3 and 12.4.

12.34 BS 8519:2010 Category 3 Based on BS 7846:2009

Schedule of Samples for Type Approval Submission

Table	Type of cable	Number and size of samples
4	Two-core 600/1000V cables with stranded copper conductors & steel wire armour.	One sample of approximately minimum conductor size. One sample of approximately maximum conductor size.
5	Three-core 600/1000 V cables with stranded copper conductors & steel wire armour.	One sample of approximately minimum conductor size. One sample of approximately maximum conductor size.
6	Four-core 600/1000 V cables with stranded copper conductors & steel wire armour.	One sample of approximately minimum conductor size. One sample of approximately maximum conductor size.
7	Five-core 600/1000V cables with stranded copper conductors & steel wire armour.	One sample of approximately minimum conductor size. One sample of approximately maximum conductor size.
8	600/1000V armoured auxiliary cables with stranded copper conductors & steel wire armour.	One sample of approximately minimum conductor size. One sample of approximately maximum conductor size.
9	Two-core 600/1000V cables with stranded copper conductors & interlocked steel tape armour.	One sample of approximately minimum conductor size. One sample of approximately maximum conductor size.
10	Three-core 600/1000 V cables with stranded copper conductors & interlocked steel tape armour.	One sample of approximately minimum conductor size. One sample of approximately maximum conductor size.
11	Four-core 600/1000 V cables with stranded copper conductors & interlocked steel tape armour.	One sample of approximately minimum conductor size. One sample of approximately maximum conductor size.
12	Five-core 600/1000V cables with stranded copper conductors & interlocked steel tape armour.	One sample of approximately minimum conductor size. One sample of approximately maximum conductor size.

12.34 BS 8519:2010 Category 3 Based on BS 7846:2009

Type Test Requirement Notes:

1. Auxiliary cables will always be considered separately.

2. For two, three and four core cables with the same type of conductors, three samples only will be required as follows:

- Two-core. Approximately minimum conductor size.

- Three-core. Approximately mid-way between the minimum and maximum conductor size.

- Four-core. Approximately maximum conductor size.

3. For two, three, four and five core cables with the same type of conductors, four samples only will be required as follows:

  - Two-core. Approximately minimum conductor size.

  - Three-core. Approximately mid-way between the minimum and maximum conductor size.

  - Four-core. Approximately maximum conductor size.

  - Five-core. Approximately mid-way between the minimum and maximum conductor size, but not the same as the three-core.

4 Test for Flame Propagation to BS EN 60332-3-24

- One sample =<35mm² tested in touching formation.
- One sample >35mm² tested in spaced formation.

5 Test for Smoke Emission to BS EN 61034-2

Size range for which conformity is required to be established	Number of samples for each test(see 17.3 of BS 7846)
Complete A)	3 and 1
Core sizes=< 16mm²B)	3 and 2
Core sizes > 16mm²c)	2 and 1

A) For “Complete” approval, 2 samples should be selected to give respectively 3 lengths and 1 length.
B) For “ Cores sizes=<16mm²” approval, 2 samples should be selected to give respectively 3 lengths and 2 lengths.
c) For “Cores sizes >16mm²” approval, 2 samples should be selected to give respectively 2 lengths and 1 length.

6 Fire Resistance Tests to BS 6387 and BS 8491

For multicore power and auxiliary cables, the smallest conductor size with the smallest number of cores and the largest conductor size with the largest number of cores should be tested.

12.35 BS 8519:2010 Category 3 Based on BS 7629-1:2008

Selection and installation of fire- resistant power and control cable systems for life safety and fire – fighting applications – Code of practice.

Tests, Facilities Required And Test Frequencies

Test description	**Requirement**		**Test Method**		**Freq**	**Avail**
	Specification	Clause	Specification	Clause		
Absence of faults on insulation Spark Test	BS 7629-1	6.4	BS 5099 & BS EN 62230	-	man	a
Absence of faults on insulation Voltage Test	BS 7629-1	12.2	BS 7629-1	Annex E	man	a
Absence of faults on insulation Voltage Test	BS 7629-1	12.2	BS 7629-1	Annex E	F100	a
Absence of faults on sheath Spark Test	BS 7629-1	10.4	BS 5099 / BS EN 62230	-	man	a
Application of insulation	BS 7629-1	6.2	Visual Examination	-	F100	n/a
Application of sheath	BS 7629-1	10.2	Visual Examination	-	F100	n/a
Bending characteristics complete cable at 0ºC	BS 7629-1	14.2	BS 7629-1	Annex G	F5	a
Bending test at low temperature -15ºC insulation	BS EN 50363-1/-5	4	BS 60811-1-4	8.1.4	F5	b
Bending test at low temperature -35ºC insulation	BS EN 50363-1	4	BS 60811-1-4	8.1.4	F5	b
Bending test at low temperature -15ºC sheath	BS 7655-6.1	-	BS 60811-1-4	8.2	F5	b
Core identification colour -colour & number	BS 7629-1	7.1	Visual Examination	-	F100	a
Core identification - clarity and durability	BS 7629-1	7.2	Visual Examination	7.2	F100	a
Conductor construction	BS 7629-1	5.1	BS EN 60228	-	F100	a
Conductor resistance	BS 7629-1	13.2	BS EN 60228	-	F100	a
Continuity of tin coating, conductor & drain wire	BS 7629-1	5.1/5.2	BS EN 13603	5	F5	b
Core lay, direction and sequence	BS 7629-1	8.1/8.2	Visual Examination	-	F100	a
Corrosive and acid gas emission	BS 7629-1	6.5/8.3/10.5	BS EN 60754-1	-	F5	o

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12.35 BS 8519:2010 Category 3 Based on BS 7629-1:2008

Selection and installation of fire- resistant power and control cable systems for life safety and fire – fighting applications – Code of practice.

Tests, Facilities Required And Test Frequencies

Test description	**Requirement**		**Test Method**		**Freq**	**Avail**
	Specification	Clause	Specification	Clause		
Drain wire	BS 7629-1	5.2	BS EN 60228	-	F25	a
Elongation test at low temperature (-15ºC) insulation	BS EN 50363-1/-5	5	BS 60811-1-4	8.3.4	F5	b
Elongation test at low temperature (-35ºC)insulation	BS EN 50363-1	5	BS 60811-1-4	8.3.4	F5	b
Elongation test at low temperature (-15ºC)sheath	BS 7655-6.1	-	BS 60811-1-4	8.2	F5	b
Flame propagation of a single cable	BS 7629-1	13.4	BS EN 60332-1-2	-	F25	b
Hardness (insulation)	BS 7655-1.2	Table3	BS 903	Part A26	F5	b
Hot set test (Insulation)	BS 7655-1.2 BS EN 50363-1/-5	2	BS EN 60811-1-2	9	F5	b
Impact resistance complete cable at 20ºC	BS 7629-1	14.3	BS 7629-1	Annex H	F5	b
Impact test at low temperature -15ºC sheath	BS 7655-6.1	Table 3	BS 60811-1-4	8.5	F5	b
Insulation resistance constant (insulation)	BS 7655-1.2	Table 3	BS 6469-99.2	8	F5	a
Marking - legend	BS 7629-1	11	Visual Examination	-	F100	a
Ozone resistance	BS 7655-1.2/ BS EN 50363-5	Table 3	BS EN 50396	8.1.3	1/yr	o
Pressure test at high temperature (insulation)	BS EN 50363-1/-5	3	BS 60811-3-1	8.1	F5	b
Pressure test at high temperature (sheath)	BS 7655-6.1	Table 3	BS 60811-3-1	8.2	F5	b
Resistance to fire	BS 7629-1	14.4	BS 6387 Cat C	D2	1/yr	o
Resistance to fire with water	BS 7629-1	14.4	BS 6387 Cat W	D3	1/yr	o
Resistance to fire with mechanical shock	BS 7629-1	14.4	BS 6387 Cat Z	D4	1/yr	o
Resistance to fire with mechanical shock PH30	BS 7629-1	14.4	BS EN 50200	-	1/yr	o
Resistance to fire with mechanical shock and water 30 minutes survival	BS 7629-1	14.4	BS EN 50200	Annex E	1/yr	o

12.35 BS 8519:2010 Category 3 Based on BS 7629-1:2008

Selection and installation of fire- resistant power and control cable systems for life safety and fire – fighting applications – Code of practice.

Tests, Facilities Required and Test Frequencies - Continued

Test description	**Requirement**		**Test Method**		**Freq**	**Avail**
	Specification	Clause	Specification	Clause		
Resistance to fire with mechanical shock PH120	BS 8519	11 3)	BS EN 50200	-	1/yr	o
Resistance to fire with mechanical shock and water 120 minutes survival	BS 8519	11 3)	BS 8519	Annex B	1/yr	o
Screen minimum thickness & overlap	BS 7629-1	9	Visual Examination	-	F50	a
Smoke emission	BS 7629-1	13.6	BS EN 61034-2	-	F5	o
Tensile Strength & Elongation before/after ageing in air (insulation)	BS 7655-1.2 BS EN 50363-1/-5	Table 3 & 1	BS EN 60811-1-1/1-2	9.1/8.1	F25	a
Tensile Strength & Elongation before/after ageing in air bomb (insulation)	BS 7655-1.2	Table 3	BS EN 60811-1-1/1-2	9.1/8.2	F25	a
Tensile Strength & Elongation before/after ageing in air (sheath)	BS 7655-6.1	Table 3	BS EN 60811-1-1/1-2	9.2/8.1	F25	a
Thickness of insulation	BS 7629-1	6.3	BS 7629-1	Annex C	F100	a
Thickness of sheath	BS 7629-1	10.3	BS 7629-1	Annex C	F100	a
Voltage withstand on complete cable	BS 7629-1	13.3	BS 7629-1	Annex F	F25	a
Water immersion test	BS 7655-6.1	Table 3	BS 6469:99.1	14	F5	a
Water absorption (gravimetric) test	BS 7655-1.2	Table 3	BS 60811-1-3	9.2	F5	a
Water absorption (capacitance) test	BS 7655-1.2	Table 3	BS 6469:99.2	10	F5	a

The above table is a full list of tests covering the requirements of all applicable Tables of the standard. Not all are necessarily required for selected Tables. Reference should be made to the standard.

For an explanation of availability and frequency of tests codes, see sections 12.3 and 12.4.

12.35 BS 8519:2010 Category 3 Based on BS 7629-1:2008

Selection and installation of fire- resistant power and control cable systems for life safety and fire – fighting applications – Code of practice.

Schedule of samples of BS 7629-1 for type approval submission

For full approval to BS 7629 part 1 only, three samples including the following:

- one of minimum conductor size and maximum number of cores.
- one of maximum conductor size and minimum number of cores.
- one of any conductor size with an intermediate number of cores.

For limited approvals covering up to three ranges in the number of cores, then only two samples are required:

- one of minimum conductor size and maximum number of cores.
- one of maximum conductor size and minimum number of cores.

For both full and limited approval the smallest and largest cables shall be subjected to fire resistance tests.

Cables which contain a “sacrificial” layer will be allowed under this scheme, however, the layer shall be disregarded in both the physical and material testing on the underlying construction, e.g., it shall be removed before testing for compliance to the tests required by the specification. The exception to this shall be core identification since it may be the layer that contains the means of identification.

12.35 BS 8519:2010 Category 3 Based on BS 7629-1:2008

Selection and installation of fire- resistant power and control cable systems for life safety and fire – fighting applications – Code of practice.

Schedule of samples of BS 7629-1 for type approval submission

Dual approvals to BS 7629 and BS 6387 will be subject to the implementation of the Note to Clause 1 of BS 6387, and the following conditions:

- All the requirements of BS 6387 see 12.24 must be met.
- Approvals to all categories of BS 6387 may be awarded.
- The cables shall be dual marked BS 7629 and BS 6387. The markings shall also include the categories of BS 6387 for which approval is granted.

Two additional type approval samples shall be submitted. One sample shall be of approximately maximum conductor size and minimum number of cores, and the other approximately minimum conductor size and maximum number of cores. These two samples shall meet all the requirements of BS 7629, and the relevant categories of BS 6387.

12.36 BS 7870-5:2011+ Corr igendum No 1
LV and MV Polymeric insulated cables for use by distribution and generation utilities

Part 5 : Polymeric insulated aerial bundled conductors (ABC) of rated voltage 0.6/1kV for overhead distribution

Tests, Facilities Required and Test Frequencies.

Test description	**Requirement**		**Test Method**		**Freq**	**Avail**
	Specification	Clause	Specification	Clause		
AC voltage test	BS 7870-5	12.1.2	BS 7870-5	12.1.2	F5	a
Conductor construction	BS 7870-5	Table 1	BS 7870-5	11.2	F100	a
Conductor resistance	BS 7870-5	Table 1	BS 7870-2	3.1.1	F100	a
Core identification	BS 7870-5	6	BS 7870-5	10.4	F100	a
Carbon black content	BS 7870-5	Table 5	BS EN 60811-4-1	11	F5	o
Conductor diameter	BS 7870-5	Table 1	BS 7870-5	11.2	F100	a
Core outside diameter	BS 7870-5	Table 1	BS EN 60811-1-1	-	F50	a
Hot set (insulation)	BS 7870-5	Table 5	BS EN 60811-2-1	9	F25	a
Insulation resistance 75ºC	BS 7870-5	12.1.3	IEC 60885-1	-	F5	a
Identification of manufacturer	BS 7870-5	8	BS 7870-5	10.5	F100	a
Laying up direction & sequence	BS 7870-5	7	BS 7870-5	11.7	F50	a
Lay length	BS 7870-5	Table 2	BS 7870-5	11.7	F50	a
Pressure test at high temperature (insulation)	BS 7870-5	Table 5	BS EN 60811-3-1	8	F5	b
Rib geometry & spacing	BS 7870-5	6	BS EN 60811-1-1	-	F100	a
Shrinkage of insulation	BS 7870-5	Table 5	BS EN 60811-1-3	10	F5	a
Slippage test	BS 7870-5	Table 4	BS 7870-5	Annex C	F25	a
Spark test on insulation	BS 7870-5	10.2.1	BS 7870-2	3.6.1	man	a
Spark test on bundle cable	BS 7870-5	10.2.2	BS 7870-2	3.6.1	man	a

12.36 BS 7870-5:2011 + Corr No 1 Continued

Tests, Facilities Required and Test Frequencies Continued.

Test description	**Requirement**		**Test Method**		**Freq**	**Avail**
	Specification	Clause	Specification	Clause		
Tensile test on conductors	BS 7870-5	Table 1	BS EN ISO 6892-1	-	F25	a
Tensile test on conductors	BS 7870-5	Table 1	Method approved by purchaser	-	F5	a
Tensile strength & elongation before/after ageing in air (insulation)	BS 7870-5	Table 5	BS EN 60811-1-1	8/9	F25	a
Thickness of insulation	BS 7870-5	Table 1	BS EN 60811-1-1	-	F50	a
Voltage test on complete bundle	BS 7870-5	10.3	BS 7870-2	3.2.1	F50	a
Water absorption (insulation)	BS 7870-5	Table 5	BS EN 60811-1-3	9	F5	a

For an explanation of availability and frequency of tests codes, see sections 12.3 and 12.4.

SCHEDULE OF SAMPLES FOR TYPE APPROVAL SUBMISSION

One sample minimum number of cores and maximum conductor size.

One sample maximum number of cores and minimum conductor size.

12.37 BS 7889:2012

Electric cables – Thermosetting insulated, non- armoured cables with a voltage of 600/1000V, for fixed installations

Tests, Facilities Required And Test Frequencies

Test description	**Requirement**		**Test Method**		**Freq**	**Avail**
	Specification	Clause	Specification	Clause		
Abrasion test	BS 7889	16.4	BS 7889	Annex C	F25	o
Absence of faults on insulation & sheath single core (Spark Test)	BS 7889	14.3.1	BS EN 62230 & BS 5099	-	man	a
Absence of faults on insulation & sheath multi-core (Voltage Test)	BS 7889	14.3.2	BS EN 50395	10.3	F100	a
Application of insulation/inner covering/sheath	BS 7889	6.2/9/10.2	Visual exam	-	F100	n/a
Assessment of halogens	BS EN 50363-5	7	BS EN 60754-1 BS EN 60754-2 BS EN 60684-2	- - -	1/yr	b
Bending test at low temperature (insulation)	BS EN 50363-5	4	BS EN 60811-504	4.2	F5	b
Bending test at low temperature (sheath)	BS 7655-4.2	-	BS EN 60811-504	4.3	F5	b
Bi-colour combination	BS 7889	7.2	BS EN 50396 BS 7889	5.2 Annex E	F100	a
Compatibility	BS 7889	16.2	BS 7889	Annex B	F25	a
Conductor construction	BS 7889	5	BS EN 60228	-	F100	a
Conductor resistance	BS 7889	14.2	BS EN 60228	-	F100	a
Core identification	BS 7889	7.1	Visual Exam	-	F100	a
Core colour clarity and durability	BS 7889	7.3	BS EN 50396	5.1	F100	a
Direction and sequence of lay of cores	BS 7889	8	Visual Exam	-	F25	n/a

12.37 BS 7889:2012

Electric cables – Thermosetting insulated, non- armoured cables with a voltage of 600/1000V, for fixed installations

Tests, Facilities Required And Test Frequencies

Test description	**Requirement**		**Test Method**		**Freq**	**Avail**
	Specification	Clause	Specification	Clause		
Determination of hardness	BS 7655-1.2	-	BS 903	Part A26	F5	b
Elongation test at low temperature (insulation)	BS EN 50363-5	5	BS EN 60811-505	4.2	F5	b
Elongation test at low temperature (sheath)	BS 7655-4.2	-	BS EN 60811-505	4.2	F5	b
Flame propagation of a single cable	BS 7889	15.2	BS EN 60332-1-2	Annex A	F25	b
Fillers and Binders	BS 7889	8	Visual examination	-	F100	n/a
Hot deformation (sheath)	BS 7655-4.2	-	BS 6469-99.1	10	F5	b
Hot set test (Insulation)	BS 7655-1.2/-1.3 BS EN 50363-5	2	BS EN 60811-507	-	F5	b
Impact test at low temperature -15ºC (sheath)	BS 7655-4.2	-	BS EN 60811-506	-	F5	b
Insulation resistance constant (insulation)	BS 7655-1.2/1.3	Table 3	BS 6469-99.2	8	F5	a
Insulation resistance constant (sheath)	BS 7655-4.2	-	BS 6469-99.2	8	F5	a
Length of lay of assembled cores	BS 7889	8	BS 7889	15.4	F25	a
Loss of mass (sheath)	BS 7655-4.2	-	BS EN 60811-409	6	F5	a
Marking	BS 7889	11	Visual Examination	-	F100	a
Marking durability of printed information	BS 7889	11.4	BS EN 50396	5.1	F100	a
Ovality	BS 7889	15.3	BS EN 50396	4.4	F100	a
Ozone resistance	BS 7655-1.2/ BS EN 50363-5	Table 3	BS EN 50396	8.1.3	1/yr	o

12.37 BS 7889:2012

Electric cables – Thermosetting insulated, non- armoured cables with a voltage of 600/1000V, for fixed installations

Tests, Facilities Required And Test Frequencies

Test description	**Requirement**		**Test Method**		**Freq**	**Avail**
	Specification	Clause	Specification	Clause		
Pressure test at high temperature (insulation)	BS EN 50363-5	3	BS EN 60811-508	4.3	F5	b
Pressure test at high temperature (sheath)	BS 7655-4.2	Table 3	BS EN 60811-508	4.4	F5	b
Resistance to cracking (sheath)	BS 7655-4.2	-	BS EN 60811-509	4.4	F50	a
Shrinkage of insulation	BS 7889	16.3	BS EN 60811-502	-	F50	a
Tensile Strength & Elongation before/after ageing in air (insulation)	BS 7655-1.2/1.3 BS EN 50363-5	Table 3 & 1	BS EN 60811-401 BS EN 60811-501	- 4.2	F25	a
Tensile Strength & Elongation before/after ageing in air bomb (insulation)	BS 7655-1.2	Table 3	BS EN 60811-412	-	F5	b
Tensile Strength & Elongation before/after ageing in air (sheath)	BS 7655-4.2	Table 3	BS EN 60811-401 BS EN 60811-501	- 4.3	F25	a
Thickness of insulation	BS 7889	6.3	BS EN 50396	4.1	F100	a
Thickness of sheath	BS 7889	10.3	BS EN 50396	4.2	F100	a
Water absorption (gravimetric) test insulation	BS 7655-1.2/1.3	Table 3	BS EN 60811-402	-	F5	a

The above table is a full list of tests covering the requirements of all applicable Tables of the standard. Not all are necessarily required for selected Tables. Reference should be made to the standard.

For an explanation of availability and frequency of tests codes, see sections 12.3 and 12.4.

12.37 BS 7889:2012

Electric cables – Thermosetting insulated, non- armoured cables with a voltage of 600/1000V, for fixed installations

Schedule of Samples for Type Approval Submission

Table	Type of cable	Number and size of samples
2	Single-core 600/1000V cables with circular stranded copper conductor	One sample of approximately minimum conductor size. One sample of approximately maximum conductor size.
3	Two-core 600/1000V cables with circular stranded copper conductors.	One sample of approximately minimum conductor size. One sample of approximately maximum conductor size.
4	Three-core 600/1000 V cables with circular stranded copper conductors.	One sample of approximately minimum conductor size. One sample of approximately maximum conductor size.
5	Four-core 600/1000 V cables with circular stranded copper conductors.	One sample of approximately minimum conductor size. One sample of approximately maximum conductor size.
6	Five-core 600/1000V cables with circular stranded copper conductors.	One sample of approximately minimum conductor size. One sample of approximately maximum conductor size.

12.37 BS 7889:2012

Electric cables – Thermosetting insulated, non- armoured cables with a voltage of 600/1000V, for fixed installations

Type Test Requirement Notes:

1. For two, three and four core cables with the same type of conductors, three samples only will be required as follows:

- Two-core. Approximately minimum conductor size.
- Three-core. Approximately mid-way between the minimum and maximum conductor size.
- Four-core. Approximately maximum conductor size.

2. For two, three, four and five core cables with the same type of conductors, four samples only will be required as follows:

  - Two-core. Approximately minimum conductor size.
  - Three-core. Approximately mid-way between the minimum and maximum conductor size.
  - Four-core. Approximately maximum conductor size.
  - Five-core. Approximately mid-way between the minimum and maximum conductor size, but not the same as the three-core.

12.38 BS 8573:2012

Electric cables – Thermosetting insulated, non- armoured cables with a voltage of 600/1000V, for fixed installations, and having low emission of smoke and corrosive gases when affected by fire.

Tests, Facilities Required And Test Frequencies

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
Abrasion test	BS 8573	16.4	BS 8573	Annex D	F25	o
Absence of faults on insulation & sheath single core (Spark Test)	BS 8573	14.3.1	BS EN 62230 & BS 5099	-	man	a
Absence of faults on insulation & sheath multi-core (Voltage Test)	BS 8573	14.3.2	BS EN 50395	10.3	F100	a
Application of insulation/inner covering/sheath	BS 8573	6.2/9.1/10.2	Visual exam	-	F100	n/a
Bending test at low temperature (insulation)	BS EN 50363-5	4	BS EN 60811-504	4.2	F5	b
Bending test at low temperature (sheath)	BS 7655-6.1	-	BS EN 60811-504	4.3	F5	b
Bi-colour combination	BS 8573	7.2	BS EN 50396 BS 8573	5.2 Annex F	F100	a
Compatibility	BS 8573	16.2	BS 8573	Annex C	F25	a
Conductor construction	BS 8573	5	BS EN 60228	-	F100	a
Conductor resistance	BS 8573	14.2	BS EN 60228	-	F100	a
Core identification	BS 8573	7.1	Visual Exam	-	F100	a
Core colour clarity and durability	BS 8573	7.3	BS EN 50396	5.1	F100	a
Corrosive and acid gas (insulation/tape/fillers & binders/inner covering/sheath)	BS EN 50363-5	7	BS EN 60754-1	-	1/yr	b
Direction and sequence of lay of cores	BS 8573	8.1	Visual Exam	-	F25	n/a

12.38 BS 8573:2012

Electric cables – Thermosetting insulated, non- armoured cables with a voltage of 600/1000V, for fixed installations, and having low emission of smoke and corrosive gases when affected by fire.

Tests, Facilities Required And Test Frequencies

Test description	**Requirement**		**Test Method**		**Freq**	**Avail**
	Specification	Clause	Specification	Clause		
Determination of hardness	BS 7655-1.2	-	BS 903	Part A26	F5	b
Elongation test at low temperature (insulation)	BS EN 50363-5	5	BS EN 60811-505	4.2	F5	b
Elongation test at low temperature (sheath)	BS 7655-6.1	-	BS EN 60811-505	4.2	F5	b
Flame propagation of a single cable	BS 8573	15.2	BS EN 60332-1-2	Annex A	F25	b
Flame propagation on a multiple cable	BS 8573	16.5	BS EN 60332-3-24	-	1/yr	o
Fillers and Binders	BS 8573	8.1	Visual examination	-	F100	n/a
Hot set test (Insulation)	BS 7655-1.2/-1.3 BS EN 50363-5	2	BS EN 60811-507	-	F5	b
Impact test at low temperature -15ºC (sheath)	BS 7655-6.1	-	BS EN 60811-506	-	F5	b
Insulation resistance constant (insulation)	BS 7655-1.2/1.3	Table 3	BS 6469-99.2	8	F5	a
Length of lay of assembled cores	BS 8573	8.1	BS 8573	15.5	F25	a
Marking	BS 8573	11	Visual Examination	-	F100	a
Marking durability of printed information	BS 8573	11.4	BS EN 50396	5.1	F100	a
Ovality	BS 8573	15.3	BS EN 50396	4.4	F100	a
Ozone resistance	BS 7655-1.2/ BS EN 50363-5	Table 3	BS EN 50396	8.1.3	1/yr	o
Pressure test at high temperature (insulation)	BS EN 50363-5	3	BS EN 60811-508	4.3	F5	b
Pressure test at high temperature (sheath)	BS 7655-6.1	Table 3	BS EN 60811-508	4.4	F5	b

12.38 BS 8573:2012

Electric cables – Thermosetting insulated, non- armoured cables with a voltage of 600/1000V, for fixed installations, and having low emission of smoke and corrosive gases when affected by fire.

Tests, Facilities Required And Test Frequencies

Test description	**Requirement**		**Test Method**		**Freq**	**Avail**
	Specification	Clause	Specification	Clause		
Shrinkage of insulation	BS 8573	16.3	BS EN 60811-502	-	F50	a
Shrinkage of sheath	BS 8573	16.6	BS 8573	Annex B	F5	a
Smoke emission	BS 8573	15.4	BS EN 61034-2	-	F5	b
Tensile Strength & Elongation before/after ageing in air (insulation)	BS 7655-1.2/1.3 BS EN 50363-5	Table 3 & 1	BS EN 60811-401 BS EN 60811-501	- 4.2	F25	a
Tensile Strength & Elongation before/after ageing in air bomb (insulation)	BS 7655-1.2	Table 3	BS EN 60811-412	-	F5	b
Tensile Strength & Elongation before/after ageing in air (sheath)	BS 7655-6.1	Table 3	BS EN 60811-401 BS EN 60811-501	- 4.3	F25	a
Thickness of insulation	BS 8573	6.3	BS EN 50396	4.1	F100	a
Thickness of sheath	BS 8573	10.3	BS EN 50396	4.2	F100	a
Water absorption (gravimetric) test (insulation)	BS 7655-1.2/1.3	Table 3	BS EN 60811-402	-	F5	a
Water immersion (sheath)	BS 7655-6.1	-	BS 6469:99.1	14	F5	a

The above table is a full list of tests covering the requirements of all applicable Tables of the standard. Not all are necessarily required for selected Tables. Reference should be made to the standard.

For an explanation of availability and frequency of tests codes, see sections 12.3 and 12.4.

12.38 BS 8573:2012

Electric cables – Thermosetting insulated, non- armoured cables with a voltage of 600/1000V, for fixed installations, and having low emission of smoke and corrosive gases when affected by fire.

Schedule of Samples for Type Approval Submission

Table	Type of cable	Number and size of samples
2	Single-core 600/1000V cables with circular stranded copper conductor	One sample of approximately minimum conductor size. One sample of approximately maximum conductor size.
3	Two-core 600/1000V cables with circular stranded copper conductors.	One sample of approximately minimum conductor size. One sample of approximately maximum conductor size.
4	Three-core 600/1000 V cables with circular stranded copper conductors.	One sample of approximately minimum conductor size. One sample of approximately maximum conductor size.
5	Four-core 600/1000 V cables with circular stranded copper conductors.	One sample of approximately minimum conductor size. One sample of approximately maximum conductor size.
6	Five-core 600/1000V cables with circular stranded copper conductors.	One sample of approximately minimum conductor size. One sample of approximately maximum conductor size.

12.38 BS 8573:2012

Electric cables – Thermosetting insulated, non- armoured cables with a voltage of 600/1000V, for fixed installations, and having low emission of smoke and corrosive gases when affected by fire.

Type Test Requirement Notes:

1. For two, three and four core cables with the same type of conductors, three samples only will be required as follows:

- Two-core. Approximately minimum conductor size.
- Three-core. Approximately mid-way between the minimum and maximum conductor size.
- Four-core. Approximately maximum conductor size.

2. For two, three, four and five core cables with the same type of conductors, four samples only will be required as follows:

  - Two-core. Approximately minimum conductor size.
  - Three-core. Approximately mid-way between the minimum and maximum conductor size.
  - Four-core. Approximately maximum conductor size.
  - Five-core. Approximately mid-way between the minimum and maximum conductor size, but not the same as the three-core.

3 Test for Flame Propagation to BS EN 60332-3-24

  - One sample =<15mm diameter tested in touching formation.
  - One sample 26-40mm diameter tested in spaced formation.

12.38 BS 8573:2012

Electric cables – Thermosetting insulated, non- armoured cables with a voltage of 600/1000V, for fixed installations, and having low emission of smoke and corrosive gases when affected by fire.

Type Test Requirement Notes:

5 Test for Smoke Emission to BS EN 61034-2

Size range for which conformity is required to be established	Number of samples for each test(see 15.4 of BS 8573)
Complete A)	3 and 1
Core sizes=< 16mm²B)	3 and 2
Core sizes > 16mm²c)	2 and 1

A) For “Complete” approval, 2 samples should be selected to give respectively 3 lengths and 1 length.
B) For “ Cores sizes=<16mm²” approval, 2 samples should be selected to give respectively 3 lengths and 2 lengths.
c) For “Cores sizes >16mm²” approval, 2 samples should be selected to give respectively 2 lengths and 1 length.

12.39 BS 7629-1:2015

Electric cables - Specification for 300/500V fire resistant screened, fixed installation cables having low emission of smoke and corrosive gases when affected by fire. Part 1 Multicore cables

Tests, Facilities Required And Test Frequencies

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
Absence of faults on insulation Spark Test	BS 7629-1 BASEC PCR	6.2 Note 1 6.4	BS EN 62230	-	man	a
Absence of faults on sheath Spark Test	BS 7629-1	10.4	BS EN 62230	-	man	a
Application of insulation	BS 7629-1	6.2	Visual Examination	-	F100	n/a
Application of sheath	BS 7629-1	10.2	Visual Examination	-	F100	n/a
Bending characteristics complete cable at 0ºC	BS 7629-1	16.4	BS 7629-1	Annex D	F5	a
Bending test at low temperature -15ºC insulation	BS EN 50363-5	Table 2	BS 60811-504	4.2	F5	b
Bending test at low temperature -35ºC insulation	BS EN 50363-1	Table 2	BS 60811-504	4.2	F5	b
Bending test at low temperature -15ºC sheath	BS 7655-6.1	Table 2	BS 60811-504	4.3	F5	b
Core identification colour -colour & number	BS 7629-1	7.1	Visual Examination	-	F100	a
Core identification - clarity and durability	BS 7629-1	7.2	BS EN 50396	5.1	F100	a
Conductor construction	BS 7629-1	5.1	BS EN 60228	-	F100	a
Conductor and drain wire resistance	BS 7629-1	14.2	BS EN 60228	-	F100	a
Continuity of tin coating, conductor & drain wire	BS 7629-1	5.1/5.2	BS 7629-1	Annex B	F5	b
Core lay, direction and sequence	BS 7629-1	8	Visual Examination	-	F100	a
Corrosive and acid gas emission	BS 7629-1	16.2	BS EN 60754-1	-	F5	o

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12.39 BS 7629-1:2015

Electric cables - Specification for 300/500V fire resistant screened, fixed installation cables having low emission of smoke and corrosive gases when affected by fire. Part 1 Multicore cables

Tests, Facilities Required And Test Frequencies

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
Drain wire construction	BS 7629-1	5.2	BS EN 60228	-	F25	a
Durability of printed information	BS 7629-1	11.7	BS EN 50396	5.1	F5	a
Elongation test at low temperature (-15ºC) insulation	BS EN 50363-5	Table 2	BS 60811-505	4.2	F5	b
Elongation test at low temperature (-35ºC)insulation	BS EN 50363-1	Table 2	BS 60811-505	4.2	F5	b
Elongation test at low temperature (-15ºC)sheath	BS 7655-6.1	Table 2	BS 60811-505	4.2	F5	b
Flame propagation of a single cable	BS 7629-1	15.4	BS EN 60332-1-2	-	F25	b
Hardness (insulation)	BS 7655-1.2	Table 2	BS 903	Part A26	F5	b
Hot set test (Insulation)	BS 7655-1.2 BS EN 50363-1/-5	Table 2	BS EN 60811-507	-	F5	b
Impact resistance complete cable at 20ºC	BS 7629-1	16.5	BS 7629-1	Annex E	F5	b
Impact test at low temperature -15ºC sheath	BS 7655-6.1	Table 2	BS 60811-506	-	F5	b
Insulation resistance constant (insulation)	BS 7655-1.2	Table 2	BS 6469-99.2	8	F5	a
Length of lay of assembled cores	BS 7629-1	8	BS 7629-1	15.3	F50	a
Marking - legend	BS 7629-1	11	Visual Examination	-	F100	a
Ovality	BS 7629-1	15.7	BS EN 50396	4.4	F50	a
Ozone resistance	BS 7655-1.2/ BS EN 50363-5	Table 2	BS EN 50396	8.1.3	1/yr	o
Pressure test at high temperature (insulation)	BS EN 50363-5	Table 2	BS 60811-508	4.3	F5	b
Pressure test at high temperature (sheath)	BS 7655-6.1	Table 2	BS 60811-508	4.4	F5	b

12.39 BS 7629-1:2015

Electric cables - Specification for 300/500V fire resistant screened, fixed installation cables having low emission of smoke and corrosive gases when affected by fire. Part 1 Multicore cables

Tests, Facilities Required and Test Frequencies - Continued

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
Test to resistance to fire category STANDARD 30	BS 7629-1	15.6.2	BS EN 50200 & BS EN 50200 Annex E	-	1/yr	o
Test to resistance to fire category STANDARD 60	BS 7629-1	15.6.3	BS EN 50200 & BS EN 50200 Annex E	-	1/yr	o
Test to resistance to fire category ENHANCED 120	BS 7629-1	15.6.4	BS EN 50200 & BS 8434-2	-	1/yr	o
Screen minimum thickness & overlap	BS 7629-1	9	Visual Examination	-	F50	a
Shrinkage of insulation	BS 7629-1	16.3	BS EN 60811-502	-	F5	a
Shrinkage of sheath	BS 7629-1	16.6	BS 7629-1	Annex F	F5	a
Smoke emission	BS 7629-1	15.5	BS EN 61034-2	-	F5	o
Tensile Strength & Elongation before/after ageing in air (insulation)	BS 7655-1.2 BS EN 50363-1/-5	Table 2	BS EN 60811-401 BS EN 60811-501	4.2 -	F25	a
Tensile Strength & Elongation before/after ageing in air bomb (insulation)	BS 7655-1.2	Table 2	BS EN 60811-412	-	F25	b
Tensile Strength & Elongation before/after ageing in air (sheath)	BS 7655-6.1	Table 2	BS EN 60811-401 BS EN 60811-501	4.3 -	F25	a
Thickness of insulation	BS 7629-1	6.3	BS EN 50396	4.1	F100	a
Thickness of sheath	BS 7629-1	10.3	BS EN 50396	4.2	F100	a
Voltage withstand	BS 7629-1	15.2	BS 7629-1	Annex C	F25	a
Voltage test on complete cable	BS 7629-1	14.3	BS EN 50395	10.3	F100	a
Water immersion test	BS 7655-6.1	Table 2	BS 6469:99.1	14	F5	a

The above table is a full list of tests covering the requirements of all applicable Tables of the standard. Not all are necessarily required for selected Tables. Reference should be made to the standard.

For an explanation of availability and frequency of tests codes, see sections 12.3 and 12.4.

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12.39 BS 7629-1:2015 - Continued

Schedule of samples for type approval submission

Separate samples are required for (1) cables of designated fire resistance category STANDARD 30 or STANDARD 60, and for (2) cables of designated fire resistance category ENHANCED 120.

For approval to BS 7629:2015 Table 2 only, two samples are required, including the following:

- one of minimum conductor size and minimum number of cores of the range applied for.
- one of maximum conductor size and maximum number of cores of the range applied for.

For approval to BS 7629:2015 Table 3 only, two samples are required, including the following:

- one of maximum conductor size and minimum number of cores of the range applied for.
- one of maximum number of cores of the range applied for (any conductor size).

For approval to Table 2 and Table 3 with the same designated fire resistance category, three samples are required:

- one of minimum conductor size and minimum number of cores of the range applied for.
- one of maximum conductor size and approx. median number of cores of the combined ranges applied for from Tables 2 and 3.
- one of maximum number of cores of the range applied for (any conductor size).

Each of the above samples shall be subject the smoke emission test and to the fire resistance test(s) relevant to the declared fire resistance category.

For a single cable design intended to provide performance of more than one designated fire resistance category, all necessary alternative fire resistance tests shall be performed (BS EN 50200 / BS EN 50200 Annex E / BS 8434-2).

Only one test per sample shall be successfully performed to BS EN 50200. [Note: this supersedes the requirements of BS 5839-1:2013 clause 26.2.]

12.39 BS 7629-1:2015 - Continued

Schedule of samples for type approval submission

For corrosive and acid gas testing one of the above cable samples, which shall contain the maximum number of separate components is to be tested. If necessary additional components shall be selected from cables of all designated fire resistance categories such that all unique components are tested. One corrosive and acid gas test shall be performed on each identified component.

Cables in each of the above designated fire resistance categories may be dual approved to BS 7629-1:2015 and BS 6387:2013. In this case each sample tested for BS 7629-1:2015 shall also be tested to the relevant BS 6387:2013 fire tests. Such dual approvals will be subject to the following conditions:

- All the requirements of BS 6387:2013 see 12.40 must be met.
- Approvals to all categories of BS 6387:2013 may be awarded.
- The cables shall be dual marked BS 7629-1 and BS 6387 in accordance with each standard. The markings shall also include the categories of BS 6387 for which approval is granted.
- Cables may not be BASEC marked and also marked BS 6387 unless a dual approval as above is held.

12.41 BS 8592:2016

Electric Cables – Thermosetting insulated, non-armoured, fire resistant, single core non-sheathed cables of rated voltage 450/750V, having low emission of smoke and corrosive gases when affected by fire - Specification

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Absence of faults on insulation (spark test)	BS 8592	11.3	BS EN 62230	-	man	a
Absence of faults on insulation (spark test)	BS 8592	6.4	BS EN 62230	-	man	a
Application of insulation	BS 8592	6.2	Visual Exam	-	F100	n/a
Bending test at low temperature (insulation)	BS EN 50363-5	Table 2	BS EN 60811-504	4.2	F5	b
Core Colour - clarity and durability of colour	BS 8592	7.3	BS EN 50396	5.1	F100	a
Conductor construction	BS 8592	5	BS EN 60228	-	F100	a
Conductor resistance	BS 8592	11.2	BS EN 60228	-	F100	a
Core I/D - Colour	BS 8592	7.2	Visual Exam	-	F100	n/a
Corrosive & acid gas (insulation)	BS 8592	13.2	BS EN 60754-1	-	F5	b
Elongation at low temperature (insulation)	BS EN 50363-5	Table 2	BS EN 60811-505	4.2	F5	b
Flame propagation single cable	BS 8592	12.2	BS EN 60332-1-2	Annex A	F25	b
Hot set (insulation)	BS EN 50363-5	Table 2	BS EN 60811-507	-	F5	b
Insulation resistance	BS 8592	13.3 & Table 2	BS EN 50395	8.1	F5	a
Marking legend	BS 8592	8.1-8.3	Visual Exam	-	F100	a

12.41 BS 8592:2016 - Continued

Electric Cables – Thermosetting insulated, non-armoured, fire resistant, single core non-sheathed cables of rated voltage 450/750V, having low emission of smoke and corrosive gases when affected by fire - Specification

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Marking durability of printed information	BS 8592	8.4	BS EN 50396	5.1	F100	a
Ozone resistance (low concentration) (insulation)	BS EN 50363-5	Table 2	BS EN 50396	8.1.3	1/YR	o
Pressure test at high temperature (insulation)	BS EN 50363-5	Table 2	BS EN 60811-508	4.3	F5	b
Resistance to fire with shock	BS 8592	12.4	IEC 60331-3	-	1/yr	b
Tensile & elongation before & after ageing (insulation)	BS EN 50363-5	Table 2	BS EN 60811-401 BS EN 60811-501	- 4.2	F25	a
Thickness (insulation)	BS 8592	6.3 & Table 2	BS EN 50396	4.1	F100	a
Shrinkage of insulation	BS 8592	13.5	BS EN 60811-502	-	F5	a
Smoke emission	BS 8592	12.3	BS EN 61034-2	-	F5	o
Voltage withstand test	BS 8592	13.4	BS EN 50395	7	F25	a

This is a full list of tests covering the requirements of all applicable Tables of the standard.
Not all are necessarily required for selected Tables. Reference should be made to the standard.
For an explanation of availability and frequency of tests codes, see 12.3 and 12.4

12.41 BS 8592:2016 - Continued

Electric Cables – Thermosetting insulated, non-armoured, fire resistant, single core non-sheathed cables of rated voltage 450/750V, having low emission of smoke and corrosive gases when affected by fire - Specification

Schedule of Samples for Type Approval Submission

Table	Type of Cable	Number and size of samples
2	Thermosetting insulated, fire resistant, single-core cables, 450/750V	One sample smallest conductor size and one sample maximum conductor size.

Cables in which the insulation is in two layers will be accepted under this scheme, however, all tests shall be applied to the complete insulation, which must meet all the requirements of the specification.

Schedule Of Samples For Type Approval Submission (Fire, Smoke Emission, Corrosive & Acid Gas Testing and Ozone Testing)

Corrosive and acid gas emission testing: One sample of each of the relevant cable components.

Ozone resistance testing: One sample is required.

Sample requirements for smoke emission testing and resistance to fire with shock (IEC 60331-3)

Tables 2	One sample of approximately maximum conductor size One sample of approximately minimum conductor size

12.42 BS 5467:2016 + Corr No1

Electric cables- Thermosetting insulated, armoured cables of rated voltages of 600/1000 V and 1900/3300 V for fixed installations - Specification

Tests, Facilities Required And Test Frequencies

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
Abrasion resistance	BS 5467	18.4	BS 5467	Annex D	F25	o
Absence of faults on insulation Spark Test	BS 5467 BASEC PCR	6.2 Note 1 6.4	BS EN 62230	-	man	a
Absence of faults on sheath Spark Test	BS 5467	11.4	BS EN 62230	-	man	a
Application of insulation	BS 5467	6.2	Visual examination	-	F50	a
Application of bedding	BS 5467	9.1	Visual examination	-	F50	a
Application of sheath	BS 5467	11.2	Visual examination	-	F50	a
Armour resistance	BS 5467	Table F1,2,3	BS 5467	Annex B5	F50	a
Armour wire tensile test (aluminium armour wire)	BS 5467	10.2d	BS 5467	Annex B4	F5	a
Armour wire diameter	BS 5467	10.2a	BS 5467	Annex B1	F5	a
Armour wire mass of zinc coating	BS 5467	10.2b	BS 5467	Annex B2	F5	a
Armour wire wrapping test	BS 5467	10.2c	BS 5467	Annex B3	F5	a
Armour wire joints	BS 5467	10.3	Visual Exam	-	F5	a
Armour wire lay length and direction	BS 5467	10.1	BS 5467	17.3	F50	a
Bending test at low temperature (sheath)	BS 7655-4.2	Table 2	BS EN 60811-504	4.3	F5	b
Bi-colour combination	BS 5467	7.4	BS EN 50396	5.2	F100	a
Core colour/number and clarity/durability	BS 5467	7.5	BS EN 50396	5.1	F100	a
Compatibility	BS 5467	Table C1	BS 5467	Annex C -	F25	a

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12.42 BS 5467:2016 + Corr No1- Continued

Tests, Facilities Required and Test Frequencies – Continued

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
Conductor construction	BS 5467	5	BS EN 60228	-	F100	a
Conductor resistance	BS 5467	16.2	BS EN 60228	-	F100	a
Core lay up direction and sequence	BS 5467	8	Visual Exam	-	F100	a
Core identification colour, sequence/number	BS 5467	7.3	Visual Exam	-	F100	a
Durability of printed information	BS 5467	12.7	BS EN 50396	5.1	F25	a
Elongation test at low temperature (sheath)	BS 7655-4.2	Table 2	BS 60811-505	4.3	F5	b
End sealing	BS 5467	13	Visual examination	-	man	n/a
Flame propagation of a single cable	BS 5467	17.4	BS EN 60332-1-2	-	F25	b
Fillers and Binders application	BS 5467	8	Visual examination	-	F100	n/a
Hardness (insulation)	BS 7655-1.2	Table 2	BS 903:Part A26	-	F5	b
Heat shock (sheath)	BS 7655-4.2	Table 2	BS EN 60811-509	4.4	F50	a
Hot deformation (sheath)	BS 7655-4.2	Table 2	BS 6469-99.1	10	F5	b
Hot set test (insulation)	BS 7655-1.2/-1.3	Table 2	BS EN 60811-507	-	F5	b
Impact test at low temperature -15ºC (sheath)	BS 7655-4.2	Table 2	BS 60811-506	-	F5	b
Insulation resistance constant (insulation)	BS 7655-1.2/1.3	Table 2	BS 6469-99.2	8	F5	a
Insulation resistance constant (sheath)	BS 7655-4.2	Table 2	BS 6469-99.2	8	F5	a
Insulation resistance constant (sheath)	BS 5467	18.5	BS 5467	Annex E	F5	a
Lay length of assembled cores	BS 5467	8	BS 5467	17.2	F50	a
Loss of mass	BS 7655-4.2	Table 2	BS EN 60811-409	6	F5	a

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12.42 BS 5467:2016 + Corr No1 - Continued

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
Marking -external marking	BS 5467	12.1 - 12.6	Visual examination	-	F100	a
Ovality	BS 5467	17.5	BS 5467	17.5	F50	a
Ozone resistance	BS 7655-1.2	Table 2	BS EN 50396	8.1.3	1/yr	o
Pressure test at high temperature (sheath)	BS 7655-4.2	Table 2	BS EN 60811-508	4.4	F5	b
Properties of bedding	BS 5467	9.1	BS EN 60811-501	4.3	F5	a
Shrinkage of insulation	BS 5467	18.3	BS EN 60811-502	-	F50	a
Shrinkage of sheath	BS 5467	18.6	BS 5467	Annex H	F5	a
Tensile Strength & Elongation before/after ageing in air (insulation)	BS 7655-1.2/1.3	Table 2	BS EN 60811-401 BS EN 60811-501	- 4.2	F25	a
Tensile Strength & Elongation before/after ageing in air bomb (insulation)	BS 7655-1.2	Table 2	BS EN 60811-412 BS EN 60811-501	- 4.2	F5	b
Tensile Strength & Elongation before/after ageing in air (sheath)	BS 7655-4.2	Table 2	BS EN 60811-401 BS EN 60811-501	- 4.3	F25	a
Thickness of insulation	BS 5467	6.3 & Tables 2-9	BS EN 50396	4.1	F100	a
Thickness of bedding	BS 5467	9.2 & Tables 2-9	BS EN 50396	4.2	F100	a
Thickness of sheath	BS 5467	11.3 & tables 2-9	BS EN 50396	4.2	F100	a
Voltage test on complete cable	BS 5467	16.3	BS EN 50395	10.3	F100	a
Water absorption (gravimetric) test insulation	BS 7655-1.2/1.3	Table 2	BS EN 60811-402	4.4	F5	a

The table above is a full list of tests covering the requirements of all applicable Tables of the standard.
Not all are necessarily required for selected Tables. Reference should be made to the standard.
For an explanation of availability and frequency of tests codes, see section 12.3 and 12.4.

12.42 BS 5467:2016 + Corr No1 – Continued

Schedule of samples for type approval submission

For approval for a Single Table

Table	Type Of Cable	Number And Size Of Samples
4	Single-core 600/1000V cables with copper conductors	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
5	Two-core 600/1000V cables with copper conductors	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
6	Three-core 600/1000V cables with copper conductors	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
7	Four-core 600/1000V cables with copper conductors	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
8	Five-core 600/1000V cables with copper conductors	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
9	Multicore auxiliary 600/1000V cables with copper conductors	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
10	Single-core 1900/3300V cables with copper conductors	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
11	Three-core 1900/3300V cables with copper conductors	One sample of approximately minimum conductor size One sample of approximately maximum conductor size

12.42 BS 5467:2016 + Corr No1 – Continued

Notes:

Single core and auxiliary cables will always be considered separately

For two, three and four core cables with the same type of conductors, three samples only will be required as follows:

- Two-core. Approximately maximum cross-sectional area of conductor.
- Three-core. Approximately mid-way between the minimum and maximum cross-sectional areas of conductor, but not the same as the five-core.
- Four-core. Approximately minimum cross-sectional area of conductor.

For two, three, four and five core cables with the same type of conductors, four samples only will be required as follows:

- Two-core. Approximately maximum cross-sectional area of conductor.
- Three-core. Approximately mid-way between the minimum and maximum cross-sectional areas of conductor, but not the same as the five core.
- Four-core. Approximately minimum cross-sectional area of conductor.
- Five-core. Approximately mid-way between the minimum and maximum cross-sectional areas of conductor, but not the same as the three-core.

12.43 BS 6724:2016 + Corr Nos 1&2

Electric cables- Thermosetting insulated, armoured cables of rated voltages of 600/1000 V and 1900/3300 V for fixed installations, having low emission of smoke and corrosive gases when affected by fire - Specification.

Tests, Facilities Required And Test Frequencies

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
Abrasion test	BS 6724	18.5	BS 6724	Annex D	F25	o
Absence of faults on insulation Spark Test	BS 6724 BASEC PCR	6.2 Note 1 6.4	BS EN 62230	-	man	a
Absence of faults on sheath Spark Test	BS 6724	11.4	BS EN 62230	-	man	a
Application of insulation	BS 6724	6.2	Visual examination	-	F50	a
Application of bedding	BS 6724	9.1	Visual examination	-	F50	a
Application of sheath	BS 6724	11.2	Visual examination	-	F50	a
Armour resistance	BS 6724	Table F1,2,3	BS 6724	Annex B5	F50	a
Armour wire tensile test (aluminium armour wire)	BS 6724	10.2d	BS 6724	Annex B4	F5	a
Armour wire diameter	BS 6724	10.2a	BS 6724	Annex B1	F5	a
Armour wire mass of zinc coating	BS 6724	10.2b	BS 6724	Annex B2	F5	a
Armour wire wrapping test	BS 6724	10.2c	BS 6724	Annex B3	F5	a
Armour wire joints	BS 6724	10.3	Visual Exam	-	F5	a
Armour wire lay length and direction	BS 6724	10.1	BS 6724	17.3	F50	a
Bending test at low temperature (insulation)	BS EN 50363-5	Table 2	BS EN 60811-504	4.2	F5	b
Bending test at low temperature (sheath)	BS 7655-6.1	-	BS EN 60811-504	4.3	F5	b
Bi-colour combination	BS 6724	7.4	BS EN 50396	5.2	F100	a
Core colour/number clarity and durability	BS 6724	7.5	BS EN 50396	5.1	F100	a
Compatibility	BS 6724	Table C1	BS 6724	Annex C	F25	a
Conductor construction	BS 6724	5	BS EN 60228	-	F100	a
Conductor resistance	BS 6724	16.2	BS EN 60228	-	F100	a

12.43 BS 6724:2016 + Corr Nos 1&2 - Continued

Tests, Facilities Required and Test Frequencies – Continued

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
Core lay up direction and sequence	BS 6724	8	Visual Exam	-	F100	a
Corrosive and acid gas emission	BS 6724	18.2	BS EN 60754-1	-	F5	o
Determination of hardness	BS 7655-1.2	Table 2	BS 903	Part A26	F5	b
Durability of printed information	BS 6724	12.7	BS EN 50396	5.1	F25	a
Elongation test at low temperature (insulation)	BS EN 50363-5	Table 2	BS 60811-505	4.2	F5	b
Elongation test at low temperature (sheath)	BS 7655-6.1	Table 2	BS 60811-505	4.3	F5	b
End sealing	BS 6724	13	Visual examination	-	man	n/a
Flame propagation of a single cable	BS 6724	17.4	BS EN 60332-1-2	-	F25	b
Flame propagation of multiple cables	BS 6724	18.8	BS EN 60332-3-24	-	1/yr	o
Fillers and Binders	BS 6724	8	Visual examination	-	F100	n/a
Hot set test (Insulation)	BS 7655-1.2/-1.3 BS EN 50363-5	Table 2	BS EN 60811-507	-	F5	b
Impact test at low temperature -15ºC sheath	BS 7655-6.1	Table 2	BS 60811-506	-	F5	b
Insulation resistance constant (insulation)	BS 7655-1.2/1.3	Table 2	BS 6469-99.2	8	F5	a
Insulation resistance constant (sheath)	BS 6724	18.7	BS 6724	Annex F	F5	a
Lay length of assembled cores	BS 6724	8	BS 6724	17.2	F50	a
Marking -external marking	BS 6724	12.1 – 12.6	Visual examination	-	F100	a
Ovality	BS 6724	17.5	BS 6724	17.5	F50	a
Ozone resistance	BS 7655-1.2/ BS EN 50363-5	Table 2	BS EN 50396	8.1.3	1/yr	o
Pressure test at high temperature (insulation)	BS EN 50363-5	Table 3	BS EN 60811-508	4.3	F5	b
Pressure test at high temperature (sheath)	BS 7655-6.1	Table 3	BS EN 60811-508	4.4	F5	b

12.43 BS 6724:2016 + Corr Nos 1&2 - Continued

Tests, Facilities Required And Test Frequencies

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
Properties of bedding	BS 6724	9.1	BS EN 60811-501	4.3	F5	a
Shrinkage of insulation	BS 6724	18.4	BS EN 60811-502	-	F50	a
Shrinkage of sheath	BS 6724	18.7	BS 6724	Annex H	F5	a
Smoke emission	BS 6724	17.6	BS EN 61034-2	-	F5	o
Tear resistance sheath	BS 7655-6.1	Table 2	BS 6469:99.1	9	F25	a
Tensile Strength & Elongation before/after ageing in air (insulation)	BS 7655-1.2/1.3 BS EN 50363-5	Table 2 & 1	BS EN 60811-401 BS EN 60811-501	- 4.2	F25	a
Tensile Strength & Elongation before/after ageing in air bomb (insulation)	BS 7655-1.2	Table 2	BS EN 60811-412 BS EN 60811-501	- 4.2	F5	b
Tensile Strength & Elongation before/after ageing in air (sheath)	BS 7655-6.1	Table 2	BS EN 60811-401 BS EN 60811-501	- 4.3	F25	a
Thickness of insulation	BS 6724	6.3	BS EN 50396	4.1	F100	a
Thickness of bedding	BS 6724	9.2	BS EN 50396	4.2	F100	a
Thickness of sheath	BS 6724	11.32	BS EN 50396	4.2	F100	a
Voltage withstand on complete cable	BS 6724	16.3	BS EN 50395	10.3	F100	a
Water immersion test sheath	BS 7655-6.1	Table 2	BS 6469:99.1	14	F5	a
Water absorption (gravimetric) test insulation	BS 7655-1.2/1.3	Table 2	BS EN 60811-402	4.4	F5	a

The table above is a full list of tests covering the requirements of all applicable Tables of the standard. Not all are necessarily required for selected Tables. Reference should be made to the standard.
For an explanation of availability and frequency of tests codes, see section 12.3 and 12.4.

12.43 BS 6724:2016 + Corr Nos 1&2 - Continued

Schedule Of Samples For Type Approval Submission (see BS 6724:2016 Annex I, the following overrides the requirements of Annex I)

For Approval for a Single Table

Table	Type Of Cable	Number And Size Of Samples
4	Single-core 600/1000V cables with copper conductors	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
5	Two-core 600/1000V cables with copper conductors	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
6	Three-core 600/1000V cables with copper conductors	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
7	Four-core 600/1000V cables with copper conductors	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
8	Five-core 600/1000V cables with copper conductors	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
9	Multicore auxiliary 600/1000V cables with copper conductors	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
10	Single-core 1900/3300V cables with copper conductors	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
11	Three-core 1900/3300V cables with copper conductors	One sample of approximately minimum conductor size One sample of approximately maximum conductor size

12.43 BS 6724:2016 + Corr Nos 1&2 - Continued

Schedule of Samples for Type Approval Submission - Continued

Notes

Single core and auxiliary cables will always be considered separately.

For two, three and four core cables with the same type of conductors, three samples only will be required as follows:

- Two-core. Approximately minimum cross-sectional area of conductor.
- Three-core. Approximately mid-way between the minimum and maximum cross-sectional areas of conductor.
-
- Four-core. Approximately maximum cross-sectional area of conductor.

For two, three, four and five core cables with the same type of conductors, four samples only will be required as follows:

- Two-core. Approximately minimum cross-sectional area of conductor.
- Three-core. Approximately mid-way between the minimum and maximum cross-sectional areas of conductor, but not the same as the five-core.
- Four-core. Approximately maximum cross-sectional area of conductor.
- Five-core. Approximately mid-way between the minimum and maximum cross-sectional areas of conductor, but not the same as the three core.

12.43 BS 6724:2016 + Corr Nos 1&2 – Continued

5. Sample requirements for flame propagation on multiple cables to BS EN 60332-3-24:

One sample for which the overall diameter is =<15mm tested in a touching formation. Note: BASEC will test the smallest conductor size in the range of approval.

One sample for which the overall diameter is between 26mm and 40mm tested in spaced formation.

For a limited range approval two samples will be tested.

4 Sample requirements for test for Smoke Emission to BS EN 61034-2
5

Size range for which conformity is required to be established	Number of samples for two tests(see 17.3 of BS 7846)
Complete A)	3 and 1 (Test 1, 3 lengths in flat array, Test 2, 1 length)
Cable sizes up to 40mm B)	3 and 2(Test 1, 3 lengths in flat array, Test 2, 2 lengths)
Cable sizes above 20mm c)	2 and 1(Test 1, 2 lengths in flat array, Test 2, 1 length)
Cable sizes up to 20mm d)	3

A) For “Complete” approval, 2 samples should be selected to give respectively 3 lengths and 1 length.
B) For “Cable sizes up to 40mm OD” approval, 2 samples should be selected to give respectively 3 lengths and 2 lengths.
c) For “Cable sizes above 20mm OD” approval, 2 samples should be selected to give respectively 2 lengths and 1 length.
d) For “Cable sizes up to 20mm OD” approval, 3 samples should be selected.

6 Sample requirements for test for Corrosive and Acid Gas Emissions

One sample of each of the relevant cable components.

12.44 BS 7846:2015

Electric cables – Thermosetting insulated, armoured, fire-resistant cables of rated voltage 600/1000V for fixed installations, having low emission of smoke and corrosive gases when affected by fire - Specification

Tests, Facilities Required And Test Frequencies

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
Abrasion test	BS 7846	18.5	BS 7846	Annex D	F25	o
Absence of faults on insulation Spark Test	BS 7846 BASEC PCR	6.2 Note 1 6.4	BS EN 62230	-	man	a
Absence of faults on sheath Spark Test	BS 7846	11.4	BS EN 62230	-	man	a
Armour resistance	BS 7846	10.4	BS 7846	Annex B4	F50	a
Armour wire diameter	BS 7846	10.2a	BS 7846	Annex B1	F5	a
Armour wire mass of zinc coating	BS 7846	10.2b	BS 7846	Annex B2	F5	a
Armour wire wrapping test	BS 7846	10.2c	BS 7846	Annex B3	F5	a
Armour wire lay length and direction	BS 7846	10.1	BS 7846	17.3	F50	a
Application of insulation	BS 7846	6.2	Visual examination	-	F50	a
Application of bedding	BS 7846	9.1	Visual examination	-	F50	a
Application of sheath	BS 7846	11.2	Visual examination	-	F50	a
Bending test at low temperature (insulation)	BS EN 50363-5	4	BS EN 60811-504	4.2	F5	b
Bending test at low temperature (sheath)	BS 7655-6.1	-	BS EN 60811-504	4.3	F5	b
Bi-colour combination	BS 7846	7.4	BS EN 50396 BS 8573	5.2 Annex F	F100	a
Compatibility	BS 7846	Table C1	BS 7846	Annex C	F25	a
Conductor construction	BS 7846	5	BS EN 60228	-	F100	a
Conductor resistance	BS 7846	16.2	BS EN 60228	-	F100	a
Corrosive and acid gas emission	BS 7846	18.2	BS EN 60754-1	-	F5	o
Core colour/number clarity and durability	BS 7846	7.5	BS EN 50396	5.1	F100	a

12.44 BS 7846:2015

Electric cables – Thermosetting insulated, armoured, fire-resistant cables of rated voltage 600/1000V for fixed installations, having low emission of smoke and corrosive gases when affected by fire.

Tests, Facilities Required And Test Frequencies

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
Determination of hardness	BS 7655-1.2	-	BS 903	Part A26	F5	b
Durability of printed information	BS 7846	12.8	BS EN 50396	5.1	F25	a
Elongation test at low temperature (insulation)	BS EN 50363-5	5	BS 60811-505	4.2	F5	b
Elongation test at low temperature (sheath)	BS 7655-6.1	-	BS 60811-505	4.3	F5	b
End sealing	BS 7846	13	Visual examination	-	man	n/a
Flame propagation of a single cable	BS 7846	17.4	BS EN 60332-1-2	Annex A	F25	b
Flame propagation of multiple cables	BS 7846	18.8	BS EN 60332-3-24	Annex B	1/yr	o
Fillers and Binders	BS 7846	8	Visual examination	-	F100	n/a
Hot set test (Insulation)	BS 7655-1.2/-1.3 BS EN 50363-5	2	BS EN 60811-507	-	F5	b
Identification of cores colour/number	BS 7846	7.1	Visual examination	-	F100	a
Impact test at low temperature -15ºC sheath	BS 7655-6.1	Table 2	BS 60811-506	-	F5	b
Insulation resistance constant (insulation)	BS 7655-1.2/1.3	Table 2	BS 6469-99.2	8	F5	a
Insulation resistance constant (sheath)	BS 7846	18.6	BS 7846	Annex E	F5	a
Joints in steel wire armour	BS 7846	10.3	Visual examination	-	F5	n/a
Lay up of cores direction & sequence	BS 7846	8.1	Visual examination	-	F100	n/a
Lay length of assembled cores	BS 7846	8	BS 7846	17.2	F50	a
Marking -external marking	BS 7846	12.1- 12.7	Visual examination	-	F100	a

12.44 BS 7846:2015

Electric cables – Thermosetting insulated, armoured, fire-resistant cables of rated voltage 600/1000V for fixed installations, having low emission of smoke and corrosive gases when affected by fire.

Tests, Facilities Required And Test Frequencies

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
Ovality	BS 7846	17.7	BS EN 50396	4.4	F50	a
Ozone resistance	BS 7655-1.2/ BS EN 50363-5	Table 3	BS EN 50396	8.1.3	1/yr	o
Pressure test at high temperature (insulation)	BS EN 50363-5	3	BS EN 60811-508	4.3	F5	b
Pressure test at high temperature (sheath)	BS 7655-6.1	Table 3	BS EN 60811-508	4.4	F5	b
Properties of bedding	BS 7846	9.1	BS EN 60811-501	4.3	F5	a
Resistance to fire Category F2	BS 7846	17.6.2	BS 6387 Cat C	6	1/yr	b
Resistance to fire with water Category F2	BS 7846	17.6.2	BS 6387 Cat W	7	1/yr	b
Resistance to fire with mechanical shock Categ F2	BS 7846	17.6.2	BS 6387 Cat Z	8	1/yr	b
Resistance to fire Category F30/F60/F120	BS 7846	17.6.3-17.6.5	BS 8491	-	1/yr	o
Shrinkage of insulation	BS 7846	18.4	BS EN 60811-502	-	F50	a
Shrinkage of sheath	BS 7846	18.7	BS 7846	Annex H	F5	a
Smoke emission	BS 7846	17.5	BS EN 61034-2	-	F5	o
Tear resistance sheath	BS 7655-6.1	Table 2	BS 6469:99.1	9	F25	a

12.44 BS 7846:2015

Electric cables – Thermosetting insulated, armoured, fire-resistant cables of rated voltage 600/1000V for fixed installations, having low emission of smoke and corrosive gases when affected by fire.

Tests, Facilities Required and Test Frequencies - Continued

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
Tensile Strength & Elongation before/after ageing in air (insulation)	BS 7655-1.2/1.3 BS EN 50363-5	Table 2 & 1	BS EN 60811-401 BS EN 60811-501	- 4.2	F25	a
Tensile Strength & Elongation before/after ageing in air bomb (insulation)	BS 7655-1.2	Table 2	BS EN 60811-412 BS EN 60811-501	- 4.2	F5	b
Tensile Strength & Elongation before/after ageing in air (sheath)	BS 7655-6.1	Table 2	BS EN 60811-401 BS EN 60811-501	- 4.3	F25	a
Thickness of insulation	BS 7846	6.2	BS EN 50396	4.1	F100	a
Thickness of bedding	BS 7846	9.2	BS EN 50396	4.2	F100	a
Thickness of sheath	BS 7846	11.2	BS EN 50396	4.2	F100	a
Voltage withstand on complete cable	BS 7846	16.3	BS EN 50395	10.3	F100	a
Water immersion test sheath	BS 7655-6.1	Table 2	BS 6469:99.1	14	F5	a
Water absorption (gravimetric) test insulation	BS 7655-1.2/1.3	Table 2	BS EN 60811-402	4.2	F5	a

The above table is a full list of tests covering the requirements of all applicable Tables of the standard. Not all are necessarily required for selected Tables. Reference should be made to the standard.

For an explanation of availability and frequency of tests codes, see sections 12.3 and 12.4.

12.44 BS 7846:2015

Schedule of Samples for Type Approval Submission (see BS 7846:2015 Annex J, the following overrides the requirements of Annex J)

For Approval for a Single Table

Table	Type of cable	Number and size of samples
4	Two-core 600/1000V cables with copper conductors.	One sample of approximately minimum conductor size. One sample of approximately maximum conductor size.
5	Three-core 600/1000 V cables with copper conductors.	One sample of approximately minimum conductor size. One sample of approximately maximum conductor size.
6	Four-core 600/1000 V cables with copper conductors.	One sample of approximately minimum conductor size. One sample of approximately maximum conductor size.
7	Five-core 600/1000V cables with copper conductors.	One sample of approximately minimum conductor size. One sample of approximately maximum conductor size.
8	Multicore (7 to 37 core) auxiliary 600/1000V cables with copper conductors.	One sample of approximately minimum conductor size and minimum number of cores. One sample of approximately maximum conductor size and maximum number of cores.

12.44 BS 7846:2015 - Continued

Type Test Requirement Notes:

1. Auxiliary cables will always be considered separately.

2. For two, three and four core cables with the same type of conductors, three samples only will be required as follows:

- Two-core. Approximately minimum conductor size.
- Three-core. Approximately mid-way between the minimum and maximum conductor size.
- Four-core. Approximately maximum conductor size.

3. For two, three, four and five core cables with the same type of conductors, four samples only will be required as follows:

  - Two-core. Approximately minimum conductor size.
  - Three-core. Approximately mid-way between the minimum and maximum conductor size, but not the same as the five-core.
  - Four-core. Approximately maximum conductor size.
  - Five-core. Approximately mid-way between the minimum and maximum conductor size, but not the same as the three-core.

4 Test for Flame Propagation to BS EN 60332-3-24

- One sample =<15mm overall diameter tested in touching formation. Note: BASEC will test the smallest conductor size in the range of approval.
- One sample 26mm- 40mm overall diameter tested in spaced formation.
  For a limited range approval two samples will be tested.

12.44 BS 7846:2016 - Continued

Type Test Requirement Notes:

5 Test for Smoke Emission to BS EN 61034-2

Size range for which conformity is required to be established	Number of samples for two tests(see 17.3 of BS 7846)
Complete A)	3 and 1 (Test 1, 3 lengths in flat array, Test 2, 1 length)
Cable sizes up to 40mm B)	3 and 2(Test 1, 3 lengths in flat array, Test 2, 2 lengths)
Cable sizes above 20mm c)	2 and 1(Test 1, 2 lengths in flat array, Test 2, 1 length)
Cable sizes up to 20mm d)	3

A) For “Complete” approval, 2 samples should be selected to give respectively 3 lengths and 1 length.
B) For “Cable sizes up to 40mm OD” approval, 2 samples should be selected to give respectively 3 lengths and 2 lengths.
c) For “Cable sizes above 20mm OD” approval, 2 samples should be selected to give respectively 2 lengths and 1 length.
d) For “Cable sizes up to 20mm OD” approval, 3 samples should be selected.

6 Fire Resistance Tests to Category F2, F30, F60 and F120

For multicore power cables, the smallest conductor size with the smallest number of cores and the largest conductor size with the largest number of cores should be tested.

For multicore auxiliary cables test one sample.

7 Test for Corrosive and Acid Gas Emissions

One sample of each of the relevant cable components.

12.45 BS 7870-3.10:2001

LV and MV polymeric insulated cable for use by distribution and general utilities -
Part 3: Specification for distribution cables of rated voltage 0.6/1 kV -
Section 3.10 PVC insulated combined neutral and earth copper wire concentric cables with copper or aluminium conductors

Tests, Facilities Required And Test Frequencies

Test description	**Requirement**		**Test Method**		**Freq**	**Avail**
	Specification	Clause	Specification	Clause		
Absence of faults on insulation Spark Test	BS 7870-3.10 BASEC PCR	14.5 6.4	BS 7870-2:1999	3.6.1	man	a
Absence of faults on sheath Spark Test	BS 7870-3.10	14.5	BS 7870-2:1999	3.6.1	man	a
Assembly of cores	BS 7870-3.10	6.0	Visual examination	-	F100	a
Application of insulation	BS 7870-3.10	5.0	Visual examination	-	F50	a
Application of sheath	BS 7870-3.10	9.0	Visual examination	-	F50	a
Bending test at low temperature (insulation)	BS EN 50363-3	5.0	BS EN 60811-504	4.2	F5	b
Bending test at low temperature (sheath)	BS EN 50363-4.1	5.0	BS EN 60811-504	4.3	F5	b
Cable construction	BS 7870-3.10	Tables 1-4	Visual examination	-	F100	a
Colour-clarity and durability of colour	BS 7870-3.10	15.4	BS 7870-2:1999	2.5.4	F100	a
Core identification- colour	BS 7870-3.10	5.0	BS 7870-3.10	15.4	F100	a
Compatibility	BS 7870-3.10	Table 7	BS EN 60811-401 BS EN 60811-501	- -	F25	a
Concentric neutral/earth conductor construction	BS 7870-3.10	8.0 &15.3	Visual examination	-	F100	a
Concentric neutral/earth conductor resistance	BS 7870-3.10	Tables 1-4	BS 7870-2:1999	3.1.1	F100	a
Elongation test at low temperature (insulation)	BS EN 50363-3	6.0	BS 60811-505	4.2	F5	b
Elongation test at low temperature (sheath)	BS EN 50363-4.1	6.0	BS 60811-505	4.3	F5	b
End sealing	BS 7870-3.10	11	Visual examination	-	man	n/a
Flame propagation of a single cable	BS 7870-3.10	15.6	BS EN 60332-1-2	Annex A	F25	b
Heat shock (insulation)	BS EN 50363-3	3.0	BS EN 60811-509	4.3	F50	a
Heat shock (sheath)	BS EN 50363-4.1	3.0	BS EN 60811-509	4.4	F50	a

12.45 BS 7870-3.10:2001

LV and MV polymeric insulated cable for use by distribution and general utilities -
Part 3: Specification for distribution cables of rated voltage 0.6/1 kV -
Section 3.10 PVC insulated combined neutral and earth copper wire concentric cables with copper or aluminium conductors

Tests, Facilities Required And Test Frequencies

Test description	**Requirement**		**Test Method**		**Freq**	**Avail**
	Specification	Clause	Specification	Clause		
Insulation resistance at 20°C	BS 7870-3.10	Table 6	BS 7870-3.10	14.3&14.4	F5	a
Loss of mass (insulation)	BS EN 50363-3	2.0	BS EN 60811-409	4	F5	a
Loss of mass (sheath)	BS EN 50363-4.1	2.0	BS EN 60811-409	6	F5	n/a
Marking -external marking	BS 7870-3.10	10	Visual examination	-	F100	a
Overall diameter	BS 7870-3.10	Tables 1-4	BS 7870-3.10	Tables 1-4	F50	a
Phase conductor construction	BS 7870-3.10	4.0	Visual examination	-	F100	a
Phase conductor resistance	BS 7870-3.10	Tables 1-4	BS 7870-2:1999	3.1.1	F100	a
Pressure test at high temperature (insulation)	BS EN 50363-3	4.0	BS EN 60811-508	4.3	F5	b
Pressure test at high temperature (sheath)	BS EN 50363-4.1	4.0	BS EN 60811-508	4.4	F5	b
Sheath colour	BS 7870-3.10	9.0	Visual examination	-	F100	a
Tensile Strength & Elongation before/after ageing in air (insulation)	BS EN 50363-3	1.0	BS EN 60811-401 BS EN 60811-501	- 4.2	F25	a
Tensile Strength & Elongation before/after ageing in air (sheath)	BS EN 50363-4.1	1.0	BS EN 60811-401 BS EN 60811-501	- 4.3	F25	a
Thickness of insulation	BS 7870-3.10	Tables 1-4	BS 7870-3.10 BS 7870-2:1999	15.4 2.1.1	F100	a
Thickness of bedding	BS 7870-3.10	7.0	BS 7870-3.10	7.0	F100	a
Thickness of sheath	BS 7870-3.10	Tables 1-4	BS 7870-3.10 BS 7870-2:1999	15.5 2.1.2	F100	a
Voltage test on complete cable	BS 7870-3.10	14.3	BS 7870-2:1999	3.2.1	F100	a

The above table is a full list of tests covering the requirements of all applicable Tables of the standard. Not all are necessarily required for selected Tables. Reference should be made to the standard.For an explanation of availability and frequency of tests codes, see sections 12.3 and 12.4.

12.45 BS 7870-3.10:2001
LV and MV polymeric insulated cable for use by distribution and general utilities -
Part 3: Specification for distribution cables of rated voltage 0.6/1 kV -
Section 3.10 PVC insulated combined neutral and earth copper wire concentric cables with copper or aluminium conductors

For Approval for a Single Table

Table	Type of cable	Number and size of samples
1	Single phase copper conductor with helical concentric copper neutral/earth conductor	One sample of minimum conductor size. One sample of maximum conductor size.
2	Single phase aluminium conductor with helical concentric copper neutral/earth conductor	One sample
3	Three phase copper conductor with helical concentric copper neutral/earth conductor	One sample
4	Three phase aluminium conductor with helical concentric copper neutral/earth conductor	One sample

12.46 BS 7870-3.11:2011 + Corr 1

LV and MV polymeric insulated cable for use by distribution and general utilities -
Part 3: Specification for distribution cables of rated voltage 0.6/1 kV -
Section 3.11 XLPE insulated combined neutral and earth copper wire concentric cables with copper or aluminium conductors

Tests, Facilities Required And Test Frequencies

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
Absence of faults on insulation Spark Test	BS 7870-3.11 BASEC PCR	14.4 6.4	BS 7870-2	3.6.1	man	a
Absence of faults on sheath Spark Test	BS 7870-3.11	14.4	BS 7870-2	3.6.1	man	a
Assembly of cores	BS 7870-3.11	6.0	Visual examination	-	F100	a
Application of insulation	BS 7870-3.11	5.0	Visual examination	-	F50	a
Application of sheath	BS 7870-3.11	9.0	Visual examination	-	F50	a
Bending test at low temperature (sheath)	BS 7870-1	Table B2	BS EN 60811-504	4.3	F5	b
Cable construction	BS 7870-3.11	Tables 1-4	Visual examination	-	F100	a
Colour-clarity and durability of colour	BS 7870-3.11	15.4	BS 7870-2:1999	2.5.4	F100	a
Core identification- colour	BS 7870-3.11	5.0	BS 7870-3.11	15.4	F100	a
Compatibility	BS 7870-3.11	Table 6	BS EN 60811-401 BS EN 60811-501	- -	F25	a
Concentric neutral/earth conductor construction	BS 7870-3.11	8.0 &15.3	Visual examination	-	F100	a
Concentric neutral/earth conductor resistance	BS 7870-3.11	Tables 1-4	BS 7870-2	3.1.1	F100	a
Concentric neutral/earth conductor lay length	BS 7870-3.11	Tables 1-4	BS 7870-3.11	15.3	F100	a
Elongation test at low temperature (sheath)	BS 7870-1	Table B2	BS 60811-505	4.3	F5	b
End sealing	BS 7870-3.11	11	Visual examination	-	man	n/a
Flame propagation of a single cable	BS 7870-3.11	15.6	BS EN 60332-1-2	Annex A	F25	b
Heat shock (sheath)	BS 7870-1	Table B2	BS EN 60811-509	4.4	F50	a
Hot set (insulation)	BS 7870-1	Table B1	BS EN 60811-507	-	F5	a
Insulation resistance constant at 90°C	BS 7870-1	Table B1	BS 7870-2	3.3.1	F5	a

12.46 BS 7870-3.11:2011 + Corr 1

LV and MV polymeric insulated cable for use by distribution and general utilities -
Part 3: Specification for distribution cables of rated voltage 0.6/1 kV -
Section 3.11 XLPE insulated combined neutral and earth copper wire concentric cables with copper or aluminium conductors

Tests, Facilities Required And Test Frequencies

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
Impact test at low temperature (sheath)	BS 7870-1	Table B2	BS EN 60811-506	-	F5	a
Loss of mass (sheath)	BS 7870-1	Table B2	BS EN 60811-409	6	F5	n/a
Marking -external marking	BS 7870-3.11	10	Visual examination	-	F100	a
Overall diameter	BS 7870-3.11	Tables 1-4	BS 7870-3.11	Tables 1-4	F50	a
Phase conductor construction	BS 7870-3.11	4.0	BS 7870-3.11 BS 3988:1970+A3	- -	F100	a
Phase conductor resistance	BS 7870-3.11	Tables 1-4	BS 7870-2	3.1.1	F100	a
Pressure test at high temperature (sheath)	BS 7870-1	Table B2	BS EN 60811-508	4.4	F5	b
Sheath colour	BS 7870-3.11	9.0	Visual examination	-	F100	a
Shrinkage of insulation	BS 7870-3.11	15.4	BS 7870-3.11	15.4	F25	a
Tensile Strength & Elongation before/after ageing in air (insulation)	BS 7870-1	Table B1	BS EN 60811-401 BS EN 60811-501	- 4.2	F25	a
Tensile Strength & Elongation before/after ageing in air (sheath)	BS 7870-1	Table B2	BS EN 60811-401 BS EN 60811-501	- 4.3	F25	a
Thickness of insulation	BS 7870-3.11	Tables 1-4	BS 7870-3.11 BS 7870-2	15.4 2.1.1	F100	a
Thickness of bedding	BS 7870-3.11	7.0	BS 7870-3.11	7.0	F100	a
Thickness of sheath	BS 7870-3.11	Tables 1-4	BS 7870-3.11 BS 7870-2	15.5 2.1.2	F100	a
Voltage test on complete cable	BS 7870-3.11	14.3	BS 7870-2	3.2.1	F100	a
Water absorption	BS 7870-1	Table B1	BS EN 60811-402	-	F5	a

The above table is a full list of tests covering the requirements of all applicable Tables of the standard. Not all are necessarily required for selected Tables. Reference should be made to the standard.For an explanation of availability and frequency of tests codes, see sections 12.3 and 12.4.

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LV and MV polymeric insulated cable for use by distribution and general utilities -
Part 3: Specification for distribution cables of rated voltage 0.6/1 kV -
Section 3.11 XLPE insulated combined neutral and earth copper wire concentric cables with copper or aluminium conductors

For Approval for a Single Table

Table	Type of cable	Number and size of samples
1	Single phase copper conductor with helical concentric copper neutral/earth conductor	One sample of minimum conductor size. One sample of maximum conductor size.
2	Single phase aluminium conductor with helical concentric copper neutral/earth conductor	One sample
3	Three phase copper conductor with helical concentric copper neutral/earth conductor	One sample
4	Three phase aluminium conductor with helical concentric copper neutral/earth conductor	One sample

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LV and MV polymeric insulated cable for use by distribution and general utilities -
Part 3: Specification for distribution cables of rated voltage 0.6/1 kV -
Section 3.12 XLPE insulated combined neutral and earth copper wire concentric cables with copper or aluminium conductors, having low emission of smoke and corrosive gases when affected by fire.

Tests, Facilities Required And Test Frequencies

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
Abrasion test on sheath	BS 7870-3.12	16.10	BS 7870-2	2.4.5	F25	o
Absence of faults on insulation Spark Test	BS 7870-3.12 BASEC PCR	14.4 6.4	BS 7870-2	3.6.1	man	a
Absence of faults on sheath Spark Test	BS 7870-3.12	14.4	BS 7870-2	3.6.1	man	a
Assembly of cores	BS 7870-3.12	6.0	Visual examination	-	F100	a
Application of insulation	BS 7870-3.12	5.0	Visual examination	-	F50	a
Application of sheath	BS 7870-3.12	9.0	Visual examination	-	F50	a
Cable construction	BS 7870-3.12	Tables 1-4	Visual examination	-	F100	a
Colour-clarity and durability of colour	BS 7870-3.12	15.4	BS 7870-2:1999	2.5.4	F100	a
Core identification- colour	BS 7870-3.12	5.0	BS 7870-3.12	15.4	F100	a
Corrosive and acid gas	BS 7870-3.12	16.2	BS EN 60754-1	-	F5	o
Compatibility	BS 7870-3.12	Table 6	BS EN 60811-401 BS EN 60811-501	- -	F25	a
Concentric neutral/earth conductor construction	BS 7870-3.12	8.0 &15.3	Visual examination	-	F100	a
Concentric neutral/earth conductor resistance	BS 7870-3.12	Tables 1-4	BS 7870-2	3.1.1	F100	a
Concentric neutral/earth conductor lay length	BS 7870-3.12	Tables 1-4	BS 7870-3.12	15.3	F100	a
Elongation test at low temperature (sheath)	BS 7870-1	Table B2	BS 60811-505	4.3	F5	b
End sealing	BS 7870-3.12	11	Visual examination	-	man	n/a
Flame propagation of a single cable	BS 7870-3.12	15.6	BS EN 60332-1-2	Annex A	F25	b
Flame propagation on multiple cables	BS 7870-3.12	16.8	BS EN 60332-3-24	Annex B	1/yr	o

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LV and MV polymeric insulated cable for use by distribution and general utilities -
Part 3: Specification for distribution cables of rated voltage 0.6/1 kV -
Section 3.12 XLPE insulated combined neutral and earth copper wire concentric cables with copper or aluminium conductors, having low emission of smoke and corrosive gases when affected by fire.

Tests, Facilities Required And Test Frequencies

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
Hot set (insulation)	BS 7870-1	Table B1	BS EN 60811-507	-	F5	a
Insulation resistance constant at 90°C (insulation)	BS 7870-1	Table B1	BS 7870-2	3.3.1	F5	a
Insulation resistance constant at 20°C (sheath)	BS 7870-1	Table B2	BS 7870-2	3.3.4	F5	a
Impact test at low temperature (sheath)	BS 7870-1	Table B2	BS EN 60811-506	-	F5	a
Marking -external marking	BS 7870-3.12	10	Visual examination	-	F100	a
Overall diameter	BS 7870-3.12	Tables 1-4	BS 7870-3.12	Tables 1-4	F50	a
Phase conductor construction	BS 7870-3.12	4.0	BS 7870-3.12 BS 3988:1970+A3	- -	F100	a
Phase conductor resistance	BS 7870-3.12	Tables 1-4	BS 7870-2	3.1.1	F100	a
Pressure test at high temperature (sheath)	BS 7870-1	Table B2	BS EN 60811-508	4.4	F5	b
Sheath colour	BS 7870-3.12	9.0	Visual examination	-	F100	a
Shrinkage of insulation	BS 7870-3.12	15.4	BS 7870-3.12	15.4	F25	a
Shrinkage of sheath	BS 7870-3.12	16.5	BS 7870-3.12	Annex B	F5	a
Smoke emission	BS 7870-3.12	15.7	BS 61034-1 BS 61034-2	- -	F5	o
Tear resistance of sheath	BS 7870-1	Table B2	BS 7870-2	2.2.2.2	F25	a
Tensile Strength & Elongation before/after ageing in air (insulation)	BS 7870-1	Table B1	BS EN 60811-401 BS EN 60811-501	- 4.2	F25	a
Tensile Strength & Elongation before/after ageing in air (sheath)	BS 7870-1	Table B2	BS EN 60811-401 BS EN 60811-501	- 4.3	F25	a

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LV and MV polymeric insulated cable for use by distribution and general utilities -
Part 3: Specification for distribution cables of rated voltage 0.6/1 kV -
Section 3.12 XLPE insulated combined neutral and earth copper wire concentric cables with copper or aluminium conductors, having low emission of smoke and corrosive gases when affected by fire.

Tests, Facilities Required And Test Frequencies

Test description	**Requirement**		**Test Method**		**Freq**	**Avail**
	Specification	Clause	Specification	Clause		
Thickness of insulation	BS 7870-3.12	Tables 1-4	BS 7870-3.12 BS 7870-2	15.4 2.1.1	F100	a
Thickness of bedding	BS 7870-3.12	7.0	BS 7870-3.12	7.0	F100	a
Thickness of sheath	BS 7870-3.12	Tables 1-4	BS 7870-3.12 BS 7870-2	15.5 2.1.2	F100	a
Voltage test on complete cable	BS 7870-3.12	14.3	BS 7870-2	3.2.1	F100	a
Water absorption	BS 7870-1	Table B1	BS EN 60811-402	-	F5	a
Water immersion	BS 7870-1	Table B2	BS 7870-2	2.2.12	F5	a

The above table is a full list of tests covering the requirements of all applicable Tables of the standard. Not all are necessarily required for selected Tables. Reference should be made to the standard.For an explanation of availability and frequency of tests codes, see sections 12.3 and 12.4.

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LV and MV polymeric insulated cable for use by distribution and general utilities -
Part 3: Specification for distribution cables of rated voltage 0.6/1 kV -
Section 3.12 XLPE insulated combined neutral and earth copper wire concentric cables with copper or aluminium conductors, having low emission of smoke and corrosive gases when affected by fire.

For Approval for a Single Table

Table	Type of cable	Number and size of samples
1	Single phase copper conductor with helical concentric copper neutral/earth conductor	One sample
2	Single phase aluminium conductor with helical concentric copper neutral/earth conductor	One sample
3	Three phase copper conductor with helical concentric copper neutral/earth conductor	One sample
4	Three phase aluminium conductor with helical concentric copper neutral/earth conductor	One sample

1 Test for Flame Propagation to BS EN 60332-3-24

- One sample =<15mm overall diameter tested in touching formation. Note: BASEC will test the smallest conductor size in the range of approval.
- One sample 20mm- 30mm overall diameter tested in spaced formation.
  For a limited range approval two samples will be tested.

2 Test for Corrosive and Acid Gas Emissions
One sample of each of the relevant cable components.

3 Test for Smoke Emisions
For samples required see BS EN 61034-2

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LV and MV polymeric insulated cable for use by distribution and general utilities -
Part 3: Specification for distribution cables of rated voltage 0.6/1 kV -
Section 3.21 XLPE insulated split concentric cables with copper or aluminium conductors

Tests, Facilities Required And Test Frequencies

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
Absence of faults on insulation Spark Test	BS 7870-3.21 BASEC PCR	15.4 6.4	BS 7870-2	3.6.1	man	a
Absence of faults on sheath Spark Test	BS 7870-3.21	15.4	BS 7870-2	3.6.1	man	a
Assembly of cores	BS 7870-3.21	6.0	Visual examination	-	F100	a
Application of concentric layer	BS 7870-3.21	8.4 & 16.3	Visual examination	-	F100	a
Application of insulation	BS 7870-3.21	5.0	Visual examination	-	F50	a
Application of sheath	BS 7870-3.21	10.0	Visual examination	-	F50	a
Bending test at low temperature (sheath)	BS 7870-1	Table B2	BS EN 60811-504	4.3	F5	b
Binder tape(s)	BS 7870-3.21	9.0	Visual examination	-	F100	a
Cable construction	BS 7870-3.21	Tables 1-4	Visual examination	-	F100	a
Colour-clarity and durability of colour	BS 7870-3.21	16.4	BS 7870-2:1999	2.5.4	F100	a
Core identification- colour	BS 7870-3.21	5.0	BS 7870-3.21	16.4	F100	a
Compatibility	BS 7870-3.21	Table 6	BS EN 60811-401 BS EN 60811-501	- -	F25	a
Concentric layer neutral conductor construction	BS 7870-3.21	8.1 &16.3	Visual examination	-	F100	a
Concentric layer neutral conductor resistance	BS 7870-3.21	Tables 1-4	BS 7870-2	3.1.1	F100	a
Concentric layer neutral conductor lay length	BS 7870-3.21	Tables 1-4	BS 7870-3.21	16.3	F100	a
Concentric layer earth continuity conductor construct	BS 7870-3.21	8.2 & 16.3	Visual examination	-	F100	a
Concentric layer non-hygroscopic string separators	BS 7870-3.21	8.3 & 16.3	Visual examination	-	F100	a
Elongation test at low temperature (sheath)	BS 7870-1	Table B2	BS 60811-505	4.3	F5	b

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LV and MV polymeric insulated cable for use by distribution and general utilities -
Part 3: Specification for distribution cables of rated voltage 0.6/1 kV -
Section 3.21 XLPE insulated split concentric cables with copper or aluminium conductors

Tests, Facilities Required And Test Frequencies

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
End sealing	BS 7870-3.21	12.0	Visual examination	-	man	n/a
Flame propagation of a single cable	BS 7870-3.21	16.6	BS EN 60332-1-2	Annex A	F25	b
Heat shock (sheath)	BS 7870-1	Table B2	BS EN 60811-509	4.4	F50	a
Hot set (insulation)	BS 7870-1	Table B1	BS EN 60811-507	-	F5	a
Insulation resistance constant at 90°C (insulation)	BS 7870-1	Table B1	BS 7870-2	3.3.1	F5	a
Impact test at low temperature (sheath)	BS 7870-1	Table B2	BS EN 60811-506	-	F5	a
Loss of mass (sheath)	BS 7870-1	Table B2	BS EN 60811-409	6	F5	n/a
Marking -external marking	BS 7870-3.21	11	Visual examination	-	F100	a
Neutral conductor wire covering material	BS 7870-3.21	17.3	BS EN 60811-501	-	F5	a
Overall diameter	BS 7870-3.21	Tables 1-4	BS 7870-3.21	Tables 1-4	F50	a
Phase conductor construction	BS 7870-3.21	4.0	BS 7870-3.21 BS 3988:1970+A3	- -	F100	a
Phase conductor resistance	BS 7870-3.21	Tables 1-4	BS 7870-2	3.1.1	F100	a
Pressure test at high temperature (sheath)	BS 7870-1	Table B2	BS EN 60811-508	4.4	F5	b
Sheath colour	BS 7870-3.21	10.0	Visual examination	-	F100	a
Shrinkage of insulation	BS 7870-3.21	16.4	BS 7870-3.21	16.4	F25	a
Tensile Strength & Elongation before/after ageing in air (insulation)	BS 7870-1	Table B1	BS EN 60811-401 BS EN 60811-501	- 4.2	F25	a
Tensile Strength & Elongation before/after ageing in air (sheath)	BS 7870-1	Table B2	BS EN 60811-401 BS EN 60811-501	- 4.3	F25	a

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LV and MV polymeric insulated cable for use by distribution and general utilities -
Part 3: Specification for distribution cables of rated voltage 0.6/1 kV -
Section 3.21 XLPE insulated split concentric cables with copper or aluminium conductors

Tests, Facilities Required And Test Frequencies

Test description	**Requirement**		**Test Method**		**Freq**	**Avail**
	Specification	Clause	Specification	Clause		
Thickness of insulation	BS 7870-3.21	Tables 1-4	BS 7870-3.21 BS 7870-2	16.4 2.1.1	F100	a
Thickness of bedding	BS 7870-3.21	7.0	BS 7870-3.21	7.0	F100	a
Thickness of sheath	BS 7870-3.21	Tables 1-4	BS 7870-3.21 BS 7870-2	16.5 2.1.2	F100	a
Voltage test on complete cable	BS 7870-3.21	15.3	BS 7870-2	3.2.1	F100	a
Water absorption	BS 7870-1	Table B1	BS EN 60811-402	-	F5	a

The above table is a full list of tests covering the requirements of all applicable Tables of the standard. Not all are necessarily required for selected Tables. Reference should be made to the standard.For an explanation of availability and frequency of tests codes, see sections 12.3 and 12.4.

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LV and MV polymeric insulated cable for use by distribution and general utilities -
Part 3: Specification for distribution cables of rated voltage 0.6/1 kV -
Section 3.21 XLPE insulated split concentric cables with copper or aluminium conductors

For Approval for a Single Table

Table	Type of cable	Number and size of samples
1	Single phase copper conductor with helical concentric copper neutral/earth conductor	One sample of minimum conductor size. One sample of maximum conductor size.
2	Single phase aluminium conductor with helical concentric copper neutral/earth conductor	One sample
3	Three phase copper conductor with helical concentric copper neutral/earth conductor	One sample
4	Three phase aluminium conductor with helical concentric copper neutral/earth conductor	One sample

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LV and MV polymeric insulated cable for use by distribution and general utilities -
Part 3: Specification for distribution cables of rated voltage 0.6/1 kV -
Section 3.22 XLPE insulated split concentric cables with copper or aluminium conductors, having low emission of smoke and corrosive gases when affected by fire.

Tests, Facilities Required And Test Frequencies

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
Abrasion test on sheath	BS 7870-3.22	17.10	BS 7870-2	2.4.5	F25	o
Absence of faults on insulation Spark Test	BS 7870-3.22 BASEC PCR	15.4 6.4	BS 7870-2	3.6.1	man	a
Absence of faults on sheath Spark Test	BS 7870-3.22	15.4	BS 7870-2	3.6.1	man	a
Assembly of cores	BS 7870-3.22	6.0	Visual examination	-	F100	a
Application of concentric layer	BS 7870-3.22	8.4 & 16.3	Visual examination	-	F100	a
Application of insulation	BS 7870-3.22	5.0	Visual examination	-	F50	a
Application of sheath	BS 7870-3.22	10.0	Visual examination	-	F50	a
Binder tape(s)	BS 7870-3.22	9.0	Visual examination	-	F100	a
Cable construction	BS 7870-3.22	Tables 1-4	Visual examination	-	F100	a
Colour-clarity and durability of colour	BS 7870-3.22	16.4	BS 7870-2:1999	2.5.4	F100	a
Core identification- colour	BS 7870-3.22	5.0	BS 7870-3.22	15.4	F100	a
Corrosive and acid gas	BS 7870-3.22	17.0	BS EN 60754-1	-	F5	o
Compatibility	BS 7870-3.22	Table 6	BS EN 60811-401 BS EN 60811-501	- -	F25	a
Concentric neutral/earth conductor construction	BS 7870-3.22	8.1 &16.3	Visual examination	-	F100	a
Concentric neutral/earth conductor resistance	BS 7870-3.22	Tables 1-4	BS 7870-2	3.1.1	F100	a
Concentric neutral/earth conductor lay length	BS 7870-3.22	Tables 1-4	BS 7870-3.22	15.3	F100	a
Concentric layer earth continuity conductor construct	BS 7870-3.22	8.2 & 16.3	Visual examination	-	F100	a
Concentric layer non-hygroscopic string separators	BS 7870-3.22	8.3 & 16.3	Visual examination	-	F100	a

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LV and MV polymeric insulated cable for use by distribution and general utilities -
Part 3: Specification for distribution cables of rated voltage 0.6/1 kV -
Section 3.22 XLPE insulated split concentric cables with copper or aluminium conductors, having low emission of smoke and corrosive gases when affected by fire.

Tests, Facilities Required And Test Frequencies

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
Elongation test at low temperature (sheath)	BS 7870-1	Table B2	BS EN 60811-505	4.3	F5	b
End sealing	BS 7870-3.22	12	Visual examination	-	man	n/a
Flame propagation of a single cable	BS 7870-3.22	16.6	BS EN 60332-1-2	Annex A	F25	b
Flame propagation on multiple cables	BS 7870-3.22	17.8	BS EN 60332-3-24	Annex B	1/yr	o
Hot set (insulation)	BS 7870-1	Table B1	BS EN 60811-507	-	F5	a
Insulation resistance constant at 90°C (insulation)	BS 7870-1	Table B1	BS 7870-2	3.3.1	F5	a
Insulation resistance constant at 20°C (sheath)	BS 7870-1	Table B2	BS 7870-2	3.3.4	F5	a
Impact test at low temperature (sheath)	BS 7870-1	Table B2	BS EN 60811-506	-	F5	a
Marking -external marking	BS 7870-3.22	11	Visual examination	-	F100	a
Neutral conductor wire covering material	BS 7870-3.22	17.4	BS EN 60811-501	-	F5	a
Overall diameter	BS 7870-3.22	Tables 1-4	BS 7870-3.22	Tables 1-4	F50	a
Phase conductor construction	BS 7870-3.22	4.0	BS 7870-3.22 BS 3988:1970+A3	- -	F100	a
Phase conductor resistance	BS 7870-3.22	Tables 1-4	BS 7870-2	3.1.1	F100	a
Pressure test at high temperature (sheath)	BS 7870-1	Table B2	BS EN 60811-508	4.4	F5	b
Sheath colour	BS 7870-3.22	10.0	Visual examination	-	F100	a

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Part 3: Specification for distribution cables of rated voltage 0.6/1 kV -
Section 3.22 XLPE insulated split concentric cables with copper or aluminium conductors, having low emission of smoke and corrosive gases when affected by fire.

Tests, Facilities Required And Test Frequencies

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
Shrinkage of insulation	BS 7870-3.22	16.4	BS 7870-3.22	16.4	F25	a
Shrinkage of sheath	BS 7870-3.22	17.6	BS 7870-3.22	Annex B	F5	a
Smoke emission	BS 7870-3.22	16.7	BS 61034-1 BS 61034-2	- -	F5	o
Tear resistance of sheath	BS 7870-1	Table B2	BS 7870-2	2.2.2.2	F25	a
Tensile Strength & Elongation before/after ageing in air (insulation)	BS 7870-1	Table B1	BS EN 60811-401 BS EN 60811-501	- 4.2	F25	a
Tensile Strength & Elongation before/after ageing in air (sheath)	BS 7870-1	Table B2	BS EN 60811-401 BS EN 60811-501	- 4.3	F25	a
Thickness of insulation	BS 7870-3.22	Tables 1-4	BS 7870-3.22 BS 7870-2	16.4 2.1.1	F100	a
Thickness of bedding	BS 7870-3.22	7.0	BS 7870-3.22	7.0	F100	a
Thickness of sheath	BS 7870-3.22	Tables 1-4	BS 7870-3.22 BS 7870-2	15.5 2.1.2	F100	a
Voltage test on complete cable	BS 7870-3.22	15.3	BS 7870-2	3.2.1	F100	a
Water absorption	BS 7870-1	Table B1	BS EN 60811-402	-	F5	a
Water immersion	BS 7870-1	Table B2	BS 7870-2	2.2.12	F5	a

The above table is a full list of tests covering the requirements of all applicable Tables of the standard. Not all are necessarily required for selected Tables. Reference should be made to the standard.For an explanation of availability and frequency of tests codes, see sections 12.3 and 12.4.

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LV and MV polymeric insulated cable for use by distribution and general utilities -
Part 3: Specification for distribution cables of rated voltage 0.6/1 kV -
Section 3.22 XLPE insulated split concentric cables with copper or aluminium conductors, having low emission of smoke and corrosive gases when affected by fire.

For Approval for a Single Table

Table	Type of cable	Number and size of samples
1	Single phase copper conductor with helical concentric copper neutral/earth conductor	One sample
2	Single phase aluminium conductor with helical concentric copper neutral/earth conductor	One sample
3	Three phase copper conductor with helical concentric copper neutral/earth conductor	One sample
4	Three phase aluminium conductor with helical concentric copper neutral/earth conductor	One sample

1 Test for Flame Propagation to BS EN 60332-3-24

- One sample =<15mm overall diameter tested in touching formation. Note: BASEC will test the smallest conductor size in the range of approval.
- One sample 20mm- 30mm overall diameter tested in spaced formation.
  For a limited range approval two samples will be tested.

2 Test for Corrosive and Acid Gas Emissions
One sample of each of the relevant cable components.

4 Test for Smoke Emisions
For samples required see BS EN 61034-2

13 SCHEME C REQUIREMENTS

13.1 SCOPE

Scheme C covers voice and data cables complying with British or International standards.

Where a cable type listed in this scheme is technically similar to a cable type listed in another scheme, the manufacturer's production of these cables may, at BASEC's discretion, be treated for sampling purposes as part of the other scheme (except for HAR scheme approvals).

13.2 TRANSFER FROM SCHEME C TO HARMONIZED SCHEME (SCHEME A)

If any of the listed standards are individually harmonized to CENELEC requirements, and are reissued in a new form, they may no longer come within the scope of Scheme C.

In such cases, suitable Harmonized Schemes will be devised. A manufacturer licensed to such standards will be given the opportunity of transferring to Harmonized Schemes if it wishes to retain BASEC approval.

From an agreed date with the manufacturer, the surveillance testing carried out by BASEC will then be to the requirements of the Harmonized Schemes.

In instances where cables which are classified as being within the scope of Scheme C, are being produced at the same location as cables of similar constructions under a Harmonized Scheme (Scheme A), the Licensee may apply to BASEC for consideration of a reduced level of sampling under Scheme C.

13.3 AVAILABILITY OF TEST EQUIPMENT

Each table of tests includes a code a, b, c or o, which indicates the requirement for availability of test equipment as follows:

a Test or measurement which must be conducted at the place of manufacture.

b Test or measurement which if not conducted at the place of manufacture may be conducted at any laboratory of the Licensee.

o Test or measurement which if not conducted at a laboratory of the Licensee may be conducted by any BASEC approved laboratory.

c Test or measurement which may be carried out at an external laboratory under a written agreement.

Any deviations from the specified test equipment availability must be authorised by BASEC, by the manufacturer applying for a BASEC concession using form BSF238.

13.4 FREQUENCY OF TESTS

F100 Test is conducted on 100% of the samples selected

F50 Test is conducted on 50% of the samples selected

F25 Test is conducted on 25% of the samples selected

F5 Test is conducted on 5% of the samples selected

1/3 Test is conducted every three years

Man Test is conducted on every product by the manufacturer

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13.5 ANSI/ IA/EIA-568-B.2:2001 – Category 5E

Commercial Building Telecommunications Cabling Standard
Part 2: Balanced Twisted-Pair Cabling Components
Type – Horizontal Cable And Patch/Work Area Cable

Tests, Facilities Required and Test Frequencies

Test description	Cross Reference	Freq	Avail
High Frequency Tests	ANSI/TIA/EIA –568-B.2:2001		
Insertion loss/Attenuation		F100	a
Near end cross talk		F100	a
Power-sum near end cross talk		F100	a
Return loss		F100	a
Propagation delay		F100	a
Propagation delay skew		F100	a
Low Frequency Tests	ANSI/TIA/EIA -568-B.2:2001		
Capacitance unbalance		F50	a
dc resistance		F50	a
dc resistance unbalance		F50	a
Other Electrical Tests			
Transfer impedance	ANSI/ICEA S-90-662 7.21	1/3yr	o
Screening attenuation	ANSI/TIA/EIA-568-B.2:2001	1/3yr	o
Coupling attenuation		1/3yr	o
TCL (LCL)		F5	b
Insulation resistance test		F100	a
High voltage/dielectric strength test		F100	a
Mechanical Tests			
Cable Construction	ANSI/TIA/EIA – 568-B.2:2001	F100	a
Cable identification and marking	ANSI/TIA/EIA – 568-B.2:2001 and ANS/ICEA S90-662.9.1	F100	a
Cable dimensions	ANSI/TIA/EIA – 568-B.2:2001	F100	a
Elongation at break of conductor		F100	b
Breaking strength of complete cable		F5	b
Bending under tension – patch cable		1/3yr	o
Temperature cycling	ANSI /ICEA S90-662	1/3yr	o
Pulling strength (by s-bend)	ANSI/TIA/ EIA – 568-B.2:2001	1/3yr	o
Repeated bending (flexing test)		1/3yr	o
Pressure test		1/3yr	o
Behaviour at low temperature	ANSI/ICEA S90-661 80.1	1/3yr	o
Cold bend test of cable	ANSI/TIA/ EIA – 568-B.2:2001	1/3yr	o

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13.5 ANSI/ TIA / EIA-568-B.2:2001 – CATEGORY 5E PART 2 – CONTINUED

Tests, Facilities Required and Test Frequencies

Test Description	Cross Reference	Freq	Avail.
Fire Performance Tests for LSF Sheath			
Flame propagation on single cable	BS EN 60332-1-2	F5	b
Corrosive and acid gas emission	BS EN 60754-1	1/3yr	o
Smoke emission	BS EN 61034-2	1/3yr	o

For the purpose of this scheme, tests may, at the discretion of the Chief Executive of BASEC, be carried out at an approved laboratory or at the manufacturer's premises, to a test programme agreed by BASEC. If at the manufacturer's premises, a BASEC auditor will undertake to witness all such tests.

For an explanation of availability and frequency of test codes see section 13.3 and 13.4**.**

Schedule of Samples for Type Approval Submission

Type of Cable	Number of Samples
4 pair UTP cable	Two samples from separate manufacturing batches
4 pair UTP and STP cable	One sample of UTP cable and one sample of STP cable
4 Pair UTP and STP Patch cable	One sample of each construction

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13.6 ANSI /TIA / EIA-568-B.2:2001 and 568B.2-1:2002 - Category 6

Commercial Building Telecommunications Cabling Standard
Part 2: Balanced Twisted-Pair Cabling Components.
Type – Horizontal Cable And Patch/Work Area Cable

Tests, Facilities Required And Test Frequencies

Test description	Cross Reference	Freq	Avail
High Frequency Tests			
Insertion loss/Attenuation	ANSI/TIA/EIA –568-B.2:2001	F100	a
Near end cross talk		F100	a
Power-sum near end cross talk		F100	a
Equal-level far end cross talk		F100	a
Power sum equal level far end cross talk		F100	a
Return loss		F100	a
Propagation delay		F100	a
Propagation delay skew		F100	a
Low Frequency Tests			
Capacitance unbalance	ANSI/TIA/EIA -568-B.2:2001	F50	a
dc resistance		F50	a
dc resistance unbalance		F50	a
Other Electrical Tests			
Transfer impedance	ANSI/ICEA S-90-662 7.21	1/3yr	o
Screening attenuation	ANSI/TIA/EIA-568-B.2:2001	1/3yr	o
Coupling attenuation		1/3yr	o
TCL (LCL)		F5	b
Insulation resistance test		F100	a
High voltage/dielectric strength test		F100	a
Mechanical Tests			
Cable Construction	ANSI/TIA/EIA – 568-B.2:2001	F100	a
Cable identification and marking	ANSI/TIA/EIA – 568-B.2:2001 and ANSI/ICEA S90-662.9.1	F100	a
Cable dimensions	ANSI/TIA/EIA – 568-B.2:2001	F100	a
Elongation at break of conductor		F100	b
Breaking strength of complete cable		F5	b
Bending under tension – patch cable		1/3yr	o
Temperature cycling	ANSI/ICEA S90-662	1/3yr	o
Pulling strength (by s-bend)	ANSI/TIA EIA – 568-B.2:2001	1/3yr	o
Repeated bending (flexing test)		1/3yr	o
Pressure test		1/3yr	o
Behaviour at low temperature	ANSI/ICEA S90-661 80.1	1/3yr	o
Cold bend test of cable	ANSI/TIA/EIA – 568-B.2:2001	1/3yr	o
Fire Performance Tests for LSF Sheath			
Flame propagation on single cable	BS EN 60332-1-2	F5	b
Corrosive and acid gas emission	BS EN 60754-1	1/3yr	o
Smoke emission	BS EN 61034-2	1/3yr	o

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13.6 ANSI/TIA/EIA-568-B.2:2001 and 568B2.1:2002 – Category 6 - Continued

For the purposes of this scheme tests may, at the discretion of the Chief Executive of BASEC, be carried out at an approved laboratory or at the manufacturer's premises to a test programme agreed by BASEC. If at the manufacturer's premises, a member of BASEC staff will undertake or supervise all such tests.

For an explanation of availability and frequency of test codes see sections 13.3 and 13.4.

Schedule of Samples for Type Approval Submission

Type of Cable	Number of Samples
4 pair UTP cable	Two samples from separate manufacturing batches
4 pair UTP and STP cable	One sample of UTP cable and one samples of STP cable
4 Pair UTP and STP Patch cable	One sample of each construction

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13.7 ISO / IEC 11801:2002 – Category 5e – Incorporating Amendments 1 and 2 and Corrigendums 1 and 2

Information Technology- Generic Cabling For Customer Premises And IEC 61156 Parts 1-6 Inclusive.
Multicore And Symmetrical Pair/Quad Cables For Digital Communications Type - Horizontal Cable And Patch/Work Area Cable

Tests, Facilities Required And Test Frequencies

Test description	Cross Reference	Freq	Avail
High Frequency Tests	ISO/IEC 11801 and IEC 61156		
Insertion loss/Attenuation		F100	a
Near end cross talk		F100	a
Power-sum near end cross talk		F100	a
Pair to pair ACR-F		F100	a
Power sum ACR-F (PS ACR-F)		F100	a
Return loss		F100	a
Propagation delay		F100	a
Propagation delay skew		F100	a
Low Frequency Tests	ISO/IEC 11801 and IEC 61156		
Capacitance unbalance		F50	a
dc resistance		F50	a
dc resistance unbalance		F50	a
Other Electrical Tests			
Insulation resistance test	IEC 61156	F100	a
High voltage test		F100	a
TCL (LCL)		F5	b
Transfer impedance	EN 50289-1-6	1/3yr	o
Screening attenuation		1/3yr	o
Coupling attenuation		1/3yr	o
Mechanical Tests			
Cable Construction	ISO/IEC 11801 and IEC 61156	F100	a
Cable identification and marking		F100	a
Cable dimensions		F100	a
Elongation at break of conductor	IEC 60189-1	F100	a
Abrasion resistance of sheath marking	EN 50289-3-8	F5	b
Cold bend test of cable	EN 60811-1-4	F5	b
Bending test of insulation at low temperature		F5	b
Tensile strength of insulation (before ageing	IEC 60811-1-1	F5	a
Elongation at break of insulation before and after ageing	EN 50290-2-23 & BS EN 60811-1-1 9.2	F5	b
Tensile strength of sheath (before ageing)	EN 50290-2-27 & BS EN 60811-1-1 9.2	F5	a
Elongation at break of sheath before and after ageing (LSZH)		F5	b

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13.7 ISO/IEC 11801:2002 – Category 5e Incorporating Amendments 1 and 2 and Corrigendum 1 and 2 - Continued

Tests, Facilities Required and Test Frequencies - Continued

Test description	Cross Reference	Freq	Avail
Mechanical Tests Continued			
Elongation at break of sheath before and after ageing (PVC-TM51)	EN 50290-2-22 & BS EN 60811-1-1 9.2	F5	b
Shrinkage of insulation	IEC 60811-1-3	F5	b
Heat shock	EN 50290	F5	b
Breaking strength of complete cable	IEC 60794-1-2	F5	a
Crush test		F5	b
Impact test	IEC 60811-1-4	F5	b
Simulated installation test (s-bend dynamic)	EN 50289-3-9	F5	b
Simulated installation test (single-bend)		F5	b
Temperature cycling	EN 50289-4-6	1/3yr	o
Pulling strength (by s-bend)	EN 50289-3-9	1/3yr	o
Repeated bending (flexing test)	EN 50289-4-6	1/3yr	o
Pressure test	EN 50290	1/3yr	o
Behaviour at low temperature		1/3yr	o
Fire Performance Tests for LSF Sheath			
Flame propagation on single cable	BS EN 60332-1	F5	b
Corrosive and acid gas emission	BS EN 60754-1	F5	o
Smoke emission	BS EN 61034-2	F5	o

For the purposes of this scheme, tests may, at the discretion of the Chief Executive of BASEC, be carried out at an approved laboratory or at the manufacturer's premises – to a test programme agreed by BASEC. If at the manufacturer's premises, a member of BASEC staff will undertake or supervise all such tests.
For an explanation of availability and frequency of test codes see sections 13.3 and 13.4.

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13.7 ISO / IEC 11801:2002 – Category 5e – Continued

Schedule of Samples for Type Approval Submission

Type of Cable	**Number of Samples**
Horizontal Cable	
4 pair UTP cable	Two samples from separate manufacturing batches
4 pair FTP cable	Two samples from separate manufacturing batches
4 Pair SFTP cable	Two samples from separate manufacturing batches
Combination of constructions	One sample of each construction
Patch/Work area cable	
4 pair UTP patch/work area cable	Two samples from separate manufacturing batches
4 Pair FTP patch/work area cable	Two samples from separate manufacturing batches
Combination of constructions	One sample of each construction

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13.8 ISO/ IEC 11801:2002 – Category 6 - Incorporating Amendments 1 and 2 and Corrigendum 1 and 2

Information technology- generic cabling for customer premises and IEC 61156 parts 1-6 inclusive
Multicore and Symmetrical pair/quad cables for digital communications type - horizontal cable and patch/work area cable

Tests, facilities required and test frequencies

Test description	Cross Reference	Freq	Avail
High Frequency Tests	ISO/IEC 11801 and IEC 61156		
Insertion loss/Attenuation		F100	a
Near end cross talk		F100	a
Power-sum near end cross talk		F100	a
Pair to pair ACR-F		F100	a
Power sum ACR-F (PS ACR-F)		F100	a
Return loss		F100	a
Propagation delay		F100	a
Propagation delay skew		F100	a
Low Frequency Tests	ISO/IEC 11801 and IEC 61156		
Capacitance unbalance		F50	a
dc resistance		F50	a
dc resistance unbalance		F50	a
Other Electrical Tests			
Insulation resistance test	IEC 61156	F100	a
High voltage test		F100	a
TCL (LCL)		F5	b
Transfer impedance	EN 50289-1-6	1/3yr	o
Screening attenuation		1/3yr	o
Coupling attenuation		1/3yr	o
Mechanical Tests			
Cable Construction	ISO/IEC 11801 and IEC 61156	F100	a
Cable identification and marking		F100	a
Cable dimensions		F100	a
Elongation at break of conductor	IEC 60189-1	F100	a
Abrasion resistance of sheath marking	EN 50289-3-8	F5	b
Cold bend test of cable	EN 60811-1-4	F5	b
Bending test of insulation at low temperature		F5	b
Tensile strength of insulation (before ageing	IEC 60811-1-1	F5	a
Elongation at break of insulation before and after ageing	EN 50290-2-23 & BS EN 60811-1-1 9.2	F5	b

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13.8 ISO / IEC 11801:2002 – Category 6 - Incorporating Amendments 1 and 2 and Corrigendum 1 and 2 - Continued

Tests, Facilities Required and Test Frequencies - Continued

Test description	Cross Reference	Freq	Avail
Mechanical Tests –Continued			
Tensile strength of sheath (before ageing)	EN 50290-2-27 & BS EN 60811-1-1 9.2	F5	a
Elongation at break of sheath before and after ageing (LSZH)		F5	b
Elongation at break of sheath before and after ageing (PVC-TM51)	EN 50290-2-22 & BS EN 60811-1-1 9.2	F5	b
Shrinkage of insulation	IEC 60811-1-3	F5	b
Heat shock	EN 50290	F5	b
Breaking strength of complete cable	IEC 60794-1-2	F5	a
Crush test		F5	b
Impact test	IEC 60811-1-4	F5	b
Simulated installation test (s-bend dynamic)	EN 50289-3-9	F5	b
Simulated installation test (single-bend)		F5	b
Temperature cycling	EN 50289-4-6	1/3yr	o
Pulling strength (by s-bend)	EN 50289-3-9	1/3yr	o
Repeated bending (flexing test)	EN 50289-4-6	1/3yr	o
Pressure test	EN 50290	1/3yr	o
Behaviour at low temperature		1/3yr	o
Fire Performance Tests for LSF Sheath			
Flame propagation on single cable	BS EN 60332-1	F5	b
Corrosive and acid gas emission	BS EN 60754-1	F5	o
Smoke emission	BS EN 50268-2	F5	o

For the purposes of this scheme, tests may, at the discretion of the Chief Executive of BASEC, be carried out at an approved laboratory or at the manufacturer's premises – to a test programme agreed by BASEC. If at the manufacturer's premises, a member of BASEC staff will undertake or supervise all such tests.
For an explanation of availability and frequency of test codes see sections 13.3 and 13.4.

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13.8 ISO / IEC 11801:2002 – Category 6 – Incorporating Amendments 1 and 2 and Corrigendum 1 and 2 – Continued

Schedule of Samples for Type Approval Submission

Type of Cable	**Number of Samples**
Horizontal Cable	
4 pair UTP cable	Two samples from separate manufacturing batches
4 pair FTP cable	Two samples from separate manufacturing batches
4 Pair SFTP cable	Two samples from separate manufacturing batches
Combination of constructions	One sample of each construction
Patch/Work area cable	
4 pair UTP patch/work area cable	Two samples from separate manufacturing batches
4 Pair FTP patch/work area cable	Two samples from separate manufacturing batches
Combination of constructions	One sample of each construction

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13.9 BS EN 50173-1:2002 – Category 5e - Incorporating Corrigendum No.1

Information Technology- Generic Cabling Systems - Part 1: General Requirements And Office Areas And Bs50288:2001 Parts 1 - 6 Inclusive Multi-Element Metallic Cables Used In Analogue And Digital Communication And Control. Type – Horizontal Cable and Patch/work area cable.

Tests, Facilities Required and Test Frequencies

Test description	Cross Reference	Freq	Avail
High Frequency Tests			
Insertion loss/Attenuation	EN 50288	F100	a
Near end cross talk		F100	a
Power-sum near end cross talk		F100	a
Equal-level far end cross talk		F100	a
Power sum equal level far end cross talk		F100	a
Return loss		F100	a
Propagation delay		F100	a
Propagation delay skew		F100	a
Low Frequency Tests			
Capacitance unbalance	IEC 61156	F50	a
dc resistance		F50	a
dc resistance unbalance		F50	a
Other Electrical Tests			
Insulation resistance test	EN 50289-1-4	F100	a
High voltage test	EN 50289-1-3	F100	a
TCL / (LCL)	IEC 61156	F5	b
Transfer impedance	EN 50289-1-6	1/3yr	o
Screening attenuation		1/3yr	o
Coupling attenuation		1/3yr	o
Mechanical Tests			
Cable Construction	EN 50173	F100	a
Cable identification and marking		F100	a
Cable dimensions		F100	a
Elongation at break of conductor	EN 50290-3-2	F100	a
Abrasion resistance of sheath marking	EN 50289-3-8	F5	b
Cold bend test of cable	EN 60811-1-4	F5	b
Bending test of insulation at low temperature		F5	b
Tensile strength of insulation (before ageing	IEC 60811-1-1	F5	a
Elongation at break of insulation before and after ageing	EN 50290-2-23 & BS EN 60811-1-1 9.2	F5	b
Tensile strength of sheath (before ageing)	EN 50290-2-27 & BS EN 60811-1-1 9.2	F5	a

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13.9 BS EN 50173-1:2002 – Category 5e - Incorporating Corrigendum No.1 - Continued

Tests, Facilities Required and Test Frequencies - Continued

Test description	Cross Reference	Freq	Avail
Mechanical Tests –Continued			
Elongation at break of sheath before and after ageing (LSZH)	EN 50290-2-27 & BS EN 60811-1-1 9.2	F5	b
Elongation at break of sheath before and after ageing (PVC-TM51)	EN 50290-2-22 & BS EN 60811-1-1 9.2	F5	b
Shrinkage of insulation	EN 50289-3-4	F5	b
Heat shock	EN 50290	F5	b
Breaking strength of complete cable	EN 50289-3-16	F5	b
Crush test	EN 50289-3-5	F5	b
Impact test	EN 50289-3-6	F5	b
Simulated installation test (s-bend dynamic)	EN 50289-3-9	F5	b
Simulated installation test (single-bend)		F5	b
Bending under tension – patch cable	EN 50173	1/3yr	o
Temperature cycling	EN 50289-4-6	1/3yr	o
Pulling strength (by s-bend)	EN 50289-3-9	1/3yr	o
Repeated bending (flexing test)	EN 50289-4-6	1/3yr	o
Pressure test	EN 50290	1/3yr	o
Behaviour at low temperature		1/3yr	o
Fire Performance Tests for LSF Sheath			
Flame propagation on single cable	BS EN 50289-4-1	F5	b
Corrosive and acid gas emission	BS EN 60754-1	F5	o
Smoke emission	BS EN 61034-2	F5	o

For the purposes of this scheme, tests may, at the discretion of the Chief Executive of BASEC, be carried out at an approved laboratory or at the manufacturer's premises to a test programme agreed by BASEC. If at the manufacturer's premises, a member of BASEC staff will undertake or supervise all such tests.
For an explanation of availability and frequency of test codes see sections 13.3 and 13.4.

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13.9 BS EN 50173-3:2002 – Category 5e – Incorporating Corrigendum No.1 - Continued

Schedule of Samples for Type Approval Submission

Type of Cable	**Number of Samples**
Horizontal Cable	
4 pair UTP cable	Two samples from separate manufacturing batches
4 pair FTP cable	Two samples from separate manufacturing batches
4 Pair SFTP cable	Two samples from separate manufacturing batches
Combination of constructions	One sample of each construction
Patch/Work area cable	
4 pair UTP patch/work area cable	Two samples from separate manufacturing batches
4 Pair FTP patch/work area cable	Two samples from separate manufacturing batches
Combination of constructions	One sample of each construction

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13.10 BS EN 50173-1:2002 – Category 6 – Incorporating Corrigendum No.1

Information Technology- Generic Cabling Systems - Part 1: General Requirements And Office Areas And BS 50288:2001 Parts 1 - 6 Inclusive Multi-Element Metallic Cables Used In Analogue and Digital Communication and Control
Type - Horizontal Cable and Patch/Work Area Cable

Tests, Facilities Required and Test Frequencies

Test description	Cross Reference	Freq	Avail
High Frequency Tests			
Insertion loss/Attenuation	EN 50288	F100	a
Near end cross talk		F100	a
Power-sum near end cross talk		F100	a
Equal-level far end cross talk		F100	a
Power sum equal level far end cross talk		F100	a
Return loss		F100	a
Propagation delay		F100	a
Propagation delay skew		F100	a
Low Frequency Tests			
Capacitance unbalance	IEC 61156	F50	a
dc resistance		F50	a
dc resistance unbalance		F50	a
Other Electrical Tests			
Insulation resistance test	EN 50289-1-4	F100	a
High voltage test	EN 50289-1-3	F100	a
TCL (LCL)	IEC 61156	F5	b
Transfer impedance	EN 50289-1-6	1/3yr	o
Screening attenuation		1/3yr	o
Coupling attenuation		1/3yr	o
Mechanical Tests			
Cable Construction	EN 50173	F100	a
Cable identification and marking		F100	a
Cable dimensions		F100	a
Elongation at break of conductor	EN 50290-3-2	F100	a
Abrasion resistance of sheath marking	EN 50289-3-8	F5	b
Cold bend test of cable	EN 60811-1-4	F5	b
Bending test of insulation at low temperature		F5	b
Tensile strength of insulation (before ageing	IEC 60811-1-1	F5	a
Elongation at break of insulation before and after ageing	EN 50290-2-23 & BS EN 60811-1-1 9.2	F5	b

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13.10 BS EN 50173-1:2002 – Category 6 – Incorporating Corrigendum No.1 - Continued

Tests, Facilities Required and Test Frequencies

Test description	Cross Reference	Freq	Avail
Mechanical Tests Continued			
Tensile strength of sheath (before ageing)	EN 50290-2-27 & BS EN 60811-1-1 9.2	F5	a
Elongation at break of sheath before and after ageing (LSZH)		F5	b
Elongation at break of sheath before and after ageing (PVC-TM51)	EN 50290-2-22 & BS EN 60811-1-1 9.2	F5	b
Shrinkage of insulation	EN 50289-3-4	F5	b
Heat shock	EN 50290	F5	b
Breaking strength of complete cable	EN 50289-3-16	F5	b
Crush test	EN 50289-3-5	F5	b
Impact test	EN 50289-3-6	F5	b
Simulated installation test (s-bend dynamic)	EN 50289-3-9	F5	b
Simulated installation test (single-bend)		F5	b
Bending under tension – patch cable	EN 50173	1/3yr	o
Temperature cycling	EN 50289-4-6	1/3yr	o
Pulling strength (by s-bend)	EN 50289-3-9	1/3yr	o
Repeated bending (flexing test)	EN 50289-4-6	1/3yr	o
Pressure test	EN 50290	1/3yr	o
Behaviour at low temperature		1/3yr	o
Fire Performance Tests for LSF Sheath			
Flame propagation on single cable	BS EN 50289-4-1	F5	b
Corrosive and acid gas emission	BS EN 60754-1	F5	o
Smoke emission	BS EN 50268-2	F5	o

For the purposes of this scheme, tests may, at the discretion of the chief executive of BASEC, be carried out at an approved laboratory or at the manufacturer's premises to a test programme agreed by BASEC. If at the manufacturer's premises, a member of BASEC staff will undertake or supervise all such tests.
For an explanation of availability and frequency of test codes see sections 13.3 and 13.4.

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13.10 BS EN 50173-1:2002 – Category 6 - Incorporating Corrigendum No.1 - Continued

Schedule of Samples for Type Approval Submission

Type of Cable	**Number of Samples**
Horizontal Cable	
4 pair UTP cable	Two samples from separate manufacturing batches
4 pair FTP cable	Two samples from separate manufacturing batches
4 Pair SFTP cable	Two samples from separate manufacturing batches
Combination of constructions	One sample of each construction
Patch/Work area cable	
4 pair UTP patch/work area cable	Two samples from separate manufacturing batches
4 Pair FTP patch/work area cable	Two samples from separate manufacturing batches
Combination of constructions	One sample of each construction

13.11 ANSI /TIA / EIA-568-B.2-10:2008 - Category 6a

Commercial Building Telecommunications Cabling Standard
Part 2: Balanced Twisted-Pair Cabling Components.
Type – Horizontal Cable And Patch/Work Area Cable

Tests, Facilities Required And Test Frequencies

Test description	Cross Reference	Freq	Avail
High Frequency Tests	ANSI/TIA/EIA –568-B.2-10:2008		
Insertion loss/Attenuation		F100	a
Near end cross talk		F100	a
Power-sum near end cross talk		F100	a
ACRF, FEXT Loss and PS ACRF		F100	a
Power sum equal level far end cross talk		F100	a
Return loss		F100	a
Propagation delay		F100	a
Propagation delay skew		F100	a
ANEXT Loss and PSANEXT Loss		F100	a
AFEXT Loss and PSAACRF		F100	a
Low Frequency Tests	ANSI/TIA/EIA -568-B.2-10:2008		
Capacitance unbalance		F50	a
dc resistance		F50	a
dc resistance unbalance		F50	a
Other Electrical Tests			
Transfer impedance	ANSI/ICEA S-90-662 7.21	1/3yr	o
Screening attenuation	ANSI/TIA/EIA-568-B.2-10:2008	1/3yr	o
Coupling attenuation		1/3yr	o
TCL (LCL)		F5	b
Insulation resistance test		F100	a
High voltage/dielectric strength test		F100	a
Mechanical Tests			
Cable Construction	ANSI/TIA/EIA-568-B.2-10:2008	F100	a
Cable identification and marking	ANSI/TIA/EIA-568-B.2-10:2008 and ANSI/ICEA S90-662.9.1	F100	a
Cable dimensions	ANSI/TIA/EIA-568-B.2-10:2008	F100	a
Elongation at break of conductor		F100	b
Breaking strength of complete cable		F5	b
Bending under tension – patch cable		1/3yr	o
Temperature cycling	ANSI/ICEA S90-662	1/3yr	o
Pulling strength (by s-bend)	ANSI/TIA/EIA-568-B.2-10:2008	1/3yr	o
Repeated bending (flexing test)		1/3yr	o
Pressure test		1/3yr	o
Behaviour at low temperature	ANSI/ICEA S90-661 80.1	1/3yr	o
Cold bend test of cable	ANSI/TIA/EIA-568-B.2-10:2008	1/3yr	o
Fire Performance Tests for LSF Sheath			
Flame propagation on single cable	BS EN 60332-1-2	F5	b
Corrosive and acid gas emission	BS EN 60754-1	1/3yr	o
Smoke emission	BS EN 61034-2	1/3yr	o

13.11 ANSI/TIA/EIA-568-B.2-10:2008 – Category 6a - Continued

For the purposes of this scheme tests may, at the discretion of the Chief Executive of BASEC, be carried out at an approved laboratory or at the manufacturer's premises to a test programme agreed by BASEC. If at the manufacturer's premises, a member of BASEC staff will undertake or supervise all such tests.

For an explanation of availability and frequency of test codes see sections 13.3 and 13.4.

Schedule of Samples for Type Approval Submission

Type of Cable	Number of Samples
4 pair UTP cable	Two samples from separate manufacturing batches
4 pair UTP and STP cable	One sample of UTP cable and one samples of STP cable
4 Pair UTP and STP Patch cable	One sample of each construction

13.12 ISO/IEC 11801:2002 – Category 6a – Incorporating Amendments 1 and 2 and Corrigendums 1 and 2

Information Technology - Generic Cabling System for Customer Premises and IEC 61156 Parts 1-6 inclusive.
Multicore and Symmetrical Pair/Quad Cables for Digital Communications
Type – Horizontal Cable and Patch/Work Area Cable

Tests, Facilities Required and Test Frequencies

Test description	Cross Reference	Freq	Avail
High Frequency Tests			
Insertion loss/Attenuation	ISO/IEC11801 and IEC 61156	F100	a
Near end cross talk		F100	a
Power-sum near end cross talk		F100	a
Pair to pair ACR-F		F100	a
Power sum ACR-F (PS ACR-F)		F100	a
Return loss		F100	a
Propagation delay		F100	a
Propagation delay skew		F100	a
Low Frequency Tests			
Capacitance unbalance		F50	a
dc resistance		F50	a
dc resistance unbalance		F50	a
Other Electrical Tests			
Insulation resistance test	IEC 61156	F100	a
High voltage test		F100	a
TCL (LCL)		F5	b
Transfer impedance	EN 50289-1-6	1/3yr	o
Screening attenuation		1/3yr	o
Coupling attenuation		1/3yr	o
Mechanical Tests			
Cable Construction	ISO/IEC11801 and IEC 61156	F100	a
Cable identification and marking		F100	a
Cable dimensions		F100	a
Elongation at break of conductor	IEC 60189-1	F100	a
Abrasion resistance of sheath marking	EN 50289-3-8	F5	b
Cold bend test of cable	EN 60811-1-4	F5	b
Bending test of insulation at low temperature		F5	b
Tensile strength of insulation (before ageing	IEC 60811-1-1	F5	a
Elongation at break of insulation before and after ageing	EN 50290-2-23 & BS EN 60811-1-1 9.2	F5	b
Tensile strength of sheath (before ageing	EN 50290-2-27 & BS EN 60811-1-1 9.2	F5	a
Elongation at break of sheath before and after ageing (LSZH)		F5	b

13.12 ISO/IEC 11801:2002 – Category 6a – Incorporating Amendments 1 and 2 and Corrigendums 1 and 2

For the purposes of this scheme tests may, at the discretion of the Chief Executive of BASEC, be carried out at an approved laboratory or at the manufacturer's premises to a test programme agreed by BASEC. If at the manufacturer's premises, a member of BASEC staff will undertake or supervise all such tests.

For an explanation of availability and frequency of test codes see sections 13.3 and 13.4.

Schedule of Samples for Type Approval Submission

Type of Cable	**Number of Samples**
Horizontal Cable	
4 pair UTP cable	Two samples from separate manufacturing batches
4 pair FTP cable	Two samples from separate manufacturing batches
4 Pair SFTP cable	Two samples from separate manufacturing batches
Combination of constructions	One sample of each construction
Patch/Work area cable	
4 pair UTP patch/work area cable	Two samples from separate manufacturing batches
4 Pair FTP patch/work area cable	Two samples from separate manufacturing batches
Combination of constructions	One sample of each construction

13.14 BS EN 50173-1:2007+A1:2009 – Category 5 (100MHz)

BS EN 50288-1:2003 Multi-element metallic cables used in analogue and digital communication and control Part 1: Generic specification and BS EN 50288-3-1:2003 Multi-element metallic cables used in analogue and digital communication and control
Type - Horizontal and building backbone cables

Tests, Facilities Required and Test Frequencies

Test description	Cross Reference	Freq	Avail
Low frequency and d.c. electrical measurements			
Conductor loop resistance	BS EN 50288-3-1:2003	F50	a
Conductor resistance unbalance		F50	a
Dielectric strength conductor/conductor		F100	a
Insulation resistance		F100	a
Capacitance unbalance to earth		F50	a
High-freqency electrical and transmission measurements			
Velocity of propagation	BS EN 50288-3-1:2003	F100	a
Propagation delay difference (skew)		F100	a
Longitudinal attenuation		F100	a
Near-end crosstalk (NEXT)		F100	a
Power sum near-end crosstalk (PSNEXT)		F100	a
Equal level far-end crosstalk (ELFEXT)		F100	
Power sum equal level far-end crosstalk (PSELFEXT)		F100	a
Mean characteristic impedance		F100	a
Return loss		F100	a
Near-end unbalance attenuation		F100	a
Coupling attenuation		1/3yr	o
Mechanical Tests (Complete cable)			
Cable construction	BS EN 50288-3-1:2003	F100	a
Cable identification and marking		F100	a
Cable dimensions		F100	a
Conductor elongation at break		F100	a
Shrinkage of insulation		F100	a
Crush resistance of the cable		F100	a
Impact resistance of the cable		F100	a
Abrasion resistance of the sheath markings		F100	a
Simulated installation test - Single bend		F5	b
Simulated installation test – “S” bend		F5	b
Tensile performance		F5	b

13.14 BS EN 50173-1:2007+A1:2009 – Category 5 (100MHz) - Continued

BS EN 50288-1:2003 Multi-element metallic cables used in analogue and digital communication and control Part 1: Generic specification and BS EN 50288-3-1:2003 Multi-element metallic cables used in analogue and digital communication and control
Type - Horizontal and building backbone cables

Tests, Facilities Required and Test Frequencies - Continued

Test description	Cross Reference	Freq	Avail
Mechanical Tests (Polythene Insulation)			
Tensile strength		F5	a
Elongation at break (before ageing)		F5	a
Shrinkage		F5	a
Elongation at break after ageing for unfilled cables	BS EN 50288-3-1:2003	F5	a
Performances after pre-conditioning for filled cables		F5	b
Wrapping after ageing		F5	b
Long term stability test		F5	b
Mass increase for filled cables		F5	b
Mechanical Tests (Polythene Sheath)			
Tensile strength	BS EN 50290-2-24:2002 +A1:2008	F5	a
Elongation before and after ageing		F5	a
Shrinkage		F5	a
Performance after pre-conditioning (for sheath in direct contact with filling compound)		F5	b
Stress cracking		F5	a
Carbon black content (Black sheath)		F5	b
Carbon black dispersion (Black sheath)		F5	b
Mechanical Tests (LSZH Sheath)			
Tensile strength before and after ageing	BS EN 50290-2-27:2002 +A1:2007	F5	a
Elongation before and after ageing		F5	a
Bending test at low temperature (OD up to and including 12.5mm)		F5	a
Elongation test at low temperature (OD exceeding 12.5mm)		F5	a
Pressure test at high temperature		F5	a
Environmental tests			
Cold bend performance of cable	BS EN 50288-3-1:2003	F5	b
Temperature cycling		F5	b
Fire performance tests			
Oxygen Index	BS EN 50290-2-27:2002 + A1:2007	F5	o
Corrosivity		F5	o
Smoke opacity		F5	o

13.14 BS EN 50173-1:2007+A1:2009 – Category 5 (100MHz) - Continued

For the purposes of this scheme tests may, at the discretion of the Chief Executive of BASEC, be carried out at an approved laboratory or at the manufacturer's premises to a test programme agreed by BASEC. If at the manufacturer's premises, a member of BASEC staff will undertake or supervise all such tests.

For an explanation of availability and frequency of test codes see sections 13.3 and 13.4.

Schedule of Samples for Type Approval Submission

Type of Cable	**Number of Samples**
Horizontal Cable	
4 pair UTP cable	Two samples from separate manufacturing batches
4 pair FTP cable	Two samples from separate manufacturing batches
4 Pair SFTP cable	Two samples from separate manufacturing batches
Combination of constructions	One sample of each construction
Building Backbone Cable	
4 pair UTP patch/work area cable	Two samples from separate manufacturing batches
4 Pair FTP patch/work area cable	Two samples from separate manufacturing batches
Combination of constructions	One sample of each construction

13.15 BS EN 50173-1:2007+A1:2009 – Category 5 (100MHz)

BS EN 50288-1:2003 Multi-element metallic cables used in analogue and digital communication and control Part 1: Generic specification and BS EN 50288-3-2:2003 Multi-element metallic cables used in analogue and digital communication and control
Type – Work area and patch cord cables

Tests, Facilities Required and Test Frequencies

Test description	Cross Reference	Freq	Avail
Low frequency and d.c. electrical measurements			
Conductor loop resistance	BS EN 50288-3-2:2003	F50	a
Conductor resistance unbalance		F50	a
Dielectric strength conductor/conductor		F100	a
Insulation resistance		F100	a
Capacitance unbalance to earth		F50	a
High frequency electrical and transmission measurements			
Velocity of propagation	BS EN 50288-3-2:2003	F100	a
Propagation delay difference (skew)		F100	
Longitudinal attenuation		F100	a
Near-end crosstalk (NEXT)		F100	a
Power sum near-end crosstalk (PSNEXT)		F100	a
Equal level far-end crosstalk (ELFEXT)		F100	
Power sum equal level far-end crosstalk (PSELFEXT)		F100	a
Mean characteristic impedance		F100	a
Return loss		F100	a
Near-end unbalance attenuation		F100	a
Coupling attenuation		1/3yr	o
Mechanical Tests (Complete cable)			
Cable construction	BS EN 50288-3-2:2003	F100	a
Cable identification and marking		F100	a
Cable dimensions		F100	a
Conductor elongation at break		F100	a
Shrinkage of insulation		F100	a
Crush resistance of the cable		F100	a
Impact resistance of the cable		F100	a
Abrasion resistance of the sheath markings		F100	a
Simulated installation test – Single bend		F5	b
Simulated installation test – “S” bend		F5	b
Tensile performance		F5	b
Flexing performance of the cable (Only applicable for cables with stranded conductors)		F5	b

13.15 BS EN 50173-1:2007+A1:2009 – Category 5 (100MHz) - Continued

BS EN 50288-1:2003 Multi-element metallic cables used in analogue and digital communication and control Part 1: Generic specification and BS EN 50288-3-2:2003 Multi-element metallic cables used in analogue and digital communication and control
Type – Work area and patch cord cables

Tests, Facilities Required and Test Frequencies - Continued

Test Description	Cross Reference	Freq	Avail
Mechanical Tests (Polythene Insulation)			
Tensile strength	BS EN 50290-2-23:2001	F5	a
Elongation at break (before ageing)		F5	a
Shrinkage		F5	a
Elongation at break after ageing for unfilled cables		F5	a
Performances after pre-conditioning for filled cables		F5	b
Wrapping after ageing		F5	b
Long term stability test		F5	b
Mass increase for filled cables		F5	b
Mechanical Tests (Polythene Sheath)			
Tensile strength	BS EN 50290-2-24:2002 +A1:2008	F5	a
Elongation before and after ageing		F5	a
Shrinkage		F5	a
Performance after pre-conditioning (for sheath in direct contact with filling compound)		F5	b
Stress cracking		F5	a
Carbon black content (Black sheath)		F5	b
Carbon black dispersion (Black sheath)		F5	b
Mechanical Tests (LSZH Sheath)			
Tensile strength before and after ageing	BS EN 50290-2-27:2002 +A1:2007	F5	a
Elongation before and after ageing		F5	a
Bending test at low temperature (OD up to and including 12.5mm)		F5	a
Elongation test at low temperature (OD exceeding 12.5mm)		F5	a
Pressure test at high temperature		F5	a
Environmental tests			
Cold bend performance of cable	BS EN 50288-3-1:2003	F5	b
Temperature cycling		F5	b
Fire performance tests			
Oxygen Index	BS EN 50290-2-27:2002 + A1:2007	F5	o
Corrosivity		F5	o
Smoke opacity		F5	o

13.15 BS EN 50173-1:2007+A1:2009 – Category 5 (100MHz) - Continued

For the purposes of this scheme tests may, at the discretion of the Chief Executive of BASEC, be carried out at an approved laboratory or at the manufacturer's premises to a test programme agreed by BASEC. If at the manufacturer's premises, a member of BASEC staff will undertake or supervise all such tests.

For an explanation of availability and frequency of test codes see sections 13.3 and 13.4.

Schedule of Samples for Type Approval Submission

Type of Cable	**Number of Samples**
Work Area Cable	
4 pair UTP cable	Two samples from separate manufacturing batches
4 pair FTP cable	Two samples from separate manufacturing batches
4 Pair SFTP cable	Two samples from separate manufacturing batches
Combination of constructions	One sample of each construction
Patch/Work area cable	
4 pair UTP patch/work area cable	Two samples from separate manufacturing batches
4 Pair FTP patch/work area cable	Two samples from separate manufacturing batches
Combination of constructions	One sample of each construction

13.16 BS EN 50173-1:2007+A1:2009 – Category 6 (250MHz)

BS EN 50288-1:2003 Multi-element metallic cables used in analogue and digital communication and control Part 1: Generic specification and BS EN 50288-6-1:2003 Multi-element metallic cables used in analogue and digital communication and control
Type - Horizontal and building backbone cables

Tests, Facilities Required and Test Frequencies

Test description	Cross Reference	Freq	Avail
Low frequency and d.c. electrical measurements			
Conductor loop resistance	BS EN 50288-6-1:2003	F50	a
Conductor resistance unbalance		F50	a
Dielectric strength conductor/conductor		F100	a
Insulation resistance		F100	a
Mutual capacitance		F50	a
Capacitance unbalance to earth		F50	a
High-freqency electrical and transmission measurements			
Velocity of propagation	BS EN 50288-6-1:2003	F100	a
Propagation delay difference (skew)		F100	a
Longitudinal attenuation		F100	a
Near-end crosstalk (NEXT)		F100	a
Power sum near-end crosstalk (PSNEXT)		F100	a
Equal level far-end crosstalk (ELFEXT)		F100	
Power sum equal level far-end crosstalk (PSELFEXT)		F100	a
Mean characteristic impedance		F100	a
Return loss		F100	a
Near-end unbalance attenuation		F100	a
Coupling attenuation		1/3yr	o
Mechanical Tests (Complete cable)			
Cable construction	BS EN 50288-6-1:2003	F100	a
Cable identification and marking		F100	a
Cable dimensions		F100	a
Conductor elongation at break		F100	a
Shrinkage of insulation		F100	a
Crush resistance of the cable		F100	a
Impact resistance of the cable		F100	a
Abrasion resistance of the sheath markings		F100	a
Simulated installation test - Single bend		F5	b
Simulated installation test – “S” bend		F5	b
Tensile performance		F5	b

13.16 BS EN 50173-1:2007+A1:2009 – Category 6 (250MHz) - Continued

BS EN 50288-1:2003 Multi-element metallic cables used in analogue and digital communication and control Part 1: Generic specification and BS EN 50288-6-1:2003 Multi-element metallic cables used in analogue and digital communication and control
Type - Horizontal and building backbone cables

Tests, Facilities Required and Test Frequencies - Continued

Test Description	Cross Reference	Freq	Avail
Mechanical Tests (Polythene Insulation)			
Tensile strength	BS EN 50290-2-23:2001	F5	a
Elongation at break (before ageing)		F5	a
Shrinkage		F5	a
Elongation at break after ageing for unfilled cables		F5	a
Performances after pre-conditioning for filled cables		F5	b
Wrapping after ageing		F5	b
Long term stability test		F5	b
Mass increase for filled cables		F5	b
Mechanical Tests (Polythene Sheath)			
Tensile strength	BS EN 50290-2-24:2002 +A1:2008	F5	a
Elongation before and after ageing		F5	a
Shrinkage		F5	a
Performance after pre-conditioning (for sheath in direct contact with filling compound)		F5	b
Stress cracking		F5	a
Carbon black content (Black sheath)		F5	b
Carbon black dispersion (Black sheath)		F5	b
Mechanical Tests (LSZH Sheath)			
Tensile strength before and after ageing	BS EN 50290-2-27:2002 +A1:2007	F5	a
Elongation before and after ageing		F5	a
Bending test at low temperature (OD up to and including 12.5mm)		F5	a
Elongation test at low temperature (OD exceeding 12.5mm)		F5	a
Pressure test at high temperature		F5	a
Environmental tests			
Cold bend performance of cable	BS EN 50288-6-1:2003	F5	b
Temperature cycling		F5	b
Fire performance tests			
Oxygen Index	BS EN 50290-2-27:2002 + A1:2007	F5	o
Corrosivity		F5	o
Smoke opacity		F5	o

13.16 BS EN 50173-1:2007+A1:2009 – Category 6 (250MHz) - Continued

For the purposes of this scheme tests may, at the discretion of the Chief Executive of BASEC, be carried out at an approved laboratory or at the manufacturer's premises to a test programme agreed by BASEC. If at the manufacturer's premises, a member of BASEC staff will undertake or supervise all such tests.

For an explanation of availability and frequency of test codes see sections 13.3 and 13.4.

Schedule of Samples for Type Approval Submission

Type of Cable	**Number of Samples**
Horizontal Cable	
4 pair UTP cable	Two samples from separate manufacturing batches
4 pair FTP cable	Two samples from separate manufacturing batches
4 Pair SFTP cable	Two samples from separate manufacturing batches
Combination of constructions	One sample of each construction
Building Backbone Cable	
4 pair UTP patch/work area cable	Two samples from separate manufacturing batches
4 Pair FTP patch/work area cable	Two samples from separate manufacturing batches
Combination of constructions	One sample of each construction

13.17 BS EN 50173-1:2007+A1:2009 – Category 6 (250MHz)

BS EN 50288-1:2003 Multi-element metallic cables used in analogue and digital communication and control Part 1: Generic specification and BS EN 50288-6-2:2003 Multi-element metallic cables used in analogue and digital communication and control
Type – Work area and patch cord cables

Tests, Facilities Required and Test Frequencies

Test description	Cross Reference	Freq	Avail
Low frequency and d.c. electrical measurements			
Conductor loop resistance	BS EN 50288-6-2:2003	F50	a
Conductor resistance unbalance		F50	a
Dielectric strength conductor/conductor		F100	a
Insulation resistance		F100	a
Capacitance unbalance to earth		F50	a
High-freqency electrical and transmission measurements			
Velocity of propagation	BS EN 50288-6-2:2003	F100	a
Propagation delay difference (skew)		F100	a
Longitudinal attenuation		F100	a
Near-end crosstalk (NEXT)		F100	a
Power sum near-end crosstalk (PSNEXT)		F100	a
Equal level far-end crosstalk (ELFEXT)		F100	a
Power sum equal level far-end crosstalk (PSELFEXT)		F100	a
Mean characteristic impedance		F100	a
Return loss		F100	a
Near-end unbalance attenuation		F100	a
Coupling attenuation		1/3yr	o
Mechanical Tests (Complete cable)			
Cable construction	BS EN 50288-6-2:2003	F100	a
Cable identification and marking		F100	a
Cable dimensions		F100	a
Conductor elongation at break		F100	a
Shrinkage of insulation		F100	a
Crush resistance of the cable		F100	a
Impact resistance of the cable		F100	a
Abrasion resistance of the sheath markings		F100	a
Simulated installation test - Single bend		F5	b
Simulated installation test – “S” bend		F5	b
Tensile performance		F5	b
Flexing performance of the cable (only applicable for cables with stranded conductors)		F5	b

13.17 BS EN 50173-1:2007+A1:2009 – Category 6 (250MHz) - Continued

BS EN 50288-1:2003 Multi-element metallic cables used in analogue and digital communication and control Part 1: Generic specification and BS EN 50288-6-2:2003 Multi-element metallic cables used in analogue and digital communication and control
Type – Work area and patch cord cables

Tests, Facilities Required and Test Frequencies - Continued

Test Description	Cross Reference	Freq	Avail
Mechanical Tests (Polythene Insulation)			
Tensile strength	BS EN 50290-2-23:2001	F5	a
Elongation at break (before ageing)		F5	a
Shrinkage		F5	a
Elongation at break after ageing for unfilled cables		F5	a
Performances after pre-conditioning for filled cables		F5	b
Wrapping after ageing		F5	b
Long term stability test		F5	b
Mass increase for filled cables		F5	b
Mechanical Tests (Polythene Sheath)			
Tensile strength	BS EN 50290-2-24:2002 +A1:2008	F5	a
Elongation before and after ageing		F5	a
Shrinkage		F5	a
Performance after pre-conditioning (for sheath in direct contact with filling compound)		F5	b
Stress cracking		F5	a
Carbon black content (Black sheath)		F5	b
Carbon black dispersion (Black sheath)		F5	b
Mechanical Tests (LSZH Sheath)			
Tensile strength before and after ageing	BS EN 50290-2-27:2002 +A1:2007	F5	a
Elongation before and after ageing		F5	a
Bending test at low temperature (OD up to and including 12.5mm)		F5	a
Elongation test at low temperature (OD exceeding 12.5mm)		F5	a
Pressure test at high temperature		F5	a
Environmental tests			
Cold bend performance of cable	BS EN 50288-6-2:2003	F5	b
Temperature cycling		F5	b
Fire performance tests			
Oxygen Index	BS EN 50290-2-27:2002 + A1:2007	F5	o
Corrosivity		F5	o
Smoke opacity		F5	o

13.17 BS EN 50173-1:2007+A1:2009 – Category 6 (250MHz) - Continued

For the purposes of this scheme tests may, at the discretion of the Chief Executive of BASEC, be carried out at an approved laboratory or at the manufacturer's premises to a test programme agreed by BASEC. If at the manufacturer's premises, a member of BASEC staff will undertake or supervise all such tests.

For an explanation of availability and frequency of test codes see sections 13.3 and 13.4.

Schedule of Samples for Type Approval Submission

Type of Cable	**Number of Samples**
Work Area Cable	
4 pair UTP cable	Two samples from separate manufacturing batches
4 pair FTP cable	Two samples from separate manufacturing batches
4 Pair SFTP cable	Two samples from separate manufacturing batches
Combination of constructions	One sample of each construction
Patch/Work area cable	
4 pair UTP patch/work area cable	Two samples from separate manufacturing batches
4 Pair FTP patch/work area cable	Two samples from separate manufacturing batches
Combination of constructions	One sample of each construction

14 SCHEME D REQUIREMENTS

14.1 SCOPE

Scheme D covers voice and data cables complying with British or International standards.

Where a cable type listed in this scheme is technically similar to a cable type listed in another scheme, the manufacturer's production of these cables may, at BASEC's discretion, be treated for sampling purposes as part of the other scheme (except for HAR scheme approvals).

14.2 TRANSFER FROM SCHEME D TO HARMONIZED SCHEME (SCHEME A)

If any of the listed standards are individually harmonized to CENELEC requirements, and are reissued in a new form, they may no longer come within the scope of Scheme D.

In such cases, suitable Harmonized Schemes will be devised. A manufacturer licensed to such standards will be given opportunity of transferring to Harmonized Schemes if it wishes to retain BASEC approval.

From an agreed date with the manufacturer, the surveillance testing carried out by BASEC will then be to the requirements of the Harmonized Schemes.

In instances where cables which are classified as being within the scope of Scheme D, are being produced at the same location as cables of similar constructions under a Harmonized Scheme (Scheme A), the Licensee may apply to BASEC for consideration of a reduced level of sampling under Scheme D.

14.3 AVAILABILITY OF TEST EQUIPMENT

Each table of tests includes a code a, b, c or o, which indicates the requirement for availability of test equipment as follows:

a Test or measurement which must be conducted at the place of manufacture.

b Test or measurement which if not conducted at the place of manufacture may be conducted at any laboratory of the Licensee.

o Test or measurement which if not conducted at a laboratory of the Licensee may be conducted by any BASEC approval laboratory.

c Test or measurement which may be carried out at an external laboratory under a written agreement.

Any deviations from the specified test equipment availability must be authorised by BASEC, by the manufacturer applying for a BASEC concession using form BSF238.

14.4 FREQUENCY OF TESTS

F100 Test is conducted on 100% of the samples selected

F50 Test is conducted on 50% of the samples selected

F25 Test is conducted on 25% of the samples selected

F5 Test is conducted on 5% of the samples selected

1/3 Test is conducted every three years

Man Test is conducted on every product by the manufacturer

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14.5 BS 5308:1986

Instrumentation Cables – Part 1 Specification for Polyethylene insulated cables. Instrumentation Cables – Part 2 Specification for PVC insulated cables.
BS 5308:1986 Part 1 – Polyethylene Insulation Tests – Incorporating Amendment No.1

Facilities Required and Test Frequencies

Test Frequencies		**Clause**	**Freq**	**Avail**
Dimensions		5	F100	a
Insulation *	Density	BS 6234	F5	b
	Melt Flow Index	BS 6234	F5	o
	Oxidative Induction Time	BS 6234	F5	o
	Thickness	6	F100	a
	Tensile & elongation at break unaged	BS 6234	F25	a
	Resistance to oxidation	BS 6234	F5	o
Pairs		7	F100	a
Pair identification		8	F100	a
Pair screens		9	F100	a
Cable Construction		10	F100	a
Binder tape		11	F50	a
Collective screen and drain wire		12	F100	a
Bedding *	Environmental stress crack resistance	BS 6234	F5	o
	Carbon black content	BS 6234	F5	o
	Carbon black dispersion rating	BS 6234	F5	o
	Tensile stress	BS 6234	F5	b
	Uniformity of appearance	BS 6234	F5	a
Outer Protection*	Tensile strength and elongation at break before & after ageing	BS 6746	F25	a
	Cold bend test	BS 6746	F5	a
	Cold elongation test	BS 6746	F5	b
	Cold impact test	BS 6746	F5	b
	Loss of mass	BS 6746	F5	b
	Hot press/hot deformation	BS 6746	F5	b
	Heat shock test	BS 6746	F50	a
	Lead alloy test	BS 6746	F5	o
Bedding thickness		13.4	F100	a
Sheath thickness		13.5	F100	a
Absence of faults on insulation		14.1	man	a
Absence of faults on sheath		BS 5099	man	a
Voltage test		15	F100	a
Insulation resistance		16	F5	a
Conductor resistance		17	F100	a
Capacitance		18	F100	a
L/R ratio		19	F100	a
Manufacture identification		20	F100	a
Cable identification		21	F100	a
Armour-mass of zinc coating		BS EN 10244.2	F5	b

BS 5308:1986 Part 1 – Polyethylene Insulation Tests – Incorporating Amendment No.1

Facilities Required and Test Frequencies

* For cables with hydrocarbon based filling compound, the following tests will also be applied to insulation and bedding only.

Test Frequencies	Clause	Freq	Avail
Filling compound absorption	BS 6234	F25	a
Change of tensile strength and elongation after absorption	BS 6234	F25	a

* For radio-frequency and telecommunication cables only, the following tests will also be applied to insulation and sheathing only.

Test Frequencies	Clause	Freq	Avail
Permittivity	BS 6234	F25	a
Loss tangent	BS 6234	F25	a

14.5 BS 5308:1986

Instrumentation Cables – Part 1 Specification for Polyethylene insulated cables. Instrumentation Cables – Part 2 Specification for PVC insulated cables.

BS 5308:1986 Part 2 – PVC Insulation Tests – Incorporating Amendment No.1

Facilities Required and Test Frequencies

Test Frequencies		**Clause**	**Freq**	**Avail**
Dimensions		5	F100	a
Insulation	Thickness	6	F100	a
	Tensile & elongation at break unaged	BS 6746	F25	a
	Tensile & Elongation after ageing in air	BS 6746	F25	a
	Loss of mass after ageing	BS 6746	F5	b
	Cold impact test	BS 6746	F5	b
	Cold elongation test	BS 6746	F5	b
	Cold bend test	BS 6746	F5	b
	Heat shock test	BS 6746	F50	a
	Hot pressure test	BS 6746	F5	b
	Insulation Resistance Constant	BS 6746	F5	b
Pairs		7	F100	a
Pair identification		8	F100	a
Pair screens		9	F100	a
Cable construction		10	F100	a
Binder tape		11	F50	a
Collective screen and drain wire		12	F100	a
Outer Protection	Tensile strength and elongation at break unaged	BS 6746	F25	a
	Tensile & Elongation after ageing in air	BS 6746	F25	a
	Cold bend test	BS 6746	F5	a
	Cold elongation test	BS 6746	F5	b
	Cold impact test	BS 6746	F5	b
	Loss of mass	BS 6746	F5	b
	Hot press/hot deformation	BS 6746	F5	b
	Heat shock test	BS6746	F50	a
	Insulation Resistance Constant	BS 6746	F5	b
	Colour fastness to daylight	BS 6746	F5	o
	Bleeding and blooming of colour	BS 6746	F5	a
Bedding thickness		13.3	F100	a
Sheath thickness		13.4	F100	a
Absence of faults on insulation		14.1	man	a
Absence of faults on sheath		BS 5099	man	a
Voltage test		15	F100	a
Insulation resistance		16	F5	a
Conductor resistance		17	F100	a

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14.5 BS 5308:1986

BS 5308:1986 Part 2 – PVC Insulation Tests – Incorporating Amendment No.1

Tests, Facilities Required and Test Frequencies - Continued

Test Frequencies	Clause	Freq	Avail
Capacitance	18	F100	a
L/R ratio	19	F100	a
Manufacture identification	20	F100	a
Cable identification	21	F100	a
Armour-mass of zinc coating	BS EN 10244.2	F5	b

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14.6 TYPE APPROVAL SAMPLES BS 5308-1:1986 & BS 5308-2:1986

For approval of one, table, two samples will be required, one from the two lowest core (or pair as applicable) numbers and one from the two highest. If applicable to the table, this selection should include a sample with quad configuration.

Where approval is requested for a number of tables, the number of samples will be kept to a minimum, but it will be necessary to provide samples of all combinations of construction features i.e.

- Conductor size
- Insulation material
- Multicore/multipair
- Unscreened/pair screens/collective screen
- Outer covering

To avoid unnecessary duplication of tests, the samples will be categorised as 'Full' or 'Partial'. Samples identified as full will be subject to all type approval tests. Those identified as partial will be subject to a construction check and tested for:

- Conductor resistance
- Mutual capacitance
- Capacitance unbalance (for pairs)
- L/R ratio

When this approach is adopted, subsequent routine sampling will aim to include options which were not covered in the type testing.

BS 5308:1986 has a number of options for protective finish i.e.

- Type 1 – Sheath
- Type 2 – Armour and Sheath
- Type 3 – Lead, bedding, armour and sheath (option for Part 1 only)

Examples must be provided for all types for which approval is sought.

Part 1 – Polyethylene Insulation - Type Approval Samples for Full Range

Table Number	Construction	Test Regime Full (F) / Partial (P)
2	2 pair quad	F
3	30 or 50 pair	F
5	20 or 30 pair	P
6	30 or 50 pair	P
7	10 or 15 pair	F
8	1 or 2 pair	P
9	30 or 50 pair	F

Note: Samples identified for full test must include examples of Type 1, 2 and 3

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14.6 TYPE APPROVAL SAMPLES BS 5308-1:1986 & BS 5308-2:1986

Part 2 – PVC Insulation - Type Approval Samples for Full Range

Table Number	Construction	Test Regime Full (F) / Partial (P)
2	40 or 80 core	P
3	2 or 3 core	F
5	10, 15 or 20	P
6	30 or 50 core	F
7	1 or 2 pair	F
8	5 pair	P
10	20 pair	F

Note: Samples identified for full test must include examples of Type 1 and 2.

14.7 PAS 5308-1:2009

Control and instrumentation cables.
Part 1: Specification for polyethylene insulated cables.

Facilities Required and Test Frequencies

Test Frequencies		**Clause**	**Freq**	**Avail**
Dimensions		PAS 5308-1 4.0	F100	a
Insulation *	Density[1]	BS EN 50290-2-23	F5	b
	Melt Flow Index[1]	BS EN 50290-2-23	F5	o
	Hot Set	BS EN 50290-2-29	F5	a
	Long term stability	BS EN 50290-2-23	F5	b
	Shrinkage	BS EN 50290-2-23/29	F5	a
	Thickness	PAS 5308-1 4.0	F100	a
	Tensile & elongation at break unaged & aged	BS EN 50290-2-23/29	F25	a
	Wrapping test after ageing	BS EN 50290-2-23/29	F5	a
Pairs		PAS 5308-1 6.1/6.2	F100	a
Pair identification		PAS 5308-1 6.3	F100	a
Pair screens		PAS 5308-1 6.4	F100	a
Cable Construction		PAS 5308-1 6.5	F100	a
Binder tape		PAS 5308-1 6.6	F50	a
Collective screen and drain wire		PAS 5308-1 6.6/6.7	F100	a
Bedding *	Environmental stress crack resistance	BS EN 50290-2-24	F5	o
	Carbon black content	BS EN 50290-2-24	F5	o
	Carbon black dispersion rating	BS EN 50290-2-24	F5	o
	Density[1]	BS EN 50290-2-24	F5	o
	Melt flow index[1]	BS EN 50290-2-24	F5	o
	Shrinkage	BS EN 50290-2-24	F5	a
	Thickness of bedding	PAS 5308-1 Annex D	F100	a
	Tensile & elongation at break before & after ageing	BS EN 50290-2-24	F25	a
Outer Protection	Tensile strength and elongation at break before & after ageing	BS EN 50290-2-22	F25	a
	Cold bend test	BS EN 50290-2-22	F5	a
	Cold elongation test	BS EN 50290-2-22	F5	b
	Cold impact test	BS EN 50290-2-22	F5	b
	Density[1]	BS EN 50290-2-22	F5	o
	Loss of mass	BS EN 50290-2-22	F5	b
	Hardness	BS EN 50290-2-22	F5	b
	Hot pressure	BS EN 50290-2-22	F5	b
	Heat shock test	BS EN 50290-2-22	F50	a
	Lead alloy test	BS EN 50307	F5	o
	Thickness of sheath	PAS 5308-1 Annex D	F100	a

14.7 PAS 5308-1:2009

Control and instrumentation cables.
Part 1: Specification for polyethylene insulated cables.

Facilities Required and Test Frequencies

Test Frequencies		**Clause**	**Freq**	**Avail**
Armour Wire	Mass of zinc coating	BS EN 10244-2	F5	b
	Tensile & elongation	BS EN 10257-1	F5	b
	Torsion	BS EN 10257-1	F5	b
	Resistance	BS EN 10257-1	F50	a
Absence of faults on insulation		BS 5099 & BS EN 62330	man	a
Absence of faults on sheath		BS 5099& BS EN 62230	man	a
Voltage test		PAS 5308-1 Annex E	F100	a
Insulation resistance		PAS 5308-1 9.3	F5	a
Conductor resistance		PAS 5308-1 4.0	F100	a
Mutual Capacitance		PAS 5308-1 9.5.1	F100	a
Capacitance unbalanced		PAS 5308-1 9.5.2	F100	a
L/R ratio		PAS 5308-1 9.6	F100	a
Manufacture identification		PAS 5308-1 8.0	F100	a
Cable identification		PAS 5308-1 8.0	F100	a

* For cables with filling compound, the following tests will also be applied to insulation and bedding only.

Test Frequencies	**Clause**	**Freq**	**Avail**
Tensile strength and elongation after preconditioning	BS EN 50290-2-23/24	F25	a

* For cables with filling compound, the following tests will also be applied to insulation only.

Test Frequencies	**Clause**	**Freq**	**Avail**
Mass increase	BS EN 50290-2-23	F25	a

Note[1] to be given by supplier on the basic resin.

14.8 PAS 5308-2:2009

Control and instrumentation cables.
Part 2: Specification for PVC insulated cables.

Facilities Required and Test Frequencies

Test Frequencies		**Clause**	**Freq**	**Avail**
Dimensions		PAS 5308-2 Table1	F100	a
Insulation	Thickness	PAS 5308-2 Table1	F100	a
	Tensile & elongation at break unaged	BS EN 50290-2-21	F25	a
	Tensile & Elongation after ageing in air	BS EN 50290-2-21	F25	a
	Loss of mass after ageing	BS EN 50290-2-21	F5	b
	Cold elongation test	BS EN 50290-2-21	F5	b
	Cold bend test	BS EN 50290-2-21	F5	b
	Heat shock test	BS EN 50290-2-21	F50	a
	Hot pressure test	BS EN 50290-2-21	F5	b
	Shrinkage	BS EN 50290-2-21	F5	b
	Volume resistivity	BS EN 50290-2-21	F5	b
Pairs		PAS 5308-2 6.1 & 6.2	F100	a
Pair identification		PAS 5308-2 6.3	F100	a
Pair screens		PAS 5308-2 6.4	F100	a
Cable construction		PAS 5308-2 6.5	F100	a
Binder tape		PAS 5308-2 6.6	F50	a
Collective screen and drain wire		PAS 5308-2 6.6	F100	a
Outer Protection	Tensile strength and elongation at break unaged	BS EN 50290-2-22	F25	a
	Tensile & Elongation after ageing in air	BS EN 50290-2-22	F25	a
	Cold bend test	BS EN 50290-2-22	F5	a
	Cold elongation test	BS EN 50290-2-22	F5	b
	Cold impact test	BS EN 50290-2-22	F5	b
	Loss of mass	BS EN 50290-2-22	F5	b
	Hot press	BS EN 50290-2-22	F5	b
	Heat shock test	BS EN 50290-2-22	F50	a
Bedding thickness		PAS 5308-2 10.1	F100	a
Sheath thickness		PAS 5308-2 10.2	F100	a
Absence of faults on insulation		PAS 5308-2 9.1 & BS EN 62330	man	a
Absence of faults on sheath		BS 5099 & BS EN 62330	man	a
Voltage test		PAS 5308-2 9.2	F100	a
Insulation resistance		PAS 5308-2 9.3	F5	a
Conductor resistance		PAS 5308-2 9.4 & Table 1	F100	a
Armour wire tensile & elongation		BS EN 10257-1	F5	b
Armour wire torsion		BS EN 10257-1	F5	b
Armour wire resistance		BS EN 10257-1	F50	a

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14.8 PAS 5308-2:2009

Control and instrumentation cables.
Part 2: Specification for PVC insulated cables.

Tests, Facilities Required and Test Frequencies - Continued

Test Frequencies	Clause	Freq	Avail
Capacitance	PAS 5308-2 9.5	F100	a
L/R ratio	PAS 5308-2 9.6	F100	a
Manufacture identification	PAS 5308-2 8	F100	a
Cable identification	PAS 5308-2 8	F100	a
Armour-mass of zinc coating	BS EN 10244.2	F5	b

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14.9 TYPE APPROVAL SAMPLES PAS 5308-1:2009 & PAS 5308-2:2009

For approval of one table, two samples will be required, one from the two lowest core (or pair as applicable) numbers and one from the two highest. If applicable to the table, this selection should include a sample with quad configuration.

Where approval is requested for a number of tables, the number of samples will be kept to a minimum, but it will be necessary to provide samples of all combinations of construction features i.e.

- Conductor size
- Insulation material
- Multicore/multipair
- Unscreened/pair screens/collective screen
- Outer covering

To avoid unnecessary duplication of tests, the samples will be categorised as 'Full' or 'Partial'. Samples identified as full will be subject to all type approval tests. Those identified as partial will be subject to a construction check and tested for:

- Conductor resistance
- Mutual capacitance
- Capacitance unbalance (for pairs)
- L/R ratio

When this approach is adopted, subsequent routine sampling will aim to include options which were not covered in the type testing.

PAS 5308-1:2009 & PAS 5308-2:2009 has a number of options for protective finish i.e.

- Type 1 – Sheath
- Type 2 – Armour and Sheath
- Type 3 – Lead, bedding, armour and sheath (option for PAS 5308-1 only)

Examples must be provided for all types for which approval is sought.

Part 1 – Polyethylene Insulation - Type Approval Samples for Full Range

Table Number	Construction	Test Regime Full (F) / Partial (P)
D1	2 pair quad	F
D2	30 or 50 pair	F
D4	20 or 30 pair	P
D5	30 or 50 pair	P
D6	10 or 15 pair	F
D7	1 or 2 pair	P
D10	30 or 50 pair	F

Note: Samples identified for full test must include examples of Type 1, 2 and 3

14.9 TYPE APPROVAL SAMPLES PAS 5308-1:2009 & PAS 5308-2:2009

Part 2 – PVC Insulation - Type Approval Samples for Full Range

Table Number	Construction	Test Regime Full (F) / Partial (P)
D1	40 or 80 core	P
D3	5 pair	P
D4	2 or 3 core	F
D5	10, 15 or 20 pair	P
D7	20 or 40 core	F
D9	20 pair	F
D10	40 or 80 core	F
D11	1 or 2 pair	P
D12	15, 20 or 30 pair	F

Note: Samples identified for full test must include examples of Type 1 and 2.

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14.10 BS EN 50288-7:2005

Multi-element metallic cables used in analogue and digital communication and control –
Part 7: Sectional specification for instrumentation and control cables

Facilities Required and Test Frequencies

Test Frequencies		Clause	Freq	Avail
Conductor elongation at break		BS EN 50288-7 & BS EN 50289-3-2	F5	a
Insulation *	Bending test at low temperature	BS EN 50290-2-21/25/26	F5	a
	Core identification durability	BS EN 50289-3-8	F25	a
	Corrosivity	BS EN 50290-2-26	F5	o
	Density[1]	BS EN 50290-2-21/23/25	F5	o
	Dielectric constant	BS EN 50290-2-26	F5	b
	Dissipation factor	BS EN 50290-2-26	F5	b
	Elongation test at low temperature	BS EN 50290-2-21	F5	a
	Melt Flow Index[1]	BS EN 50290-2-21/23/25	F5	o
	Hardness	BS EN 50290-2-21	F5	b
	Heat shock	BS EN 50290-2-21	F50	a
	Hot pressure	BS EN 50290-2-21/26	F5	a
	Hot Set	BS EN 50290-2-26/29	F5	a
	Long term stability	BS EN 50290-2-23/25	F5	b
	Loss of mass	BS EN 50290-2-21	F5	a
	Shrinkage	BS EN 50290-2-23/26/29	F5	a
	Stripping properties	BS EN 50289-3-17	F100	a
	Thermal stability	BS EN 50290-2-21	F5	a
	Thickness & concentricity	BS EN 50288-7 4.2	F100	a
	Tensile & elongation at break unaged & aged	BS EN 50290-2-23/25/26/29	F25	a
	Volume resistivity	BS EN 50290-2-26	F5	a
	Wrapping test after ageing	BS EN 50290-2-23/25/29	F5	a
Cable elements		BS EN 50288-7 & BS EN 50288-1	F100	a
Lay length (pair, triple or quad)		BS EN 50288-7	F100	a
Cable Construction		BS EN 50288-7/ BS 50288-1/ IEC 60228	F100	a

14.10 BS EN 50288-7:2005

Multi-element metallic cables used in analogue and digital communication and control –
Part 7: Sectional specification for instrumentation and control cables

Facilities Required and Test Frequencies

Test Frequencies		**Clause**	**Freq**	**Avail**
Bedding/Sheathing*	Carbon black content	BS EN 50290-2-24	F5	o
	Carbon black dispersion rating	BS EN 50290-2-24	F5	o
	Cold bend test	BS EN 50290-2-22/27	F5	a
	Cold elongation test	BS EN 50290-2-22/27	F5	a
	Cold impact test	BS EN 50290-2-22	F5	a
	Corrosivity	BS EN 50290-2-27	F5	o
	Density[1]	BS EN 50290-2-22	F5	o
	Environmental stress crack resistance	BS EN 50290-2-24	F5	o
	Hardness	BS EN 50290-2-22/24	F5	b
	Hot pressure	BS EN 50290-2-22/27	F5	a
	Heat shock test	BS EN 50290-2-22/27	F50	a
	Lead alloy test	BS EN 50307	F5	o
	Loss of mass	BS EN 50290-2-22	F5	a
	Melt flow index[1]	BS EN 50290-2-24	F5	o
	Mineral oil immersion	BS EN 50290-2-22	F5	a
	Multilayer sheath thickness	BS EN 50288-7	F5	a
	Shrinkage	BS EN 50290-2-24	F5	a
	Tensile & elongation at break before & after ageing	BS EN 50290-2-22/24/27	F25	a
	Thermal stability	BS EN 50290-2-22	F5	a
	Thickness of bedding	BS EN 50288-7	F100	a
	Thickness of sheath	BS EN 50288-7	F100	a

14.10 BS EN 50288-7:2005

Multi-element metallic cables used in analogue and digital communication and control –
Part 7: Sectional specification for instrumentation and control cables

Facilities Required and Test Frequencies

Test Frequencies		**Clause**	**Freq**	**Avail**
Armour Wire	Bending test	BS EN 10218-1	F5	b
	Compression test	BS EN 10218-1	F5	b
	Deep etch test	BS EN 10218-1	F5	b
	Electrical resistance	BS EN 10257-1	F5	a
	Fatigue test	BS EN 10218-1	F5	b
	Grain size test	BS EN 10218-1	F5	b
	Hardness test	BS EN 10218-1	F5	b
	Mass of zinc coating	BS EN 10244-2	F5	b
	Quench hardenability test	BS EN 10218-1	F5	b
	Reverse bend test	BS EN 10218-1	F5	b
	Reverse torsion test	BS EN 10218-1	F5	b
	Segregation test	BS EN 10218-1	F5	b
	Simple torsion test	BS EN 10218-1	F5	b
	Tensile & elongation	BS EN 10218-1	F5	b
	Tensile test on knotted wire	BS EN 10218-1	F5	b
	Wire cast measurement	BS EN 10218-1	F5	b
	Wire diameter	BS EN 50288-7	F25	a
	Wrapping test	BS EN 10218-1	F5	b
Filling Compounds for Filled Cables only	Absence of corrosive components	BS EN 50290-2-28	F5	b
	Drop point	BS EN 50290-2-28	F5	b
	dc resistivity	BS EN 50290-2-28	F5	b
	Low temperature brittleness	BS EN 50290-2-28	F5	b
	Permittivity	BS EN 50290-2-28	F5	b
	Separation of oil	BS EN 50290-2-28	F5	b
	Total acid number	BS EN 50290-2-28	F5	b
Dielectric strength		BS EN 50288-7 & BS EN 50289-1-3	F100	a
Insulation resistance		BS EN 50288-7 & BS EN 50289-1-4	F5	a
Conductor resistance		BS EN 50289-1-2	F100	a
Mutual Capacitance		BS EN 50288-7 & BS EN 50289-1-5	F100	a
Capacitance unbalanced (pairs/quads)		BS EN 50288-7 & BS EN 50289-1-5	F100	a
L/R ratio		BS EN 50288-7 & BS EN 50289-1-2/12	F100	a
Identification of cable elements		IEC 60189-2 or EN 60708	F100	a

14.10 BS EN 50288-7:2005

Multi-element metallic cables used in analogue and digital communication and control –
Part 7: Sectional specification for instrumentation and control cables

Facilities Required and Test Frequencies

* For cables with filling compound, the following tests will also be applied to insulation only.

Test Frequencies	Clause	Freq	Avail
Tensile strength & elongation after preconditioning	BS EN 50290-2-23	F25	a
Mass increase	BS EN 50290-2-23	F25	a
Wrapping test	BS EN 50290-2-23	F25	a

* For cables with filling compound, the following tests will also be applied to bedding and sheathing only.

Test Frequencies	Clause	Freq	Avail
Tensile strength & elongation after preconditioning	BS EN 50290-2-24	F25	a

Note[1] to be given by supplier on the basic resin.

15 SCHEME E REQUIREMENTS

15.1 SCOPE

Scheme E covers cables or cords (cables) complying with national, international and public domain standards which are not covered by a British Standard. Cables manufactured to meet the requirements of IEC, ESI, DIN, MoD, BASEC Certificate of Assessed Design, etc. come within the scope of this scheme.

The BASEC Technical Committee will determine whether a particular standard or specification falls within the scope of Scheme E. In addition, cables to a specification submitted to, but not progressed by, BSI may be eligible for licensing under this scheme.

Where a cable type listed in this scheme is technically similar to a cable type listed in another scheme, the manufacturer's production of these cables may, at BASEC's discretion, be treated for sampling purposes as part of the other scheme (except for HAR scheme approvals).

15.2 TRANSFER FROM SCHEME E TO HARMONIZED (SCHEME A)

If any of the standards within this scheme are individually harmonized to CENELEC requirements, and are reissued in a new form they may no longer come within the scope of Scheme E.

In such cases, suitable Harmonized Schemes will be devised. A manufacturer licensed to such standards will be given the opportunity of transferring to Harmonized Schemes if it wishes to retain BASEC approval.
From an agreed date with the manufacturer, the surveillance testing carried out by BASEC will then be to the requirements of the Harmonized Schemes.

In instances where cables which are classified as being within the scope of Scheme E, are being produced at the same location as cables of similar constructions under Harmonized Scheme, i.e., Scheme A, the Licensee may apply to BASEC for consideration of a reduced level of sampling under Scheme E.

15.3 AVAILABILITY OF TEST EQUIPMENT

Each table of tests includes a code a, b, c or o, which indicates the requirement for availability of test equipment as follows:-

a Test or measurement which must be conducted at the place of manufacture.

b Test or measurement which if not conducted at the place of manufacture may be conducted at any laboratory of the Licensee.

o Test or measurement which if not conducted at a laboratory of the Licensee may be conducted by any BASEC approved laboratory.

c Test or measurement which may be carried out at an external laboratory under a written agreement.

Any deviations from the specified test equipment availability must be authorised by BASEC, by the manufacturer applying for a BASEC concession using form BSF 238.

15.4 FREQUENCY OF TESTS

Each table of tests includes a frequency at which each test will be conducted on the samples selected by BASEC.

F100 Test is conducted on 100% of the samples selected
F50 Test is conducted on 50% of the samples selected.
F25 Test is conducted on 25% of the samples selected.
F5 Test is conducted on 5% of the samples selected.
1/3 Test is conducted every three years.
man Test is conducted on every product by the manufacturer.

15.5 IEC 60227-3:1993 – Incorporating Amendment No.1

Polyvinyl chloride insulated cables of rated voltages up to and including 450/750V Part 3: Non Sheathed Cables for Fixed Wiring. Tables 1, 3, 5, 7, 9 and 11

Testing Facilities Required And Test Frequencies

Test description	Cross Reference	Freq	Avail
Bi-colour combinations	IEC 60227-1	F100	a
Cold bend	IEC 60811-1-4	F5	b
Cold elongation	IEC 60811-1-4	F5	b
Cold impact	IEC 60811-1-4	F5	b
Conductor resistance	IEC 60227-2 / IEC 60228	F100	a
Construction	IEC 60227-1 / IEC 60228	F100	a
Heat shock	IEC 60811-3-1	F50	a
Hot pressure	IEC 60811-3-1	F5	a
Insulation resistance	IEC 60227-2	F5	a
Insulation thickness	IEC 60227-2	F100	a
Loss of mass	IEC 60811-3-2	F5	a
Marking		F100	a
Overall dimensions	IEC 60227-2	F25	a
Tensile and Elongation before and after ageing in air	IEC 60811-1-1 IEC 60811-1-2	F25	a
Flame propagation of a single cable	IEC 60332-1-2	F25	b
Thermal stability	IEC 60811-3-2	F5	a
Voltage test on complete cable	IEC 60227-2	F100	a

This is a full list of tests covering the requirements of all applicable Tables of the standard. Not all are necessarily required for selected Tables. Reference should be made to the standard.

For an explanation of availability and frequency of tests codes see points 15.3 and 15.4.

15.5 IEC 60227-3:1993 – Incorporating Amendment No.1 - Continued

Schedule Of Samples For Type Approval Submission

Table	Type of Cable	Number and Size of samples
I	Single-core non-sheathed cable with rigid conductor for general purposes, 450/750V	1 sample of approximately minimum cross-section 1 sample of approximately maximum cross-section
III	Single-core non-sheathed cable with flexible conductor for general purposes, 450/750V	1 sample of approximately minimum cross-section 1 sample of approximately maximum cross-section
V	Single-core non-sheathed cable with solid conductor for internal wiring for a conductor temperature of 70ºC, 300/500V	1 sample
VII	Single-core non-sheathed cable with flexible conductor for internal wiring for a conductor temperature of 70ºC, 300/500V	1 sample
IX	Single-core non-sheathed cable with solid conductor for internal wiring for a conductor temperature of 105ºC, 300/500V	1 sample of approximately minimum cross-section 1 sample of approximately maximum cross-section
XI	Single-core non-sheathed cable with flexible conductor for internal wiring for a conductor temperature of 70ºC	1 sample of approximately minimum cross-section 1 sample of approximately maximum cross-section

15.6 IEC60227-5:1997 – Incorporating Amendment Nos 1 & 2

Polyvinyl Chloride Insulated Cables Of Rated Voltages Up To And Including 450/750v. Tables 1, 5, 7 And 9

Tests, Facilities Required And Test Frequencies

Test description	Cross Reference	Freq	Avail
Bi-colour combinations	IEC 60227-1	F100	a
Bend test on complete cable	IEC 60227-2	F5	b
Cold bend (Insulation and Sheath)	IEC 60811-1-4	F5	b
Cold impact (Complete cable)	IEC 60811-1-4	F5	b
Conductor resistance	IEC 60227-2 / IEC 60228	F100	a
Conductor construction	IEC 60228	F100	a
Flexing for cords and extensible leads	IEC 60227-2	F5	b
Heat shock (Insulation and Sheath)	IEC 60811-3-1	F50	a
Hot pressure (Insulation and Sheath)	IEC 60811-3-1	F5	b
Insulation resistance at 70^0C	IEC 60227-2	F5	a
Insulation thickness	IEC 60227-2	F100	a
Loss of mass	IEC 60811-3-2	F5	a
Marking	IEC 60227-1	F100	a
Non-contamination (Compatibility)	IEC 60811-1-2	F	
Ovality	IEC 60227-2	F25	a
Overall dimensions	IEC 60227-2	F25	a
Separation of cores	IEC 60227-5	F5	a
Sheath thickness	IEC 60227-2	F100	a
Snatch test	IEC 60227-2	F5	b
Tensile Strength & Elongation before/after ageing in air (insulation and sheath)	IEC 60811-1-1 IEC 60811-1-2	F25	a
Flame propagation of a single cable	IEC 60332-1-2	F25	b
Voltage test on complete cable	IEC 60227-2	F25	a
Voltage test on cores	IEC 60227-2	F5	a

The table above is a full list of tests covering the requirements of all applicable Tables of the standard. Not all are necessarily required for selected Tables. Reference should be made to the standard.

For an explanation of availability and frequency of tests codes, see points 15.3 and 15.4.

Schedule Of Samples For Type Approval Submission

Table	Type of Cable	Number and Size of samples
1	Flat tinsel cord	1 sample
5	Cord for indoor decorative lighting chains	1 sample

7	Light polyvinyl chloride sheathed cord	1 sample approximately minimum cross section 1 sample approximately maximum cross section
9	Ordinary polyvinyl chloride sheathed cord	1 sample approximately minimum cross section 1 sample approximately maximum cross section

15.7 IEC 60502-1:2004 & Amd 1:2009

Cables with rated voltage 0.6/1 (1.2)kV, XLPE insulation, steel wire armour and Polyvinyl Chloride (PVC) sheath

Tests, Facilities Required and Test Frequencies

Test description	Cross Reference	Freq	Avail
Armour tape dimensions	IEC 60502-1	F5	a
Armour wire diameter	IE C60502-1	F5	a
Acid gas emission of sheath	IEC 60754-1	F5	b
Bending test at low temperature	IEC 60811-1-4	F5	b
Cable construction	IEC 60502-1	F100	a
Carbon black content of sheath	IEC 60811-4-1	F5	b
Colour - clarity and durability of colour	IEC 60502-1	F100	a
Colour - sequence	IEC 60502-1	F100	a
Compatibility	IEC 60811-1-1/-2	F25	a
Conductor construction	IEC 60228	F100	a
Conductor resistance	IEC 60228	F100	a
Determination of hardness	IEC 60502-1	F5	b
Determination of elastic modulus	IEC 60502-1	F5	b
Elongation test at low temperature	IEC 60811-1-4	F5	b
Flame propagation of a single cable	IEC 60332-1-2	F25	b
Flame propagation of on bunched cables	IEC 60332-3-24	F25	b
Fluorine content of sheath	IEC 60684-2	F5	b
Hot set test	IEC 60811-2-1	F5	b
Impact test at low temperature	IEC 60811-1-4	F5	b
Insulation resistance	IEC 60502-1	F5	a
Insulation resistance constant (Insulation)	IEC 60502-1	F5	a
Volume resistivity (Insulation)	IEC 60502-1	F5	a
Loss of mass	IEC 60811-3-2	F5	a
Marking - legend		F100	a

Test description	Cross Reference	Freq	Avail
Ozone resistance test (Alternative - low concentration)	IEC 60811-2-1	1/yr	o
PH and conductivity of sheath	IEC 60754-2	F5	b
Pressure test at high temperature	IEC 60811-3-1	F5	b
Resistance to cracking (Heat shock)	IEC 60811-3-1	F50	a
Shrinkage test on insulation and sheath	IEC 60811-1-3	F50	a
Smoke emission of sheath	IEC 61034-2	F5	b
Tensile Strength & Elongation before/after ageing in air (Insulation)	IEC 60811-1-1/-2	F25	a
Tensile strength & Elongation before/after ageing in air (Sheath)	IEC 60811-1-1/-2	F25	a
Thickness of inner sheath (bedding)	IEC 60811-1.1	F100	a
Thickness of insulation	IEC 60811-1.1	F100	a
Thickness of sheath	IEC 60811-1.1	F100	a
Voltage test on complete cable - sheathed	IEC 60502-1	F100	a
Voltage test (4 hour)	IEC 60502-1	F5	b
Water absorption test	IEC 60811-1-3	F5	a

15.7 IEC 60502-1:2004 & Amd 1:2009 – Continued

For an explanation of availability and frequency of tests codes, see points 15.3 and 15.4.

Schedule Of Samples For Type Approval Submission

Type of Cable	Number and Size of samples
Single-core 600/1000V cables with circular stranded copper conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
Single-core 600/1000V cables with solid aluminium conductor – circular solid conductor (Class 1)	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
Single-core 600/1000V cables with solid aluminium conductor – circular sectoral conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
Two-core 600/1000V cables with stranded copper conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
Two-core 600/1000V cables with solid aluminium conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
Three-core 600/1000V cables with stranded copper conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
Three-core 600/1000V cables with solid aluminium conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
Four-core 600/1000V cables with stranded copper conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
Four-core 600/1000V cables with solid aluminium conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
Five-core 600/1000V cables with stranded copper conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size

15.7 IEC 60502-1:2004 Amd 1:2009– Continued

Notes:

1. Single core and auxiliary cables will always be considered separately.

2. For two, three and four core cables with the same type of conductors, three samples only will be required as follows:

   - Two-core. Approximately maximum cross-sectional area of conductor.
   - Three-core. Approximately mid-way between the minimum and maximum cross-sectional areas of conductor.
   - Four-core. Approximately minimum cross-sectional area of conductor.

3. For two, three, four and five core cables with the same type of conductors, four samples only will be required as follows:

   - Two-core. Approximately maximum cross-sectional area of conductor.
   - Three-core. Approximately mid-way between the minimum and maximum cross-sectional areas of conductor, but not the same as the five-core.
   - Four-core. Approximately minimum cross-sectional area of conductor
   - Five-core. Approximately mid-way between the minimum and maximum cross-sectional areas of conductor, but not the same as the three-core.

15.8 I.S. 201-4:2001

Polyvinyl Chloride (PVC) Insulated Cables Of Rated Voltages Up To And Including 450/750v (Part 4 - Sheathed Cables For Fixed Wiring) Tables I, III and IV

Tests, Facilities Required And Test Frequencies

Test description	Cross Reference	Freq	Avail
Absence of faults in insulation(Spark or voltage test)	I.S.201.2	man	a
Absence of faults in insulation (Spark or voltage test)	I.S.201.2	F100	a
Bi-colour combinations	I.S.201.1	F100	a
Cable construction	IS 201.1	F100	a
Cold bend (insulation and sheath)	BS EN 60811.1.4	F5	b
Cold elongation (Sheath)	BS EN 60811.1.4	F5	b
Cold impact	BS EN 60811.1.4	F5	b
Conductor resistance	I.S.201.2	F100	a
Heat shock (insulation and sheath)	BS EN 60811.3.1	F50	a
Hot pressure (insulation and sheath)	BS EN 60811.3.1	F5	b
Insulation resistance at 70^0C	IS 201.2	F5	a
Insulation thickness	IS 201.2	F100	a
Long term resistance of insulation to dc	IS 201.2	F5	b
Loss of mass	BS EN 60811.3.2	F5	a
Marking (durability and legibility)	IS 201.1	F100	a
Non-contamination test	BS EN 60811.1.2	F25	a
Ovality	IS 201.2	F25	a
Overall dimensions	IS 201.2	F25	a
Sheath thickness	IS 201.2	F100	a
Tensile Strength & %Elongation -before ageing (Insulation and Sheath)	BS EN 60811.1.1	F25	a
Tensile Strength & %Elongation - after ageing (Insulation and Sheath)	BS EN 60811.1.2	F25	a
Flame propagation of a single cable	BS EN 60332.1	F25	b
Voltage test on complete cable	IS 201.2	F25	a
Voltage test on cores	IS 201.2	F5	a

For an explanation of availability and frequency of tests codes, see points 15.3 and 15.4.

Schedule of Samples for Type Approval Submission

Table	Type of Cable	Number and Size of samples
I	PVC/PVC twin with bare earth conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
III	PVC/PVC twin flat	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
IV	PVC/PVC Single-core	One sample of approximately minimum conductor size One sample of approximately maximum conductor size

Notes:

1. If the manufacturer already holds a BASEC approval for the same range of cables, then the type approval testing may be limited to the requirements of construction providing the cable is otherwise identical.

15.9 I.S. 273:1988 Incorporating Amendment Nos 1 & 2

Cables with polyvinyl chloride (PVC) or cross-linked polyethylene (XLPE) insulation 600/1000V and 1900/3300V with and without steel wire armour (SWA)

Tests, Facilities Required and Test Frequencies

Test description	Cross Reference	Freq	Avail
Absence of faults on insulation (spark test)	I.S. 201	man	a
Absence of faults on sheath (spark test)	I.S. 273	man	a
Armour wire diameter	I.S. 273	F5	a
Armour wire mass of zinc coating	I.S. 273	F5	a
Armour wire uniformity of coating	I.S. 273	F5	a
Armour wire adhesion of coating	I.S. 273	F5	a
Armour wire resistance	I.S. 273	F50	a
Armour wire tensile and elongation test	I.S. 273	F5	a
Armour wire wrapping test	I.S. 273	F5	a
Armour wire torsion test	I.S. 273	F5	a
Bedding application	I.S. 273	F100	a
Bending test at - 15°C	BS 7655-6.1 & 4.2	F5	b
Bending test complete cable 0°C	I.S. 273	F5	b
Bleeding & blooming of colour	I.S. 273	F5	a
Cable construction	I.S. 273	F100	a
Colour - sequence	I.S. 273	F100	a
Colour fastness to daylight	I.S. 273	F5	o
Conductor construction	I.S. 270	F100	a
Conductor resistance	I.S. 270	F100	a
Core lay, direction and sequence	I.S. 273	F100	a
Core identification - colour/number	I.S. 273	F100	a
Corrosive and acid gas emission	BS EN 60754-1	F5	o
Elongation test at low temperature (Sheath)	BS 7655-6.1 & 4.2	F5	b

Test description	Cross Reference	Freq	Avail
Flame propagation of a single cable	IEC 332 Part 1	F25	b
Heat shock	I.S. 271/BS7655-4.2	F5	a
Hot deformation	BS 7655-4.2	F5	a
Hot set test	I.S. 272	F5	b
Impact test at - 15°C & 60°C	I.S. 273/BS7655-4.2	F5	b
Insulation application	I.S. 273	F100	a
Insulation volume resistivity	I.S. 272	F5	a
Insulation resistance	I.S. 271	F5	b
Insulation resistance constant	BS 7655-4.2	F5	a
Long term resistance of insulation to dc	I.S. 201 Part 2	F5	b
Loss of mass	BS EN 60811-3.2	F5	a
Marking - legend	I.S. 273	F100	a
Nail penetration test	I.S. 273	1/3yr	o
Non contamination test	BS EN 60811-1.2	F5	b
Oxygen Index (Sheath)	I.S. 273	F5	o
Overall Diameter	I.S. 201-2	F100	a
Ovality	I.S. 201-2	F100	a
Pressure test at high temperature	BS 7655-6.1&4.2	F5	b
Properties of inner sheath (Bedding)	I.S. 273	F5	a
Screen minimum thickness and overlap	I.S. 273	F50	a
Sheath application	I.S. 273	F100	a
Smoke emission	BS EN 50268-2	F5	b
Tear strength	BS 7655-6.1	F25	a
Tensile Strength & Elongation before/after ageing in air (Insulation)	I.S. 271 & I.S. 272	F25	a
Tensile Strength & Elongation before/after ageing in air (Sheath)	BS 7655-6.1&4.2	F25	a
Thickness of inner sheath (Bedding)	I.S. 273	F100	a
Thickness of insulation	I.S. 273	F100	a
Thickness of sheath	I.S. 273	F100	a
Voltage test on complete cable	I.S. 273	F5	a

Test description	Cross Reference	Freq	Avail
Water immersion test	BS 7655-6.1	F5	a

This is a full list of tests covering the requirements of all applicable Tables of the standard. Not all are necessarily required for selected Tables. Reference should be made to the standard.

For an explanation of availability and frequency of tests codes, see points 15.3 and 15.4.

Schedule Of Samples For Type Approval Submission

Table	Type of cable	Number and size of samples
2	Single-core PVC insulated 600/1000V cables stranded copper or aluminium conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
3	Single-core PVC insulated 600/1000V cables with solid aluminium conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
4	Two-core PVC insulated 600/1000V cables with stranded copper or aluminium conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
5	Two-core PVC insulated 600/1000V cables with solid aluminium conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
6	Three-core PVC insulated 600/1000V cables with stranded copper or aluminium conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
7	Three-core PVC insulated 600/1000V cables with solid aluminium conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
8	Four-core PVC insulated 600/1000V cables with reduced neutral conductor with stranded copper or aluminium conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
9	Four-core PVC insulated 600/1000V cables with stranded copper or aluminium conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
10	Four-core PVC insulated 600/1000V cables with solid aluminium conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size

Table	Type of cable	Number and size of samples
11	Single-core PVC insulated 1900/3300V cables with stranded copper or aluminium conductor	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
12	Single-core PVC insulated 1900/3300V cables with solid aluminium conductors	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
13	Three-core PVC insulated 1900/3300V cables with stranded copper or aluminium conductors	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
14	Three-core PVC insulated 1900/3300V cables with solid aluminium conductors	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
15	Single-core XLPE insulated 600/1000V cables with stranded copper or aluminium conductors	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
16	Single-core XLPE insulated 600/1000V cables with solid aluminium conductors	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
17	Two-core XLPE insulated 600/1000V cables with stranded copper and aluminium conductors	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
18	Two-core XLPE insulated 600/1000V cables with solid aluminium conductors	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
19	Three-core XLPE insulated 600/1000V cables with stranded copper or aluminium conductors	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
20	Three-core XLPE insulated 600/1000V cables with solid aluminium conductors	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
21	Four-core XLPE insulated 600/1000V cables with reduced neutral conductor and with stranded copper or aluminium conductors	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
22	Four-core XLPE insulated 600/1000V cables with stranded copper or aluminium conductors	One sample of approximately minimum conductor size One sample of approximately maximum conductor size

Table	Type of cable	Number and size of samples
23	Four-core XLPE insulated 600/1000V cables with solid aluminium conductors	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
24	Single-core XLPE insulated 1900/3300V cables with stranded copper or aluminium conductors	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
25	Single-core XLPE insulated 1900/3300V cables with stranded copper or aluminium conductors	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
26	Three-core XLPE insulated 1900/3300V cables with circular stranded copper or solid aluminium conductors	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
27	Three-core XLPE insulated 1900/3300V cables with solid aluminium conductors	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
37	Screened XLPE insulated multi-core 600/1000V cables with stranded or solid copper conductors	One sample of approximately minimum number of cores & maximum conductor size One sample of approximately maximum number of cores and minimum conductor size
38	Five core PVC insulated 600/1000V cables with solid or stranded copper or aluminium conductors	One sample of approximately minimum conductor size One sample of approximately maximum conductor size
39	Five core XLPE insulated 600/1000V cables with solid or stranded copper or aluminium conductors	One sample of approximately minimum conductor size One sample of approximately maximum conductor size

15.10 BS 276:1994

Electric cables for fixed wiring with low emission of smoke and corrosive gases of rated voltage up to and including 450/750V

Tests, Facilities Required And Test Frequencies

Test Description	Cross Reference	Freq	Avail
Absence of Faults on Insulation Spark Test	IS 202	Man	a
Bending Test At Low Temperature (insulation)	HD 505.1.4	F5	b
Bi-Colour Combinations	IS 202	F100	a
Cable Construction	IS 276	F100	a
Colour - Sequence	IS 202	F100	a
Conductor Construction	IS 270	F100	a
Conductor Resistance	IS 270	F100	a
Core Identification - Colour/Number	IS 202	F100	a
Corrosive And Acid Gas Emission (insulation unsheathed cables)	HD602	F5	b
Elongation Test At Low Temperature (insulation)	HD 505.1.4	F5	b
Flame Propagation Of A Single Cable	HD 405.1	F25	b
Hot Set Test (insulation)	HD 505.2.1	F5	b
Impact Test At Low Temperature (insulation)	HD 505.1.4	F5	b
Insulation Resistance	HD 22.2	F5	a
Marking - Legend	IS 276	F100	a
Overall Dimensions	BS EN 60811-1-1	F25	a
Ozone Resistance Test (Low Concentration)	HD 505.2.1 or HD 22.2	1/Yr	o
Pressure Test At High Temperature (insulation)	HD 505.3.1	F5	b
Smoke Emission	HD 606	F5	c
Tensile strength & Elongation Before/After Ageing in Air (insulation)	HD 505	F25	a
Thickness of Insulation	BS 60811-1-1	F100	a
Voltage Test on Complete Cable- Unsheathed	IS 202	F25	a

This is a full list of tests covering the requirements of all applicable Tables of the standard. Not all are necessarily required for selected Tables. Reference should be made to the standard.

For an explanation of availability and frequency of tests codes, see 15.3 and 15.4.

Schedule Of Samples For Type Approval Submission

Table	Type of Cable	Number and size of samples
I	Thermosetting insulated, non-sheathed, single-core cables 450/750V (rigid copper conductor)	For each rigid conductor 1 sample of approx. minimum cross section. 1 sample of approx. maximum cross section
III	Thermosetting insulated, non-sheathed, single-core cables 450/750V (flexible copper conductor)	For each flexible conductor 1 sample of approx. minimum cross section. 1 sample of approx. maximum cross section
V	Thermosetting insulated, non-sheathed single-core cables 300/500V (rigid copper conductor)	As Table 1.

Sample requirements for smoke emission testing

Tables I, III and V	One sample of approximately maximum conductor size One sample of approximately minimum conductor size

Cables in which the insulation is in two layers will be accepted under this scheme, however, all tests shall be applied to the complete insulation, which must meet all the requirements of the specification.

Schedule Of Samples For Type Approval Submission (Fire and Corrosive & Acid Gas Testing)

Two samples are required for flame propagation.

One sample is required for corrosive and acid gas emission testing.

One sample is required for ozone resistance testing.

15.11 IEC 60800 Edition 3 2009

Heating cables with rated voltage of 300/500V for comfort heating and prevention of ice formation.

Tests, Facilities Required And Test Frequencies

Test description	Cross Reference	Freq	Avail
Armour resistance test	IEC 60800	F50	a
Armour wire wrapping test	IEC 60800	F5	a
Armour wire diameter	IEC 60800	F5	a
Cable construction	IEC 60800 7.0	F100	a
Cold Bend Complete Cable -10ºC	IEC 60800 8.2.9	F5	a
Cold Impact Complete Cable -5ºC	IEC 60800 8.2.8	F5	a
Compatibility	IEC 60800 8.2.12	F5	a
Conductor construction	IEC 60800 7.0 / BS EN 60228	F100	a
Conductor resistance	IEC 60800 8.2.1 / BS EN 60228	F100	a
Cyclic Ageing for Heating Cables	IEC 60800 8.2.19	F5	b
Cyclic Ageing for Splices & End Seals	IEC 60800 8.2.20	F5	b
Deformation Test	IEC 60800 8.2.7	F5	a
Flame propagation of a single cable	IEC 60800 8.2.6 BS EN 60332-1-2	F25	b
Heat Shock Complete Cable	IEC 60800 8.2.18	F5	a
Hot Deformation (insulation & sheath)	IEC 60800 8.2.23	F5	a
Hot set test	IEC 60800 8.3.6	F25	b
Marking – legend	IEC 60800	F100	a
Marking – legibility/durability	IEC 60800 8.2.2.1	F5	a
Mass of zinc coating	BS EN 10244	F5	a
Penetration test for electrical conductive screen	IEC 60800 8.2.5	F5	a
Rated output (parallel heating cables)	IEC 62395-1 & IEC 60800 8.2.3	F5	a
Reverse winding test	IEC 60800 8.2.15	F5	a
Screen resistance	IEC 60800 8.2.1	F100	a

Test description	Cross Reference	Freq	Avail
Shrinkage test on insulation	IEC 60800 8.2.17	F50	a
Shrinkage test on sheath	IEC 60800 8.2.17	F5	a
Start-up current (parallel heating cables)	IEC 62395-1 & IEC 60800 8.2.4	F5	a
Tensile strength & Elongation before/after ageing in air (Insulation)	IEC 60800 8.2.10	F25	a
Tensile strength & Elongation before/after ageing in air (Sheath)	IEC 60800 8.2.11	F25	a
Tensile strength complete cable	IEC 60800 8.2.14	F5	b
Thickness of insulation	BS EN 60811-1.1	F100	a
Thickness of sheath	BS EN 60811-1.1	F100	a
UV resistance	IEC 60800 8.2.13	F5	o
Voltage test on complete cable	IEC 60800 8.3.2	F25	a
Water immersion / dielectric test	IEC 60800 8.2.2.2	F5	a
Water immersion / insulation resistance	IEC 60800 8.2.2.3	F5	a

The table above is a full list of tests covering the requirements of all applicable Tables of the standard. Not all are necessarily required for selected Tables. Reference should be made to the standard.

For an explanation of availability and frequency of tests codes, see section 15.3 and 15.4.

Schedule Of Samples For Type Approval Submission

One sample from the bottom and one sample from the top of the manufacturer's range of conductor sizes to be tested.

Notes

1 For two, three and four core cables with the same type of conductors, three samples only will be required as follows:

Two-core. Approximately maximum cross-sectional area of conductor.

Three-core. Approximately mid-way between the minimum and maximum cross-sectional areas of conductor, but not the same as the five-core.

Four-core. Approximately minimum cross-sectional area of conductor.

2 For two, three, four and five core cables with the same type of conductors, four samples only will be required as follows:

Two-core. Approximately maximum cross-sectional area of conductor.

Three-core. Approximately mid-way between the minimum and maximum cross-sectional areas of conductor, but not the same as the five-core.

Four-core. Approximately minimum cross-sectional area of conductor.

Five-core. Approximately mid-way between the minimum and maximum cross-sectional areas of conductor, but not the same as the three core.

3. Sample requirements for flame propagation testing:

One sample for which the overall diameter is >10sqmm and =<15sqmm.

One sample for which the overall diameter is >25sqmm and <40sqmm.

The above samples may be any size and from any Table providing the requirements stated are met.

15.20 IS 3218:2013 (Standard Fire Performance) Based on BS 7629-1:2008

Fire detection and fire alarm systems for buildings – System design, installation, servicing and maintenance

Tests, Facilities Required and Test Frequencies

Test description	Cross reference	Freq	Avail
Absence of faults on insulation Spark test	BS 5099 & BS EN 50356	man	a
Absence of faults on insulation Voltage test	BS 7629-1	man	a
Absence of faults on insulation Voltage test	BS 7629-1	F100	a
Absence of faults on sheath Spark test	BS 5099	man	a
Application of insulation & sheath	BS 7629	F100	n/a
Bending test at low temperature (-15°C) (insulation & sheath)	BS 7655-5.1/6.1	F5	b
Bend test complete cable (0°C)	BS 7629	F5	b
Cable construction	BS 7629-1	F100	a
Colour - clarity and durability of colour	BS 7629-1	F100	a
Colour - sequence	BS7629-1	F100	a
Conductor construction	BS 6390 & BS EN 60228	F100	a
Conductor resistance	BS 6360 & BS EN 60228	F100	a
Core lay, direction and sequence	BS 7629-1	F100	a
Core identification - colour/number	BS 7629-1	F100	a
Corrosive and acid gas emission	BS EN 60754-1	F5	o
Determination of Hardness (insulation)	BS 7655-1.2	F5	b
Drain wire	BS 6360	F25	a
Elongation test at low temperature (insulation & sheath)	BS 7655-5.1/6.1	F5	b
Flame propagation of a single cable	BS EN 60332-1-2	F25	b
Hot Set (insulation)	BS 7655-1.1/1.2/ 5.1	F5	b
Impact test at low temperature (insulation & sheath)	BS 7655-5.1/6.1	F5	b
Impact test at ambient temperature	BS 7629	F5	b
Insulation resistance constant (insulation)	BS 7655-1.2	F5	a

Test description	Cross reference	Freq	Avail
Marking - legend	BS 7269-1	F100	a
Marking - legibility	BS 7629-1	F100	a
Ozone resistance test - alternate low concentration (insulation)	BS 7655-1.2/5.1	1/yr	o
Pressure test at high temperature (insulation & sheath)	BS 7655-1.1/5.1/ 6.1	F5	b
Resistance to fire	BS 6387	1/yr	o
Resistance to fire with water	BS 6387	1/yr	o
Resistance to fire with mechanical shock	BS 6387	1/yr	o
Standard fire performance	IS EN 50200 & IS EN 50200 Annex E2	1/yr	o
Screen - minimum thickness and overlap	BS 7629-1	F50	a
Smoke emission	BS EN 50268-2	F5	o
Tensile Strength & Elongation before/after ageing in air (insulation & sheath)	BS 7655-1.1/1.2/5.1/6.1	F25	a
Tensile Strength & Elongation before/after ageing in air bomb (insulation)	BS 7655-1.1/1.2	F5	b
Thickness of insulation	BS EN 60811-1.1	F100	a
Thickness of sheath	BS EN 60811-1.1	F100	a
Voltage test on completed cable	BS 7629-1	F25	a
Water absorption by capacitance method (insulation)	BS 7655-1.2	F5	o
Water absorption (insulation)	BS-7655-1.2	F5	a
Water immersion test (sheath)	BS 7655-6.1	F5	a

For an explanation of availability and frequency of tests codes, see sections 15.3 and 15.4.

15.20 IS 3218:2013 (Standard Fire Performance) Based on BS 7629-1:2008

Schedule Of Samples For Type Approval Submission

For full approval to BS 7629 part 1 only, three samples including the following:

* one of minimum conductor size and maximum number of cores.

* one of maximum conductor size and minimum number of cores.

* one of any conductor size with an intermediate number of cores.

For limited approvals covering up to three ranges in the number of cores, then only two samples are required:

* one of minimum conductor size and maximum number of cores.

* one of maximum conductor size and minimum number of cores.

For both full and limited approval the smallest and largest cables shall be subjected to fire resistance tests.

Cable Marking

Cable marking must conform to the marking requirements of the base cable standard (e.g., BS 7629-1), with the additional marking of “IS 3218” and “Standard” (these must be kept adjacent to each other). If the cable is also to be marked with a survival time classification in the IS EN 50200 test (PH30 etc.), verified by BASEC and included in the certificate, then this classification marking must be separated from the “IS 3218 Standard” marking and come immediately after “IS EN 50200”, e.g., “IS EN 50200 PH30”. For further information contact

15.21 IS 3218:2013 (Enhanced Fire Performance) Based on BS 7629-1:2008

Fire detection and fire alarm systems for buildings – System design, installation, servicing and maintenance

Tests, Facilities Required And Test Frequencies

Test description	Cross reference	Freq	Avail
Absence of faults on insulation Spark test	BS 5099 & BS EN 50356	man	a
Absence of faults on insulation Voltage test	BS 7629-1	man	a
Absence of faults on insulation Voltage test	BS 7629-1	F100	a
Absence of faults on sheath Spark test	BS 5099	man	a
Application of insulation and sheath	BS 7629	F100	n/a
Bending test at low temperature (-15°C) insulation & sheath	BS 7655-5.1/6.1	F5	b
Bend test complete cable (0°C)	BS 7629	F5	b
Cable construction	BS 7629-1	F100	a
Colour - clarity and durability of colour	BS 7629-1	F100	a
Colour - sequence	BS7629-1	F100	a
Conductor construction	BS 6360 & BS EN 60228	F100	a
Conductor resistance	BS 6360 & BS EN 60228	F100	a
Core lay, direction and sequence	BS 7629-1	F100	a
Core identification - colour/number	BS 7629-1	F100	a
Corrosive and acid gas emission	BS EN 60754-1	F5	o
Determination of Hardness (insulation)	BS 7655-1.2		
Drain wire	BS 6360	F25	a
Elongation test at low temperature (insulation & sheath)	BS 7655-5.1/6.1	F5	b
Flame propagation of a single cable	BS EN 60332-1-2	F25	b
Hot Set (insulation)	BS 7655-1.1/1.2 /5.1	F5	b
Impact test at low temperature (insulation & sheath)	BS 7655-5.1/6.1	F5	b
Impact test at ambient temperature	BS 7629	F5	b
Insulation resistance constant (insulation)	BS 7655-1.2	F5	a
Marking - legend	BS 7269-1	F100	a

Test description	Cross reference	Freq	Avail
Marking - legibility	BS 7629-1	F100	a
Ozone resistance test - alternate low concentration (insulation)	BS 7655-1.2/5.1	1/yr	o
Pressure test at high temperature (insulation & sheath)	BS 7655-1.1/5.1/ 6.1	F5	b
Resistance to fire	BS 6387	1/yr	o
Resistance to fire with water	BS 6387	1/yr	o
Resistance to fire with mechanical shock	BS 6387	1/yr	o
Enhanced fire performance	IS EN 50200 & BS 8434-2	1/yr	o
Screen - minimum thickness and overlap	BS 7629-1	F50	a
Smoke emission	BS EN 50268-2	F5	o
Tensile Strength & Elongation before/after ageing in air (insulation & sheath)	BS 7655-1.1/1.2/ 5.1/6.1	F25	a
Tensile Strength & Elongation before/after ageing in air bomb (insulation)	Bs 7655-1.1/1.2	F5	b
Thickness of insulation	BS EN 60811-1.1	F100	a
Thickness of sheath	BS EN 60811-1.1	F100	a
Voltage test on completed cable	BS 7629-1	F25	a
Water absorption by capacitance method (insulation)	BS 7655-1.2	F5	o
Water absorption (insulation)	BS-7655-1.2	F5	a
Water immersion test (sheath)	BS 7655-6.1	F5	a

For an explanation of availability and frequency of tests codes, see sections 15.3 and 15.4.

15.21 IS 3218:2013 (Enhanced Fire Performance) Based on BS 7629-1:2008 Continued

Schedule Of Samples For Type Approval Submission

For full approval to BS 7629 part 1 only, three samples including the following:

* one of minimum conductor size and maximum number of cores

* one of maximum conductor size and minimum number of cores

* one of any conductor size with an intermediate number of cores

For limited approvals covering up to three ranges in the number of cores, then only two samples are required:

* one of minimum conductor size and maximum number of cores

* one of maximum conductor size and minimum number of cores

For both full and limited approval the smallest and largest cables shall be subjected to fire resistance tests.

Cable Marking

Cable marking must conform to the marking requirements of the base cable standard (e.g., BS 7629-1), with the additional marking of “IS 3218” and “Enhanced” (these must be kept adjacent to each other). If the cable is also to be marked with a survival time classification in the IS EN 50200 test (PH120 etc.), verified by BASEC and included in the certificate, then this classification marking must be separated from the “IS 3218 Enhanced” marking and come immediately after “IS EN 50200”, e.g., “IS EN 50200 PH120”. For further information contact the BASEC office.

15.22 IS 201-4:2013 + Corr 1:2013 + Corr 2:2014

Polyvinyl Chloride Insulated Cables of Rated Voltages up to and Including 450/750V – Part 4: PVC and Low Smoke Halogen Free Sheathed cables for fixed wiring.

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Absence of faults on insulation (voltage test)	IS EN 50395	10.3.2	IS EN 50395	10.3	F100	a
Absence of faults on insulation (spark test)	IS EN 50395	10.2.2	IS EN 50395	10.2	man	a
Application of insulation/sheath	IS 201-4	-	Visual Exam	-	F100	n/a
Assessment of Halogens	IS EN 50525-1	Annex B	IS EN 50525-1	Annex B	F5	b
Bending test at low temperature (insulation)	IS EN 50363-3 IS EN 50363-5 IS EN 50363-4.1	-	IS EN 60811-504	4.2	F5	b
Bending test at low temperature (sheath)	BS 7655-4.2 BS 7655-6.1	-	IS EN 60811-504	4.3	F5	b
Bi-colour combinations	IS EN 50525-1	5.4.4	IS EN 50396	5.2	F100	a
Cable construction	IS 201-4	3-16 & T 1-8 & T10-15	Visual Exam	-	F100	n/a
Core Colour - clarity and durability of colour	IS 201-4	-	IS EN 50396	5.1	F100	a
Conductor construction	IS 201-4	3-16	IS EN 60228	-	F100	a
Conductor resistance	IS EN 50395	5	IS EN 60228	-	F100	a
Core I/D - Colour	IS 201-4	3-16	Visual Exam	-	F100	n/a
Core assembly and sequence	IS 201-4	3-16	Visual Exam	-	F100	n/a
Corrosive & acid gas (sheath)	BS 7655-6.1	-	IS EN 60754-1	-	F5	b

15.22 IS 201-4:2013 + Corr 1:2013 + Corr 2:2014 Continued

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Elongation at low temperature (insulation)	IS EN 50363-3 IS EN 50363-5 IS EN 50363-4.1	-	IS EN 60811-505	4.2	F5	b
Elongation at low temperature (sheath)	BS 7655-4.2 BS 7655-6.1	-	IS EN 60811-505	4.3	F5	b
Flame propagation single cable	IS EN 60332-1-2	Annex A	IS EN 60332-1-2	-	F25	b
Heat shock (insulation)	IS EN 50363-3 IS EN 50363-4.1	-	IS EN 60811-509	4.3	F50	a
Heat shock (sheath)	BS 7655-4.2	-	IS EN 60811-509	4.4	F50	a
Hot set (insulation)	BS 7655-1.3 IS EN 50363-5	3	IS EN 60811-507	-	F5	b
Impact test at low temperature (sheath)	BS 7655-6.1	-	IS EN 60811-506	4	F5	b
Impact test at -5°C	IS EN 60811-506	4.6	IS EN 60811-506	4.3	F5	b
Insulation resistance	IS 201-4	T1-8 & T10-15	IS EN 50395	8.1	F5	a
Insulation resistance constant (insulation)	BS 7655-1.3 BS 7655-4.2	-	BS 6469-99.2	8	F5	a
Long term resistance to d.c.	IS EN 50395	9.3	IS EN 50395	9	F5	b
Loss of mass (insulation)	IS EN 50363-3 IS EN 50363-4.1	-	IS EN 60811-409	4	F5	a
Loss of mass (sheath)	BS 7655-4.2	-	IS EN 60811-409	6	F5	a

15.22 IS 201-4:2013 + Corr 1:2013 + Corr 2:2014 Continued

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Marking legend	IS 201-4	3-16	IS 201-1	3	F100	a
Marking durability of printed information	IS EN 50525-1	6.6.1	IS EN 50396	5.1	F100	a
Mean overall diameter	IS 201-4	T1-8 & T10-15	IS EN 50396	4.4	F25	a
Non-contamination test	IS 201-4	T9	IS EN 60811-401	4.2.3.4	F25	a
Ovality	IS 201-4	T9	IS EN 50396	4.4.2	F25	a
Ozone resistance (low concentration) (insulation)	IS EN 50363-5	6	IS EN 50396	8.1.3	1/YR	o
Pressure test at high temperature (sheath)	BS 7655 4.2 BS 7655-6.1	-	IS EN 60811-508	4.4	F5	b
Pressure test at high temperature (insulation)	IS EN 50363-3 IS EN 50363-4.1 IS EN 50363-5	3	IS EN 60811-508	4.3	F5	b
Tensile & elongation before & after ageing (insulation)	IS EN 50363-3 IS EN 50363-4.1 IS EN 50363-5 BS 7655-1.3	1.1 & 1.2	IS EN 60811-401 IS EN 60811-501	- 4.2	F25	a
Tensile & elongation before & after ageing (sheath)	BS 7655-4.2 BS 7655-6.1	-	IS EN 60811-401 IS EN 60811-501	- 4.3	F25	a
Thickness (insulation)	IS 201-4	T1-8 & T10-15	IS EN 50396	4.1	F100	a

15.22 IS 201-4:2013 + Corr 1:2013 + Corr 2:2014 Continued

Tests, Facilities Required and Test Frequencies

Test description	Requirement		Test method		Freq	Avail
	Specification	Clause	Specification	Clause		
Thickness(sheath)	IS 201-4	T1-8 & T10-15	IS EN 50396	4.2/4.3	F100	a
Sheath colour	IS 201-4	3-16	Visual Exam	-	F100	a
Smoke emission	IS EN 61034-2	Annex B	BS EN 61034-2	-	F5	c
Voltage test complete cable (sheathed)	IS EN 50395	6	IS EN 50395	6	F25	a
Voltage test cores	IS EN 50395	7.3	IS EN 50395	7	F5	a
Water absorption gravimetric (insulation)	BS 7655-1.3	-	IS EN 60811-402	4.4	F5	a
Water immersion (sheath)	BS 7655-6.1	-	BS 6469-99.1	14	F5	a

This is a full list of tests covering the requirements of all applicable Tables of the standard.
Not all are necessarily required for selected Tables. Reference should be made to the standard.
For an explanation of availability and frequency of tests codes, see 15.3 and 15.4

15.22 IS 201-4:2013 + Corr 1:2013 + Corr 2:2014 Continued

Schedule of Samples for Type Approval Submission

Table	Type of Cable	Number and size of samples
1 IE-N05VVH4-R IE-N05VVH4-U	PVC/PVC Twin flat with insulated earth conductor	1 sample smallest conductor size, class 1 conductor 1 sample maximum conductor size, class 2 conductor
2 IE-N05VVH4-K	PVC/PVC Flat twin with insulated earth	1 sample
3 IE-N05VVH2-U IE-N05VVH2-R	PVC/PVC Twin flat	1 sample smallest conductor size, class 1 conductor 1 sample maximum conductor size, class 2 conductor
4 IE-N05VV-U IE-N05VV-R	PVC/PVC Single core	1 sample smallest conductor size, class 1 conductor 1 sample maximum conductor size, class 2 conductor
5 IE-N05VVH-U IE-N05VVH-R	PVC/PVC single flat with insulated earth	1 sample smallest conductor size, class 1 conductor 1 sample maximum conductor size, class 2 conductor

15.22 IS 201-4:2013 + Corr 1:2013 + Corr 2:2014 Continued

Schedule of Samples for Type Approval Submission

Table	Type of Cable	Number and size of samples
6 IE-N05VVH6-R IE-N05VVH6-U	PVC/PVC Three core	1 sample smallest conductor size, class 1 conductor 1 sample maximum conductor size, class 2 conductor
7 IE-N05VVV-U (“G or “X”) IE-N05VVV-R (“G” or “X”)	Light polyvinyl chloride sheathed cable	1 sample class 2 conductor, two core, with the smallest conductor size 1 sample class 1 conductor, three core, with mid range conductor size 1 sample class 2 conductor, five core, with the largest conductor size
8 NYM	Light polyvinyl chloride sheathed cable (NYM)	1 sample class 2 conductor, one core, with the smallest conductor size 1 sample class 1 conductor, three core, with mid range conductor size 1 sample class 2 conductor, five core, with the largest conductor size
10 IE-N05Z1ZH4-U IE-N05Z1ZH4-R	Halogen free twin flat with insulated earth	1 sample smallest conductor size, class 1 conductor 1 sample maximum conductor size, class 2 conductor 1 sample class 5 conductor
11 IE-N05Z1ZH2-U IE-N05Z1ZH2-R	Halogen free twin flat	1 sample smallest conductor size, class 1 conductor 1 sample maximum conductor size, class 2 conductor

15.22 IS 201-4:2013 + Corr 1:2013 + Corr 2:2014 Continued

Schedule of Samples for Type Approval Submission

Table	Type of Cable	Number and size of samples
12 IE-N07Z1Z-U IE-N07Z1Z-R	Halogen free single core sheathed	1 sample smallest conductor size, class 1 conductor 1 sample maximum conductor size, class 2 conductor
13 IE-N05Z1ZH-U IE-N05Z1ZH-R	Halogen free single flat with insulated earth	1 sample smallest conductor size, class 1 conductor 1 sample maximum conductor size, class 2 conductor
14 IE-N05Z1ZH6-U IE-N05Z1ZH6-R	Halogen free three core flat with insulated earth	1 sample smallest conductor size, class 1 conductor 1 sample maximum conductor size, class 2 conductor
15 NHXMH-O NHXMH-J	Halogen free circular cable with insulated earth for fixed installations (NHXM)	1 sample class 2 conductor, one core, with the smallest conductor size 1 sample class 1 conductor, three core, with mid range conductor size 1 sample class 2 conductor, five core, with the largest conductor size

Cables in which the insulation is in two layers will be accepted under this scheme, however, all tests shall be applied to the complete insulation, which must meet all the requirements of the specification.

15.22 IS 201-4:2013 + Corr 1:2013 + Corr 2:2014 Continued

Schedule Of Samples For Type Approval Submission (Smoke Emission, Corrosive & Acid Gas Testing and Ozone Testing)

Corrosive and acid gas emission testing: One sample of each of the relevant cable components.

Ozone resistance testing: One sample is required.

Sample requirements for smoke emission testing

Tables 10, 11, 12 and 14	One sample of approximately maximum conductor size One sample of approximately minimum conductor size
Table 13	One sample any size
Table 15	1 sample approximately minimum conductor size and approximately maximum number of cores 1 sample approximately maximum conductor size and approximately minimum number of cores

15.23 IS 3218:2013 (Standard Fire Performance) Based on BS 7629-1:2015

Fire detection and fire alarm systems for buildings – System design, installation, commissioning, servicing and maintenance

Tests, Facilities Required And Test Frequencies

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
Absence of faults on insulation Spark Test	BS 7629-1 BASEC PCR	6.2 Note 1 6.4	BS EN 62230	-	man	a
Absence of faults on sheath Spark Test	BS 7629-1	10.4	BS EN 62230	-	man	a
Application of insulation	BS 7629-1	6.2	Visual Examination	-	F100	n/a
Application of sheath	BS 7629-1	10.2	Visual Examination	-	F100	n/a
Bending characteristics complete cable at 0ºC	BS 7629-1	16.4	BS 7629-1	Annex D	F5	a
Bending test at low temperature -15ºC insulation	BS EN 50363-5	Table 2	BS 60811-504	4.2	F5	b
Bending test at low temperature -35ºC insulation	BS EN 50363-1	Table 2	BS 60811-504	4.2	F5	b
Bending test at low temperature -15ºC sheath	BS 7655-6.1	Table 2	BS 60811-504	4.3	F5	b
Core identification colour -colour & number	BS 7629-1	7.1	Visual Examination	-	F100	a
Core identification - clarity and durability	BS 7629-1	7.2	BS EN 50396	5.1	F100	a
Conductor construction	BS 7629-1	5.1	BS EN 60228	-	F100	a
Conductor and drain wire resistance	BS 7629-1	14.2	BS EN 60228	-	F100	a
Continuity of tin coating, conductor & drain wire	BS 7629-1	5.1/5.2	BS 7629-1	Annex B	F5	b
Core lay, direction and sequence	BS 7629-1	8	Visual Examination	-	F100	a
Corrosive and acid gas emission	BS 7629-1	16.2	BS EN 60754-1	-	F5	o

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15.23 IS 3218:2013 (Standard Fire Performance) Based on BS 7629-1:2015 Continued

Tests, Facilities Required And Test Frequencies

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
Drain wire construction	BS 7629-1	5.2	BS EN 60228	-	F25	a
Durability of printed information	BS 7629-1	11.7	BS EN 50396	5.1	F5	a
Elongation test at low temperature (-15ºC) insulation	BS EN 50363-5	Table 2	BS 60811-505	4.2	F5	b
Elongation test at low temperature (-35ºC)insulation	BS EN 50363-1	Table 2	BS 60811-505	4.2	F5	b
Elongation test at low temperature (-15ºC)sheath	BS 7655-6.1	Table 2	BS 60811-505	4.2	F5	b
Flame propagation of a single cable	BS 7629-1	15.4	BS EN 60332-1-2	-	F25	b
Hardness (insulation)	BS 7655-1.2	Table 2	BS 903	Part A26	F5	b
Hot set test (Insulation)	BS 7655-1.2 BS EN 50363-1/-5	Table 2	BS EN 60811-507	-	F5	b
Impact resistance complete cable at 20ºC	BS 7629-1	16.5	BS 7629-1	Annex E	F5	b
Impact test at low temperature -15ºC sheath	BS 7655-6.1	Table 2	BS 60811-506	-	F5	b
Insulation resistance constant (insulation)	BS 7655-1.2	Table 2	BS 6469-99.2	8	F5	a
Length of lay of assembled cores	BS 7629-1	8	BS 7629-1	15.3	F50	a
Marking - legend	BS 7629-1	11	Visual Examination	-	F100	a
Ovality	BS 7629-1	15.7	BS EN 50396	4.4	F50	a
Ozone resistance	BS 7655-1.2/ BS EN 50363-5	Table 2	BS EN 50396	8.1.3	1/yr	o
Pressure test at high temperature (insulation)	BS EN 50363-5	Table 2	BS 60811-508	4.3	F5	b
Pressure test at high temperature (sheath)	BS 7655-6.1	Table 2	BS 60811-508	4.4	F5	b

15.23 IS 3218:2013 (Standard Fire Performance) Based on BS 7629-1:2015 Continued

Tests, Facilities Required and Test Frequencies - Continued

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
Test to resistance to fire category STANDARD 30	BS 7629-1	15.6.2	BS EN 50200 & BS EN 50200 Annex E	-	1/yr	o
Screen minimum thickness & overlap	BS 7629-1	9	Visual Examination	-	F50	a
Shrinkage of insulation	BS 7629-1	16.3	BS EN 60811-502	-	F5	a
Shrinkage of sheath	BS 7629-1	16.6	BS 7629-1	Annex F	F5	a
Smoke emission	BS 7629-1	15.5	BS EN 61034-2	-	F5	o
Tensile Strength & Elongation before/after ageing in air (insulation)	BS 7655-1.2 BS EN 50363-1/-5	Table 2	BS EN 60811-401 BS EN 60811-501	4.2 -	F25	a
Tensile Strength & Elongation before/after ageing in air bomb (insulation)	BS 7655-1.2	Table 2	BS EN 60811-412	-	F25	b
Tensile Strength & Elongation before/after ageing in air (sheath)	BS 7655-6.1	Table 2	BS EN 60811-401 BS EN 60811-501	4.3 -	F25	a
Thickness of insulation	BS 7629-1	6.3	BS EN 50396	4.1	F100	a
Thickness of sheath	BS 7629-1	10.3	BS EN 50396	4.2	F100	a
Voltage withstand	BS 7629-1	15.2	BS 7629-1	Annex C	F25	a
Voltage test on complete cable	BS 7629-1	14.3	BS EN 50395	10.3	F100	a
Water immersion test	BS 7655-6.1	Table 2	BS 6469:99.1	14	F5	a

The above table is a full list of tests covering the requirements of all applicable Tables of the standard. Not all are necessarily required for selected Tables. Reference should be made to the standard.

For an explanation of availability and frequency of tests codes, see sections 12.3 and 12.4. [INDEX]

15.23 IS 3218:2013 (Standard Fire Performance) Based on BS 7629-1:2015 Continued

Schedule of samples for type approval submission

Separate samples are required for (1) cables of designated fire resistance category STANDARD 30 and for (2) cables of designated fire resistance category ENHANCED 120.

For approval to BS 7629:2015 Table 2 only, two samples are required, including the following:

- one of minimum conductor size and minimum number of cores of the range applied for.
- one of maximum conductor size and maximum number of cores of the range applied for.

For approval to BS 7629:2015 Table 3 only, two samples are required, including the following:

- one of maximum conductor size and minimum number of cores of the range applied for.
- one of maximum number of cores of the range applied for (any conductor size).

For approval to Table 2 and Table 3 with the same designated fire resistance category, three samples are required:

- one of minimum conductor size and minimum number of cores of the range applied for.
- one of maximum conductor size and approx. median number of cores of the combined ranges applied for from Tables 2 and 3.
- one of maximum number of cores of the range applied for (any conductor size).

Each of the above samples shall be subject the smoke emission test and to the fire resistance test(s) relevant to the declared fire resistance category.

For a single cable design intended to provide performance of more than one designated fire resistance category, all necessary alternative fire resistance tests shall be performed (BS EN 50200 / BS EN 50200 Annex E).

Only one test shall be successfully performed to BS EN 50200. [Note: this supersedes the requirements of BS 5839-1:2013 clause 26.2.]

15.23 IS 3218:2013 (Standard Fire Performance) Based on BS 7629-1:2015 Continued

Schedule of samples for type approval submission

For corrosive and acid gas testing one of the above cable samples is to be tested, which shall contain the maximum number of separate components. If necessary additional components shall be selected from cables of all designated fire resistance categories such that all unique components are tested. One corrosive and acid gas test shall be performed on each identified component.

Cables in each of the above designated fire resistance categories may be dual approved to BS 7629-1:2015 and BS 6387:2013. In this case each sample tested for BS 7629-1:2015 shall also be tested to the relevant BS 6387:2013 fire tests. Such dual approvals will be subject to the following conditions:

- All the requirements of BS 6387:2013 see 12.40 must be met.
- Approvals to all categories of BS 6387:2013 may be awarded.
- The cables shall be dual marked BS 7629-1 and BS 6387 in accordance with each standard. The markings shall also include the categories of BS 6387 for which approval is granted.
- Cables may not be BASEC marked and also marked BS 6387 unless a dual approval as above is held.

15.24 IS 3218:2013 (Enhanced Fire Performance) Based on BS 7629-1:2015

Fire detection and fire alarm systems for buildings – System design, installation, commissioning, servicing and maintenance

Tests, Facilities Required And Test Frequencies

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
Absence of faults on insulation Spark Test	BS 7629-1 BASEC PCR	6.2 Note 1 6.4	BS EN 62230	-	man	a
Absence of faults on sheath Spark Test	BS 7629-1	10.4	BS EN 62230	-	man	a
Application of insulation	BS 7629-1	6.2	Visual Examination	-	F100	n/a
Application of sheath	BS 7629-1	10.2	Visual Examination	-	F100	n/a
Bending characteristics complete cable at 0ºC	BS 7629-1	16.4	BS 7629-1	Annex D	F5	a
Bending test at low temperature -15ºC insulation	BS EN 50363-5	Table 2	BS 60811-504	4.2	F5	b
Bending test at low temperature -35ºC insulation	BS EN 50363-1	Table 2	BS 60811-504	4.2	F5	b
Bending test at low temperature -15ºC sheath	BS 7655-6.1	Table 2	BS 60811-504	4.3	F5	b
Core identification colour -colour & number	BS 7629-1	7.1	Visual Examination	-	F100	a
Core identification - clarity and durability	BS 7629-1	7.2	BS EN 50396	5.1	F100	a
Conductor construction	BS 7629-1	5.1	BS EN 60228	-	F100	a
Conductor and drain wire resistance	BS 7629-1	14.2	BS EN 60228	-	F100	a
Continuity of tin coating, conductor & drain wire	BS 7629-1	5.1/5.2	BS 7629-1	Annex B	F5	b
Core lay, direction and sequence	BS 7629-1	8	Visual Examination	-	F100	a
Corrosive and acid gas emission	BS 7629-1	16.2	BS EN 60754-1	-	F5	o

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15.24 IS 3218:2013 (Enhanced Fire Performance) Based on BS 7629-1:2015 Continued

Tests, Facilities Required And Test Frequencies

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
Drain wire construction	BS 7629-1	5.2	BS EN 60228	-	F25	a
Durability of printed information	BS 7629-1	11.7	BS EN 50396	5.1	F5	a
Elongation test at low temperature (-15ºC) insulation	BS EN 50363-5	Table 2	BS 60811-505	4.2	F5	b
Elongation test at low temperature (-35ºC)insulation	BS EN 50363-1	Table 2	BS 60811-505	4.2	F5	b
Elongation test at low temperature (-15ºC)sheath	BS 7655-6.1	Table 2	BS 60811-505	4.2	F5	b
Flame propagation of a single cable	BS 7629-1	15.4	BS EN 60332-1-2	-	F25	b
Hardness (insulation)	BS 7655-1.2	Table 2	BS 903	Part A26	F5	b
Hot set test (Insulation)	BS 7655-1.2 BS EN 50363-1/-5	Table 2	BS EN 60811-507	-	F5	b
Impact resistance complete cable at 20ºC	BS 7629-1	16.5	BS 7629-1	Annex E	F5	b
Impact test at low temperature -15ºC sheath	BS 7655-6.1	Table 2	BS 60811-506	-	F5	b
Insulation resistance constant (insulation)	BS 7655-1.2	Table 2	BS 6469-99.2	8	F5	a
Length of lay of assembled cores	BS 7629-1	8	BS 7629-1	15.3	F50	a
Marking - legend	BS 7629-1	11	Visual Examination	-	F100	a
Ovality	BS 7629-1	15.7	BS EN 50396	4.4	F50	a
Ozone resistance	BS 7655-1.2/ BS EN 50363-5	Table 2	BS EN 50396	8.1.3	1/yr	o
Pressure test at high temperature (insulation)	BS EN 50363-5	Table 2	BS 60811-508	4.3	F5	b
Pressure test at high temperature (sheath)	BS 7655-6.1	Table 2	BS 60811-508	4.4	F5	b

15.24 IS 3218:2013 (Enhanced Fire Performance) Based on BS 7629-1:2015 Continued

Tests, Facilities Required and Test Frequencies - Continued

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
Test to resistance to fire category ENHANCED 120	BS 7629-1	15.6.4	BS EN 50200 & BS 8434-2	-	1/yr	o
Screen minimum thickness & overlap	BS 7629-1	9	Visual Examination	-	F50	a
Shrinkage of insulation	BS 7629-1	16.3	BS EN 60811-502	-	F5	a
Shrinkage of sheath	BS 7629-1	16.6	BS 7629-1	Annex F	F5	a
Smoke emission	BS 7629-1	15.5	BS EN 61034-2	-	F5	o
Tensile Strength & Elongation before/after ageing in air (insulation)	BS 7655-1.2 BS EN 50363-1/-5	Table 2	BS EN 60811-401 BS EN 60811-501	4.2 -	F25	a
Tensile Strength & Elongation before/after ageing in air bomb (insulation)	BS 7655-1.2	Table 2	BS EN 60811-412	-	F25	b
Tensile Strength & Elongation before/after ageing in air (sheath)	BS 7655-6.1	Table 2	BS EN 60811-401 BS EN 60811-501	4.3 -	F25	a
Thickness of insulation	BS 7629-1	6.3	BS EN 50396	4.1	F100	a
Thickness of sheath	BS 7629-1	10.3	BS EN 50396	4.2	F100	a
Voltage withstand	BS 7629-1	15.2	BS 7629-1	Annex C	F25	a
Voltage test on complete cable	BS 7629-1	14.3	BS EN 50395	10.3	F100	a
Water immersion test	BS 7655-6.1	Table 2	BS 6469:99.1	14	F5	a

The above table is a full list of tests covering the requirements of all applicable Tables of the standard. Not all are necessarily required for selected Tables. Reference should be made to the standard.

For an explanation of availability and frequency of tests codes, see sections 12.3 and 12.4. [INDEX]

15.24 IS 3218:2013 (Enhanced Fire Performance) Based on BS 7629-1:2015 Continued

Schedule of samples for type approval submission

Separate samples are required for (1) cables of designated fire resistance category STANDARD 30 and for (2) cables of designated fire resistance category ENHANCED 120.

For approval to BS 7629:2015 Table 2 only, two samples are required, including the following:

- one of minimum conductor size and minimum number of cores of the range applied for.
- one of maximum conductor size and maximum number of cores of the range applied for.

For approval to BS 7629:2015 Table 3 only, two samples are required, including the following:

- one of maximum conductor size and minimum number of cores of the range applied for.
- one of maximum number of cores of the range applied for (any conductor size).

For approval to Table 2 and Table 3 with the same designated fire resistance category, three samples are required:

- one of minimum conductor size and minimum number of cores of the range applied for.
- one of maximum conductor size and approx. median number of cores of the combined ranges applied for from Tables 2 and 3.
- one of maximum number of cores of the range applied for (any conductor size).

Each of the above samples shall be subject the smoke emission test and to the fire resistance test(s) relevant to the declared fire resistance category.

For a single cable design intended to provide performance of more than one designated fire resistance category, all necessary alternative fire resistance tests shall be performed (BS EN 50200 / BS EN 50200 Annex E / BS 8434-2).

Only one test shall be successfully performed to BS EN 50200. [Note: this supersedes the requirements of BS 5839-1:2013 clause 26.2.]

15.24 IS 3218:2013 (Enhanced Fire Performance) Based on BS 7629-1:2015 Continued

Schedule of samples for type approval submission

For corrosive and acid gas testing one of the above cable samples is to be tested, which shall contain the maximum number of separate components. If necessary additional components shall be selected from cables of all designated fire resistance categories such that all unique components are tested. One corrosive and acid gas test shall be performed on each identified component.

Cables in each of the above designated fire resistance categories may be dual approved to BS 7629-1:2015 and BS 6387:2013. In this case each sample tested for BS 7629-1:2015 shall also be tested to the relevant BS 6387:2013 fire tests. Such dual approvals will be subject to the following conditions:

- All the requirements of BS 6387:2013 see 12.40 must be met.
- Approvals to all categories of BS 6387:2013 may be awarded.
- The cables shall be dual marked BS 7629-1 and BS 6387 in accordance with each standard. The markings shall also include the categories of BS 6387 for which approval is granted.
- Cables may not be BASEC marked and also marked BS 6387 unless a dual approval as above is held.

16 SCHEME F REQUIREMENTS

16.1 SCOPE

Scheme F covers cables designed to operate at medium voltage (6kV to 33kV).

Where a cable type listed in this scheme is technically similar to a cable type listed in another scheme, the manufacturer's production of these cables may, at BASEC's discretion, be treated for sampling purposes as part of the other scheme (except for HAR scheme approvals).

16.2 AVAILABILITY OF TEST EQUIPMENT

Each table of tests includes a code a, b or o, which indicates the requirement for availability of test equipment as follows:

a Test or measurement which must be conducted at the place of manufacture.

b Test or measurement which if not conducted at the place of manufacture may be conducted at any laboratory of the Licensee.

o Test or measurement which if not conducted at a laboratory of the Licensee may be conducted by any BASEC approved laboratory.

Any deviations from the specified test equipment availability must be authorised by BASEC, by the manufacturer applying for a BASEC concession using form BSF 238.

16.3 FREQUENCY OF TESTS

Each table of tests includes a frequency at which each test will be conducted on the samples selected by BASEC.

F100 Test is conducted on 100% of the samples selected.

F50 Test is conducted on 50% of the samples selected.

F25 Test is conducted on 25% of the samples selected.

F5 Test is conducted on 5% of the samples selected.

1/5y Test is conducted once every 5 years.

man Test is conducted on every product by the manufacturer.

16.4 BS 6622:2007 Incorporating Corrigenda Nos. 1 and 2.

Electric Cables- Armoured cables with thermosetting insulation for rated voltages from 3.8/6.6kV to 19/33kV-Requirements and Test Methods

Table 1 Tests, Facilities Required and Test Frequencies.

Test Description	Cross Reference	Freq	Avail
Absence of faults on sheath (spark test)	BS 5099 and BS EN 50356	man	a
Adherence of screens during short circuit	BS 6622	1/5y	b
Armour wire dimensions	BS 6622	F5	a
Armour wire, mass of zinc coating	BS 6622	F5	a
Armour wire, wrapping test	BS 6622	F5	a
Armour wire, tensile test (aluminium wire)	BS 6622	F5	a
Armour wire, wet compatibility test	BS 6622	F5	a
Assembly of three core cables	BS 6622	F25	a
Bending test at low temperature	BS 7655-4.2	F5	a
Cable construction	BS 6622	F100	a
Carbon black content	BS 7655-10.1	F5	b
Circularity of insulated core	BS 6622	F100	a
Compatibility	BS 6622	F25	a
Conductor, material and construction	BS EN 60228	F50	a
Conductor resistance	BS EN 60228	F100	a
Conductor screen, application	BS 6622	F50	a
Conductor screen, resistivity	BS 6622	F5	a
Copper wire screen resistance	BS 6622 and BS EN 60228	F100	a
d.c. voltage test on oversheath (where applicable)	BS 6622	F100	a
Elongation test at low temperature	BS 7655-4.2	F5	b
Flame propagation (PVC sheathed cables only)	BS EN 60332-1-2	F25	b
Four hour voltage test	BS 6622	F5	a
Impact test at low temperature	BS 7655-4.2	F5	b
Insulation, colour	BS 6622	F100	a
Insulation, hot set test	BS 7655-1.2/1.3	F25	a

16.4 BS 6622:2007 Incorporating Corrigenda Nos. 1 and 2 Continued

Electric Cables- Armoured cables with thermosetting insulation for rated voltages from 3.8/6.6kV to 19/33kV-Requirements and Test Methods

Table 1 Tests, Facilities Required and Test Frequencies.

Test Description	Cross Reference	Freq	Avail
Insulation, thickness & concentricity	BS 6622	F100	a
Insulation resistance constant (insulation)	BS 7655-1.2/1.3	F5	a
Insulation resistance constant (sheath)	BS 7655-4.2	F5	a
Insulation screen, application	BS 6622	F50	a
Insulation screen, cold strippability	BS 6622	F25	a
Insulation screen, resistivity	BS 6622	F5	a
Loss of mass	BS 7655-4.2	F5	a
Marking - legend	BS 6622	F100	a
Marking - legibility	BS 6622	F100	a
Metallic layer, application	BS 6622	F50	a
Ozone resistance test (alternative-low concentration)	BS 7655-1.2	F5	o
Oversheath, shrinkage (type TS2 only)	BS 6622 and BS EN 60811-1-3	F5	a
Oversheath, thickness	BS EN 60811-1-1	F100	a
Partial discharge test	BS 6622 and BS EN 60885-3	F100	a
Pressure test at high temperature	BS 7655-4.2/10.1	F5	b
Properties after exposure to UV	BS 7655-10.1	F5	o
Resistance to cracking (heat shock)	BS 7655-4.2	F50	a
Semi-conducting lapped bedding layer, application	BS6622	F50	a
Semi-conducting lapped bedding layer, resistivity	BS 6622	F5	a
Separation layer, material	BS 6622	F5	a
Separation layer, thickness	BS EN 60811-1-1	F100	a
Tensile strength and elongation before/after ageing in air (insulation)	BS 7655-1.2/1.3	F25	a
Tensile strength and elongation before/after ageing in air (sheath)	BS 7655-4.2/10.1	F25	a
Tensile strength and elongation before/after ageing in air bomb (ins.)	BS 7655-1.2	F5	b
Type tests, sequential electrical tests	BS 6622	1/5yr	o
Voltage test on complete cable	BS 6622	F100	a
Water absorption test	BS 7655-1.2/1.3	F5	a
Wet compatibility	BS 6622	F5	b

16.4 BS 6622:2007 Incorporating Corrigenda Nos. 1 and 2 Continued

Electric Cables- Armoured cables with thermosetting insulation for rated voltages from 3.8/6.6kV to 19/33kV-Requirements and Test Methods

Schedule of Samples for Type Approval

The selection of samples for type approval is based on the guidelines given in the cable specification. Reference should be made to BS 6622 Annex G.

The samples selected will depend on the scope of approval sought. For guidance the following notes detail typical sample requirements.

- Separate samples will be required to cover conductor constructions that include stranded circular or solid circular variants.
- Separate samples will be required to cover XLPE and EPR insulation variants, if required.
- Tests performed on a conductor size within the range 70 – 300mm^2 will give approval for all sizes within that range for cables of a similar type and construction.
- Tests performed on a conductor size outside that range will give approval for the next two standard smaller sizes on the smallest cable tested and for the next two standard larger sizes on the largest cable tested.
- Tests performed on a cable with stranded copper or stranded aluminium conductors will be accepted as valid for similar cables with stranded conductors of the other metal.
- Tests performed on a cable with a strippable semi-conducting core screen will cover similar cables with a fully bonded screen.
- Tests performed on a 3 core cable shall be accepted as valid for single core cables, otherwise of the same type, for the same range of conductor sizes.
- Tests performed successfully on one voltage rating will be accepted as demonstrating capability to produce cables of a lower voltage rating which utilise the same materials and processing methods.

The approval application should indicate the material options for which approval is sought. BASEC will identify the construction alternatives required to gain approval covering the required options.

At the absolute discretion of BASEC consideration can be given to the evaluation of type test reports performed on cables to the BS 6622 specification, as an alternative to carrying out type testing. Such reports must be produced by a BASEC approved laboratory and must cover all of the applicable elements required by the standard to be considered.

The BS 6622:2007 (Annex E) details the methodology for the calculation of component dimensions. BASEC will as part of the Product Certification Requirements, verify the application of these design principles, by the applicant.

16.4 BS 6622:2007 Incorporating Corrigenda Nos. 1 and 2 Continued

Electric Cables- Armoured cables with thermosetting insulation for rated voltages from 3.8/6.6kV to 19/33kV-Requirements and Test Methods

Surveillance Following Approval to Scheme F

Surveillance will be performed at the place of manufacture. Testing on cables, sample or components will be witnessed by the BASEC representative. Testing will follow the frequency defined in the Table 1. Samples of cable will be saved by the manufacturer and the selection of test samples and the tests to be performed will be selected by BASEC. The manufacturer will be advised which tests will be performed so that sample preparation, as necessary, can take place before the surveillance visit.

Samples will be selected at the rate given in BS 6622:2007 Table 9, which is summarised below:

Table 2

Cable Length				Number of samples
Multicore cables		Single core cables		
Above km	Up to & including km	Above km	Up to & including km	
2	10	4	20	1
10	20	20	40	2
20	30	40	60	3
etc.	etc.	etc.	etc.	etc.

The manufacturer shall advise BASEC every 3 months of the proposed BS 6622 production planned for the following 3 months (both quantity and cable type). BASEC will in turn advise the manufacturer of the sample requirements (cable type and quantity) and will also advise the test regime to be witnessed, in line with Table 1.

16.5 BS 7835:2007 Incorporating Corrigendum No. 1

Electric Cables- Armoured cables with thermosetting insulation for rated voltages from 3.8/6.6kV to 19/33kV having low emission of smoke and corrosive gases when affected by fire - Requirements and Test Methods.

Table 1 : Tests, Facilities Required and Test Frequencies.

Test Description	Cross Reference	Freq	Avail
Abrasion test	BS 7835	F25	o
Absence of faults on sheath (spark test)	BS 5099 and BS EN 50356	man	a
Adherence of screens during short circuit	BS 7835	1/5y	o
Armour wire dimensions	BS 7835	F5	a
Armour wire, mass of zinc coating	BS 7835 and BS EN 10244-2	F5	a
Armour wire, wrapping test	BS 7835	F5	a
Armour wire, tensile test (aluminium wire)	BS 7835	F5	a
Armour wire, wet compatibility test	BS 7835	F5	a
Assembly of three core cables	BS 7835	F25	a
Bending test at low temperature	BS 7655-6.1	F5	b
Cable construction	BS 7835	F100	a
Circularity of insulated core	BS 7835	F100	a
Compatibility	BS 7835	F25	a
Conductor, material and construction	BS EN 60228	F50	a
Conductor resistance	BS EN 60228	F100	a
Conductor screen, application	BS 7835	F50	a
Conductor screen, resistivity	BS 7835	F5	a
Copper wire screen resistance	BS 7835 and BS EN 60228	F100	a
Corrosive and acid gas emission	BS EN 60754-1	F5	o
d.c. voltage test on oversheath (where applicable)	BS 7835	F100	a
Elongation test at low temperature	BS 7655-6.1	F5	b
Flame propagation of single cable	BS EN 60332-1-2	F25	b
Flame propagation of bunched cables	BS EN 50266-2-4	1/yr	o
Four hour voltage test	BS 7835	F5	a
Impact test at low temperature	BS 7655-6.1	F5	b

16.5 BS 7835:2007 Incorporating Corrigendum No. 1 Cont'd

Table 1 : Tests, Facilities Required and Test Frequencies.

Test Description	Cross Reference	Freq	Avail
Insulation, hot set test	BS 7655-1.2/1.3	F25	a
Insulation, thickness & concentricity	BS 7835	F100	a
Insulation resistance constant (insulation)	BS 7655-1.2/1.3	F5	a
Insulation resistance constant (sheath)	BS 7835	F5	a
Insulation screen, application	BS 7835	F50	a
Insulation screen, cold strippability	BS 7835	F25	a
Insulation screen, resistivity	BS 7835	F5	a
Marking - legend	BS 7835	F100	a
Marking - legibility	BS 7835	F100	a
Metallic screen, application	BS 7835	F50	a
Ozone resistance test (alternative-low concentration)	BS 7655-1.2	F5	o
Oversheath, shrinkage	BS 7835	F5	a
Oversheath, thickness	BS EN 60811-1-1	F100	a
Oversheath, pressure test at high temperature	BS 7655-6.1	F5	b
Partial discharge test	BS 7835 and BS EN 60885-3	F100	a
Resistance to cracking (heat shock)	BS 7655-4.2	F50	a
Semi-conducting lapped bedding layer, application	BS 7835	F50	a
Semi-conducting lapped bedding layer, resistivity	BS 7835	F5	a
Separation layer, material	BS 7835 and BS EN 60811-1-1	F5	a
Separation layer, thickness	BS EN 60811-1-1	F100	a
Smoke emission	BS EN 50268-2	F5	o
Tensile strength and elongation before/after ageing in air (insulation)	BS 7655-1.2/1.3	F25	a
Tensile strength and elongation before/after ageing in air (sheath)	BS 7655-6.1	F25	a
Tensile strength and elongation before/after ageing in air bomb (ins.)	BS 7655-1.2	F5	b
Type tests, sequential electrical tests	BS 7835	1/5yr	o
Voltage test on complete cable	BS 7835	F100	a
Water absorption test	BS 7655-1.2/1.3	F5	a
Water immersion test	BS 7655-6.1	F5	a
Wet compatibility	BS 7835	F5	b

16.5 BS 7835:2007 Incorporating Corrigendum No. 1 Cont'd

Schedule of Samples for Type Approval

The selection of samples for type approval is based on the guidelines given in the cable specification. Reference should be made to BS 7835 Annex G. Type testing will only be required in relation to the cables fire, smoke and corrosive gases performance if a Product Licence to BS 6622 has already been awarded.

The samples selected will depend on the scope of approval sought. For guidance the following notes detail typical sample requirements.

- Separate samples will be required to cover conductor constructions that include stranded circular or solid circular variants.
- Separate samples will be required to cover XLPE and EPR insulation variants, if required.
- Tests performed on a conductor size within the range 70 – 300mm^2 will give approval for all sizes within that range for cables of a similar type and construction.
- Tests performed on a conductor size outside that range will give approval for the next two standard smaller sizes on the smallest cable tested and for the next two standard larger sizes on the largest cable tested.
- Tests performed on a cable with stranded copper or stranded aluminium conductors will be accepted as valid for similar cables with stranded conductors of the other metal.
- Tests performed on a cable with a strippable semi-conducting core screen will cover similar cables with a fully bonded screen.
- Tests performed on a 3 core cable shall be accepted as valid for single core cables, otherwise of the same type, for the same range of conductor sizes.
- Tests performed successfully on one voltage rating will be accepted as demonstrating capability to produce cables of a lower voltage rating which utilise the same materials and processing methods.

The approval application should indicate the material options for which approval is sought. BASEC will identify the construction alternatives required to gain approval covering the required options.

At the absolute discretion of BASEC consideration can be given to the evaluation of type test reports performed on cables to the BS 7835 specification, as an alternative to carrying out type testing. Such reports must be produced by a BASEC approved laboratory and must cover all of the applicable elements required by the standard to be considered.

The BS 7835:2007 (Annex E) details the methodology for the calculation of component dimensions. BASEC will as part of the Product Certification Requirements, verify the application of these design principles, by the applicant.

16.5 BS 7835:2007 Incorporating Corrigendum No. 1 Cont'd

Surveillance Following Approval to Scheme F

Surveillance will be performed at the place of manufacture. Testing on cables, sample or components will be witnessed by the BASEC representative. Testing will follow the frequency defined in the Table 1. Samples of cable will be saved by the manufacturer and the selection of test samples and the tests to be performed will be selected by BASEC. The manufacturer will be advised which tests will be performed so that sample preparation, as necessary, can take place before the surveillance visit.

Samples will be selected at the rate given in BS 7835:2007 Table 9, which is summarised below:

Table 2

Cable Length				Number of samples
Multicore cables		Single core cables		
Above km	Up to & including km	Above km	Up to & including km	
2	10	4	20	1
10	20	20	40	2
20	30	40	60	3
etc.	etc.	etc.	etc.	etc.

The manufacturer shall advise BASEC every 3 months of the proposed BS 7835 production planned for the following 3 months (both quantity and cable type). BASEC will in turn advise the manufacturer of the sample requirements (cable type and quantity) and will also advise the test regime to be witnessed, in line with Table 1.

16.6 IEC 60502-2. Second Edition. 2005-03.

Power Cables with extruded insulation and their accessories for rated voltage from 1kV (Um=1,2kV) up to 30kV (Um=36kV).
Part 2 : Cables from rated voltages from 6kV (Um=7,2kV) up to 30kV (Um=36kV).

Table 1 : Tests, Facilities Required and Test Frequencies.

Test Description	Cross Reference	Freq	Avail
Ageing test on completed cable	IEC 60811-1-2	F25	a
Armour wire and/or tape dimensions	IEC 60502-2	F5	a
Carbon black content (black PE sheaths)	IEC 60811-4-1	F5	b
Conductor examination	BS EN 60228	F50	a
Conductor resistance	BS EN 60228	F100	a
Conductor screen, resistivity	IEC 60502-2	F5	a
Copper wire screen resistance	BS EN 60228	F100	a
d.c. voltage test on oversheath (where applicable)	IEC 60229	F100	a
External diameter measurement (where applicable)	IEC 60502-2	F100	a
Flame spread test (ST1, ST2 & SE1 sheathed cables only)	BS EN 60332-1-2	F25	b
Four hour voltage test	IEC 60502-2	F5	a
Insulation, test at low temperature	IEC 60502-2 and IEC 60811-1-4	F5	b
Insulation, thermal stability (PVC insulation)	IEC 60502-2 and IEC 60811-3-2	F5	b
Insulation, hot set test	IEC 60811-2-1	F25	a
Insulation, thickness	IEC 60811-1-1	F100	a
Insulation, elastic modulus of HEPR	IEC 60502-2	F5	b
Insulation, hardness of HEPR	IEC 60502-2	F5	b
Insulation, resistance to cracking of PVC	IEC60502-2 and IEC 60811-3-1	F5	a
Insulation, shrinkage of XLPE	IEC 60502-2 and IEC 60811-1-3	F5	a
Insulation screen, resistivity	IEC 60502-2	F5	a
Insulation screen, strippability (where applicable)	IEC 60502-2	F25	a
Lead sheath, thickness (where applicable)	IEC 60502-2	F100	a
Loss of mass	IEC 60811-3-2	F5	a
Oil immersion test (elastomeric sheaths)	IEC 60811-2-1	F5	b

16.6 IEC 60502-2. Second Edition. 2005-03.

Power Cables with extruded insulation and their accessories for rated voltagesfrom 1kV (Um=1,2kV) up to 30kV (Um=36kV).
Part 2 : Cables from rated voltages from 6kV (Um=7,2kV) up to 30kV (Um=36kV).

Table 1 : Tests, Facilities Required and Test Frequencies.

Test Description	Cross Reference	Freq	Avail
Overseath, loss of mass (PVC sheathed cables only)	IEC 60811-3-2	F5	a
Oversheath, shrinkage (PE sheathed cables only)	IEC 60502-2 and BS EN 60811-1-3	F5	a
Oversheath, test at low temperature (PVC sheathed cables only)	IEC 60502-2 and IEC 60811-1-4	F5	b
Oversheath, thickness	BS EN 60811-1-1	F100	a
Oversheath, resistance to cracking (PVC sheathed cables only)	IEC60502-2 and IEC 60811-3-1	F5	a
Ozone resistance test (EPR & HEPR insulation)	IEC 60811-2-1	F5	o
Partial discharge test	IEC 60502-2 and BS EN 60885-3	F100	a
Pressure test at high temperature	IEC 60502-2 and IEC 60811-3-1	F5	b
Resistance to cracking (heat shock)	IEC 60811-3-1	F50	a
Separation layer, material	IEC 60502-2	F5	a
Separation layer, thickness	BS EN 60811-1-1	F100	a
Tensile strength and elongation before/after ageing in air (insulation)	IEC 60811-1-1 IEC 60811-1-2	F25	a
Tensile strength and elongation before/after ageing in air (sheath)	IEC 60811-1-1 IEC 60811-1-2	F25	a
Type tests, sequential electrical tests	IEC 60502-2	1/5yr	o
Voltage test on complete cable	IEC 60502-2	F100	a
Water penetration test (where applicable)	IEC 60502-2	F5	o

16.6 IEC 60502-2. Second Edition. 2005-03.

Power Cables with extruded insulation and their accessories for rated voltages from 1kV (Um=1,2kV) up to 30kV (Um=36kV). Part 2 : Cables from rated voltages from 6kV (Um=7,2kV) up to 30kV (Um=36kV).

Schedule of Samples for Type Approval

The selection of samples for type approval is based on the guidelines given in the cable specification BS 6622 Annex G, which has been used as a basis for the determination of the scope of approval. This is used in the absence of any specified recommendations in the IEC 60502-2 specification.

The samples selected will depend on the scope of approval sought. For guidance the following notes detail typical sample requirements.

- Separate samples will be required to cover conductor constructions that include stranded circular or solid circular variants.
- Separate samples will be required to cover XLPE, EPR and HEPR insulation variants, if required.
- Tests performed on a conductor size within the range 70 – 300mm^2 will give approval for all sizes within that range for cables of a similar type and construction.
- Tests performed on a conductor size outside that range will give approval for the next two standard smaller sizes on the smallest cable tested and for the next two standard larger sizes on the largest cable tested.
- Tests performed on a cable with stranded copper or stranded aluminium conductors will be accepted as valid for similar cables with stranded conductors of the other metal.
- Tests performed on a cable with a strippable semi-conducting core screen will cover similar cables with a fully bonded screen.
- Tests performed on a 3 core cable shall be accepted as valid for single core cables, otherwise of the same type, for the same range of conductor sizes.
- Tests performed successfully on one voltage rating will be accepted as demonstrating capability to produce cables of a lower voltage rating which utilise the same materials and processing methods.

The approval application should indicate the material options for which approval is sought. BASEC will identify the construction alternatives required to gain approval covering the required options.

At the absolute discretion of BASEC consideration can be given to the evaluation of type test reports performed on cables to the IEC 60502-2 specification, as an alternative to carrying out type testing. Such reports must be produced by a BASEC approved laboratory and must cover all of the applicable elements required by the standard to be considered.

The IEC 60502-2 (Annex A) details the methodology for the calculation of component dimensions. BASEC will as part of the Product Certification Requirements, verify the application of these design principles, by the applicant.

16.6 IEC 60502-2. Second Edition. 2005-03.

Power Cables with extruded insulation and their accessories for rated voltagesfrom 1kV (Um=1,2kV) up to 30kV (Um=36kV).
Part 2 : Cables from rated voltages from 6kV (Um=7,2kV) up to 30kV (Um=36kV).

Surveillance Following Approval to Scheme F

Surveillance will be performed at the place of manufacture. Testing on cables, sample or components will be witnessed by the BASEC representative. Testing will follow the frequency defined in the Table 1. Samples of cable will be saved by the manufacturer and the selection of test samples and the tests to be performed will be selected by BASEC. The manufacturer will be advised which tests will be performed so that sample preparation, as necessary, can take place before the surveillance visit.

Samples will be selected at the rate given in IEC 60502-2 Table 12, which is summarised below:

Table 2

Cable Length				Number of samples
Multicore cables		Single core cables		
Above km	Up to & including km	Above km	Up to & including km	
2	10	4	20	1
10	20	20	40	2
20	30	40	60	3
etc.	etc.	etc.	etc.	etc.

The manufacturer shall advise BASEC every 3 months of the proposed IEC 60502-2 production planned for the following 3 months (both quantity and cable type). BASEC will in turn advise the manufacturer of the sample requirements (cable type and quantity) and will also advise the test regime to be witnessed, in line with Table 1.

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LV and MV Polymeric insulated cables for use by distribution and generation utilities

Part 4 : Specification for distribution cables with extruded insulation for rated voltages of 11kV to 33kV.
Section 4.10 : Single core 11kV to 33kV cables

Tests, Facilities Required and Test Frequencies.

Test description	**Requirement**		**Test Method**		**Freq**	**Avail**
	Specification	Clause	Specification	Clause		
Abrasion resistance	BS 7870-4.10	8.1.7	BS 7870-2	2.4.5	F5	a
Absence of faults on sheath (spark test)	BS 7870-4.10	6.1	BS 7870-2	3.6.1	man	a
Adherence of screens during short circuit	BS 7870-4.10	8.4	BS 7870-2	3.13	1/5y	o
Bending test	BS 7870-4.10	8.2.3	BS 7870-2	2.4.1.7	F5	a
Carbon black content	BS 7870-1	Table B2	BS EN 60811-605	-	F5	b
Circularity of insulated core	BS 7870-4.10	7.4	BS 7870-2	2.1.11.3	F50	a
Compatibility	BS 7870-4.10	8.1.9	BS EN 60811-401 BS EN 60811-501	4.2.3.4 -	F25	a
Cold bend test on complete cable	BS 7870-4.10	8.1.10	BS 7870-2	2.4.1.8	F5	b
Conductor, material and construction	BS 7870-4.10	4.1	BS 7870-4.10	7.1	F50	a
Conductor resistance	BS 7870-4.10	6.2	BS 7870-2	3.1.1	F100	a
Conductor screen, application	BS 7870-4.10	4.2.2	BS 7870-4.10	7.2	F50	a
Conductor screen, resistivity	BS 7870-4.10	7.2	BS 7870-2	3.9.1	F25	a
Conductor screen thickness	BS 7870-4.10	4.2.2	BS 7870-2	2.1.11.3	F50	a
Corrosive and acid gas	BS 7870-4.10	8.1.8.1	BS EN 60754-1	-	1/yr	o
d.c. voltage test on oversheath (where applicable)	BS 7870-4.10	6.8.1	BS 7870-4.10	6.8.2	F100	a
Elongation at low temperature (sheath)	BS 7870-1	Table B1	BS EN 60811-505	4.3	F5	b
Flame propagation on single cable	BS 7870-4.10	7.10.1	BS EN 60332-1-2	-	F25	a
Flame propagation on multiple cables	BS 7870-4.10	8.1.8.2	BS EN 60332-3-24	-	F50	a

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Tests, Facilities Required and Test Frequencies Continued.

Test description	**Requirement**		**Test Method**		**Freq**	**Avail**
	Specification	Clause	Specification	Clause		
Four hour voltage test	BS 7870-4.10	7.11	BS 7870-2	3.2.5	F25	a
Impact test at low temperature (sheath)	BS 7870-1	Table B2	BS EN 60811-506	-	F5	b
Insulation, application	BS 7870-4.10	4.2.3	BS 7870-4.10	7.3	F50	a
Insulation, hot set test	BS 7870-4.10	7.3	BS EN 60811-507	-	F25	a
Insulation, thickness & concentricity	BS 7870-4.10	7.3	BS 7870-2	2.1.1	F50	a
Insulation, shrinkage test	BS 7870-4.10	7.3	BS EN 60811-502	-	F25	a
Insulation screen, application	BS 7870-4.10	4.2.4	BS 7870-4.10	7.5.1	F50	a
Insulation screen, strippability	BS 7870-4.10	7.5.2	BS 7870-2	2.2.8.1	F25	a
Insulation screen, resistivity	BS 7870-4.10	7.5.3	BS 7870-2	3.9.1	F50	a
Insulation screen, cutting test (where applicable)	BS 7870-4.10	6.4	BS 7870-2	2.2.11	F100	a
Insulation water content	BS 7870-4.10	7.3	BS 7870-2	2.5.10	F25	a
Insulation screen thickness	BS 7870-4.10	4.2.4	BS 7870-2	2.1.1	F50	a
Insulation water absorption (gravimetric)	BS 7870-1	Table B1	BS EN 60811-402	4.4	F5	a
Insulation resistance constant (insulation)	BS 7870-1	Table B1	BS 7870-2	3.3.1	F5	b
Insulation resistance constant (sheath)	BS 7870-1	Table B2	BS 7870-2	3.3.4	F5	b
Irregularities of insulation and screen	BS 7870-4.10	7.6	BS 7870-2	2.1.10.5	F50	a
Long duration test	BS 7870-4.10	8.3	BS 7870-2	5.4.8	F5	o
Marking - legend	BS 7870-4.10	4.5	BS 7870-4.10	6.7	F100	a
Marking - legibility	BS 7870-4.10	4.5	BS 7870-4.10	6.7	F100	a

16.10 BS 7870-4.10:2011 + Amd No 1:2016 Continued

Tests, Facilities Required and Test Frequencies Continued.

Test description	**Requirement**		**Test Method**		**Freq**	**Avail**
	Specification	Clause	Specification	Clause		
Metallic screen, application	BS 7870-4.10	4.3	BS 7870-4.10	7.7	F50	a
Metallic screen gap	BS 7870-4.10	8.1.4	BS 7870-2	2.1.6.2	F5	a
Metallic screen resistance	BS 7870-4.10	6.3	BS 7870-2	3.1.1	F100	a
Ozone resistance test	BS 7870-1	Table B1	BS EN 60811-403	-	F5	o
Oversheath, application	BS 7870-4.10	4.4	BS 7870-4.11	7.9	F50	a
Oversheath, pressure test at high temperature	BS 7870-1	Table B2	BS EN 60811-508	4.4	F5	b
Oversheath, shrinkage test	BS 7870-4.10	8.1.6 & 8.1.7	BS EN 60811-503 BS 7870-4.10	- 8.1.7	F5	a
Oversheath, thickness	BS 7870-4.10	7.9	BS 7870-2	2.1.2	F50	a
Partial discharge test	BS 7870-4.10	6.6	BS 7870-2	3.10.1	F100	a
Properties after exposure to UV (non black sheathed cables)	BS 7870-1	Table B2	BS 7870-2	2.4.20	F5	o
Smoke emission	BS 7870-4.10	7.10.2	BS EN 61034-2	-	1/yr	b
Sealing and drumming	BS 7870-4.10	4.7	Visual	-	man	a
Sequential Electrical Tests						
Partial discharge	BS 7870-4.10	8.2.2	BS 7870-4.10	3.10.1	1/5yr	o
Bending test	BS 7870-4.10	8.2.3	BS 7870-4.10	2.4.1.7	1/5yr	o
Tan δ in relation to voltage	BS 7870-4.10	8.2.4	BS 7870-4.10	3.11.3.1	1/5yr	o
Tan δ in relation to temperature	BS 7870-4.10	8.2.5	BS 7870-4.10	3.11.1	1/5yr	o
Heat cycle test	BS 7870-4.10	8.2.6	BS 7870-4.10	3.8.1	1/5yr	o
Impulse voltage test	BS 7870-4.10	8.2.7	BS 7870-4.10	3.2.4.2	1/5yr	o
Four hour voltage test	BS 7870-4.10	8.2.8	BS 7870-4.10	3.2.5	1/5yr	o

16.10 BS 7870-4.10:2011 + Amd No 1:2016 Continued

Tests, Facilities Required and Test Frequencies Continued.

Test description	**Requirement**		**Test Method**		**Freq**	**Avail**
	Specification	Clause	Specification	Clause		
Tear resistance (sheath)	BS 7870-1	Table B2	BS 7870-2	2.2.2.2	F5	a
Tensile strength and elongation before/after ageing in air (insulation)	BS 7870-1	Table B1	BS EN 60811-401 BS EN 60811-501	- 4.2	F25	a
Tensile strength and elongation before/after ageing in air (sheath)	BS 7870-1	Table B2	BS EN 60811-401 BS EN 60811-501	- 4.3	F25	a
Tensile strength and elongation before/after ageing in air bomb (insulation)	BS 7870-1	Table B1	BS EN 60811-412	-	F5	b
Voltage test on complete cable	BS 7870-4.10	6.5	BS 7870-2	3.2.1.1	F100	a
Water blocking tape resistivity	BS 7870-4.10	7.8.1	BS 7870-2	3.14	F25	a
Water blocking tape swell height	BS 7870-4.10	7.8.2	BS 7870-2	2.5.9	F25	a
Water blocking tape moisture content	BS 7870-4.10	7.8.3	BS 7870-4.10	D2	F25	a
Water penetration test	BS 7870-4.10	8.1.5	BS 7870-2	2.4.9	F5	b
Water immersion test (sheath)	BS 7870-1	Table B2	BS 7870-2	2.2.12	F5	a
Water blocking tape characterisation	BS 7870-4.10	8.1.11	BS 7870-4.10	D1	F5	a

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Part 4 : Specification for distribution cables with extruded insulation for rated voltages of 11kV to 33kV.
Section 4.10 : Single core 11kV to 33kV cables

Schedule of Samples for Type Approval

The selection of samples for type approval is based on the guidelines given in the cable specification. Reference should be made to BS 7870-4.10 Annex C.

The samples selected will depend on the scope of approval sought. For guidance the following notes detail typical sample requirements.

- Separate samples will be required to cover conductor constructions that include stranded circular or solid circular variants.
- Separate samples will be required to cover XLPE and EPR insulation and Type A and B sheath variants, if required.
- Tests performed on a conductor size within the range 70 – 300mm^2 will give approval for all sizes within that range for cables of a similar type and construction.
- Limited tests, as defined in BS 7870-4.10 Annex C Section C2, performed on a larger conductor size outside that range will give approval up to and including two standard size above the size tested. Tests performed on a cable with stranded copper or stranded aluminium conductors will be accepted as valid for similar cables with stranded conductors of the other metal.
- Tests performed on a cable with a strippable semi-conducting core screen will cover similar cables with a fully bonded screen.
- Tests performed successfully on 19/33kV will be accepted as demonstrating capability to produce cables at 6.35/11kV which utilise the same materials and processing methods. Tests carried out at either 6.35/11kV or 19/33kV cables should be accepted as valid for cables of the same type rated at 12.7/22kV

The approval application should indicate the material options for which approval is sought. BASEC will identify the construction alternatives required to gain approval covering the required options.

At the absolute discretion of BASEC consideration can be given to the evaluation of type test reports performed on cables to the BS 7870-4.10 specification (including the long term test), as an alternative to carrying out type testing. Such reports must be produced by a BASEC approved laboratory and must cover all of the applicable elements required by the standard to be considered.
The BS 7870-4.10 cable specification requires that a long term test be conducted at specified intervals. BASEC may wish to witness this test being carried out, including the witnessing of the step breakdown voltage tests carried out at predetermined intervals

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Part 4 : Specification for distribution cables with extruded insulation for rated voltages of 11kV to 33kV.
Section 4.10 : Single core 11kV to 33kV cables

Surveillance Following Approval to Scheme F

Surveillance will be performed at the place of manufacture. Testing on cables, sample or components will be witnessed by the BASEC representative. Testing will follow the frequency defined in the Table 1. Samples of cable will be saved by the manufacturer and the selection of test samples and the tests to be performed will be selected by BASEC. The manufacturer will be advised which tests will be performed so that sample preparation, as necessary, can take place before the surveillance visit.

Samples will be selected at the rate given in the table below:

Single core cables		Number of samples
Above km	Up to & including km	
4	20	1
20	40	2
40	60	3
etc.	etc.	etc.

The manufacturer shall advise BASEC every 3 months of the proposed BS 7870-4.10 cable production planned for the following 3 months (both quantity and cable type). BASEC will in turn advise the manufacturer of the sample requirements (cable type and quantity) and will also advise the test regime to be witnessed, in line with Table 1.

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LV and MV Polymeric insulated cables for use by distribution and generation utilities

Part 4 : Specification for distribution cables with extruded insulation for rated voltages of 11kV and 33kV.
Section 4.11 : Single core 33kV lead sheathed cables

Table 1 : Tests, Facilities Required and Test Frequencies.

Test description	**Requirement**		**Test Method**		**Freq**	**Avail**
	Specification	Clause	Specification	Clause		
Absence of faults on sheath (spark test)	BS 7870-4.11	6.1	BS 7870-2	3.6.1	man	a
Adherence of screens during short circuit	BS 7870-4.11	8.4	BS 7870-2	3.13	1/5y	o
Carbon black content	BS 7870-1	Table B2	BS EN 60811-605	-1	F5	b
Circularity of insulated core	BS 7870-4.11	7.4	BS 7870-2	2.1.11.3	F50	a
Compatibility	BS 7870-4.11	8.1.7	BS EN 60811-401 BS EN 60811-501	4.2.3.4 -	F25	a
Cold bend test on complete cable	BS 7870-4.11	8.1.8	BS 7870-2	2.4.1.8	F5	b
Conductor, material and construction	BS 7870-4.11	4.1	BS 7870-4.11	7.1	F50	a
Conductor resistance	BS 7870-4.11	6.2	BS 7870-2	3.1.1	F100	a
Conductor screen, application	BS 7870-4.11	4.2.2	BS 7870-4.11	7.2	F50	a
Conductor screen, resistivity	BS 7870-4.11	7.2	BS 7870-2	3.9.1	F25	a
Conductor screen thickness	BS 7870-4.11	4.2.2	BS 7870-2	2.1.11.3	F50	a
d.c. voltage test on oversheath (where applicable)	BS 7870-4.11	6.9.1	BS 7870-4.11	6.7.2	F100	a
Four hour voltage test	BS 7870-4.11	7.10	BS 7870-2	3.2.5	F25	a
Insulation, application	BS 7870-4.11	4.2.3	BS 7870-4.11	7.3	F50	a
Insulation, hot set test	BS 7870-4.11	7.3	BS EN 60811-507	-	F25	a
Insulation, thickness & concentricity	BS 7870-4.11	7.3	BS 7870-2	2.1.1	F50	a

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16.11 BS 7870-4.11:2011 + Amd No 1:2016 Continued

Table 1 : Tests, Facilities Required and Test Frequencies Continued.

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
Insulation, shrinkage test	BS 7870-4.11	7.3	BS EN 60811-502	-	F25	a
Insulation screen, application	BS 7870-4.11	4.2.4	BS 7870-4.11	7.5.1	F50	a
Insulation screen, strippability	BS 7870-4.11	7.5.2	BS 7870-2	2.2.8.1	F25	a
Insulation screen, resistivity	BS 7870-4.11	7.5.3	BS 7870-2	3.9.1	F50	a
Insulation screen, cutting test (where applicable)	BS 7870-4.11	6.3	BS 7870-2	2.2.11	F100	a
Insulation water content	BS 7870-4.11	7.3	BS 7870-2	2.5.10	F25	a
Insulation screen thickness (bonded)	BS 7870-4.11	4.2.4	BS 7870-2	2.1.1	F50	a
Insulation screen thickness (cold strippable)	BS 7870-4.11	4.2.4	BS 7870-2	2.1.11	F50	a
Insulation water absorption (gravimetric)	BS 7870-1	Table B1	BS EN 60811-402	4.4	F5	a
Insulation resistance constant (insulation)	BS 7870-1	Table B1	BS 7870-2	3.3.1	F5	b
Irregularities of insulation and screen	BS 7870-4.11	7.6	BS 7870-2	2.1.10.5	F50	a
Lead alloy sheath composition	BS 7870-4.11	8.1.5	BS EN 12548	-	F5	o
Lead sheath application	BS 7870-4.11	4.4	BS 7870-2	7.8	F50	a
Lead sheath thickness	BS 7870-4.11	7.8	BS 7870-2	2.1.5b	F100	a
Long duration test	BS 7870-4.11	8.3	BS 7870-2	5.4.8	F5	o
Marking - legend	BS 7870-4.11	4.6	BS 7870-4.11	6.6	F100	a
Marking - legibility	BS 7870-4.11	4.6	BS 7870-4.11	6.6	F100	a
Oversheath, application	BS 7870-4.11	4.5	BS 7870-4.11	7.9	F50	a
Oversheath, pressure test at high temperature	BS 7870-1	Table B2	BS EN 60811-508	4.4	F5	b
Oversheath, thickness	BS 7870-4.11	7.9	BS 7870-2	2.1.2	F50	a

16.11 BS 7870-4.11:2011 + Amd No 1:2016 Continued

Table 1 : Tests, Facilities Required and Test Frequencies Continued.

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
Partial discharge test	BS 7870-4.11	6.5	BS 7870-2	3.10.1	F100	a
Properties after exposure to UV (non black sheathed cables)	BS 7870-1	Table B2	BS 7870-2	2.4.20	F5	o
Sequential Electrical Tests Partial discharge test Bending test Tan δ in relation to voltage Tan δ in relation to temperature Heat cycle test Impulse voltage test Four hour voltage test	 BS 7870-4.11 BS 7870-4.11 BS 7870-4.11 BS 7870-4.11 BS 7870-4.11 BS 7870-4.11 BS 7870-4.11	 8.2.2 8.2.3 8.2.4 8.2.5 8.2.6 8.2.7 8.2.8	 BS 7870-2 BS 7870-2 BS 7870-2 BS 7870-2 BS 7870-2 BS 7870-2 BS 7870-2	 3.10.1 2.4.1.7 3.11.3.1 3.11.1 3.8.1 3.2.4.2 3.2.5	 1/5yr 1/5yr 1/5yr 1/5yr 1/5yr 1/5yr 1/5yr	 o o o o o o o
Sealing and drumming	BS 7870-4.11	4.7	Visual	-	man	a
Tensile strength and elongation before/after ageing in air (insulation)	BS 7870-1	Table B1	BS EN 60811-401 BS EN 60811-501	- 4.2	F25	a
Tensile strength and elongation before/after ageing in air (sheath)	BS 7870-1	Table B2	BS EN 60811-401 BS EN 60811-501	- 4.3	F25	a
Voltage test on complete cable	BS 7870-4.11	6.4	BS 7870-2	3.2.1.1	F100	a
Water blocking tape application	BS 7870-4.11	4.3	BS 7870-4.11	7.7.1	F50	a
Water blocking tape resistivity	BS 7870-4.11	7.7.2	BS 7870-2	3.14	F25	a
Water blocking tape swell height	BS 7870-4.11	7.7.3	BS 7870-2	2.5.9	F25	a
Water blocking tape moisture content	BS 7870-4.11	7.7.4	BS 7870-4.11	D2	F25	a
Water penetration test	BS 7870-4.11	8.1.4	BS 7870-2	2.4.9	F5	b
Water blocking tape characterisation	BS 7870-4.11	8.1.9	BS 7870-4.11	D1	F5	a

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LV and MV Polymeric insulated cables for use by distribution and generation utilities

Part 4 : Specification for distribution cables with extruded insulation for rated voltages of 11kV and 33kV.
Section 4.11 : Single core 33kV lead sheathed cables

Schedule of Samples for Type Approval

The selection of samples for type approval is based on the guidelines given in the cable specification. Reference should be made to BS 7870-4.11 Annex C.

The samples selected will depend on the scope of approval sought. For guidance the following notes detail typical sample requirements.

- Tests performed on a conductor size within the range 120 – 300mm^2 will give approval for all sizes within that range for cables of a similar type and construction.
- Limited tests, as defined in BS 7870-4.11 Annex C Section C2, performed on a larger conductor size outside that range will give approval up to and including the size tested.
- Tests performed on a cable with stranded copper or stranded aluminium conductors will be accepted as valid for similar cables with stranded conductors of the other metal.
- Tests performed on a cable with a strippable semi-conducting core screen will cover similar cables with a fully bonded screen.

The approval application should indicate the material options for which approval is sought. BASEC will identify the construction alternatives required to gain approval covering the required options.

At the absolute discretion of BASEC consideration can be given to the evaluation of type test reports performed on cables to the BS 7870-4.11 specification (including the long term test), as an alternative to carrying out type testing. Such reports must be produced by a BASEC approved laboratory and must cover all of the applicable elements required by the standard to be considered.

The BS 7870-4.11 cable specification requires that a long duration test be conducted at specified intervals. BASEC may wish to witness this test being carried out, including the witnessing of the step breakdown voltage tests carried out at predetermined intervals.

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Part 4 : Specification for distribution cables with extruded insulation for rated voltages of 11kV and 33kV.
Section 4.11 : Single core 33kV lead sheathed cables

Surveillance Following Approval to Scheme F

Surveillance will be performed at the place of manufacture. Testing on cables, sample or components will be witnessed by the BASEC representative. Testing will follow the frequency defined in the Table 1. Samples of cable will be saved by the manufacturer and the selection of test samples and the tests to be performed will be selected by BASEC. The manufacturer will be advised which tests will be performed so that sample preparation, as necessary, can take place before the surveillance visit.

Samples will be selected at the rate given in the table below:

Single core cables		Number of samples
Above km	Up to & including km	
4	20	1
20	40	2
40	60	3
etc.	etc.	etc.

The manufacturer shall advise BASEC every 3 months of the proposed BS 7870-4.11 cable production planned for the following 3 months (both quantity and cable type). BASEC will in turn advise the manufacturer of the sample requirements (cable type and quantity) and will also advise the test regime to be witnessed, in line with Table 1.

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LV and MV Polymeric insulated cables for use by distribution and generation utilities

Part 4 : Specification for distribution cables with extruded insulation for rated voltages of 11kV to 33kV.
Section 4.20 : Three core 11kV cables

Tests, Facilities Required and Test Frequencies.

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
Abrasion resistance	BS 7870-4.20	8.1.7	BS 7870-2	2.4.5	F5	a
Absence of faults on sheath (spark test)	BS 7870-4.20	6.1	BS 7870-2	3.6.1	man	a
Adherence of screens during short circuit	BS 7870-4.20	8.4	BS 7870-2	3.13	1/5y	o
Carbon black content	BS 7870-1	Table B2	BS EN 60811-605	-	F5	b
Circularity of insulated core	BS 7870-4.20	7.4	BS 7870-2	2.1.11.3	F50	a
Compatibility	BS 7870-4.20	8.1.9	BS EN 60811-401 BS EN 60811-501	4.2.3.4 -	F25	a
Cold bend test on complete cable	BS 7870-4.20	8.1.10	BS 7870-2	2.4.1.8	F5	b
Conductor, material and construction	BS 7870-4.20	4.1	BS 7870-4.20	7.1	F50	a
Conductor resistance	BS 7870-4.20	6.2	BS 7870-2	3.1.1	F100	a
Conductor screen, application	BS 7870-4.20	4.2.2	BS 7870-4.20	7.2	F50	a
Conductor screen, resistivity	BS 7870-4.20	7.2	BS 7870-2	3.9.1	F25	a
Conductor screen thickness	BS 7870-4.20	4.2.2	BS 7870-2	2.1.11.3	F50	a
Corrosive and acid gas	BS 7870-4.20	8.1.8.1	BS EN 60754-1	-	1/yr	o
d.c. voltage test on oversheath (where applicable)	BS 7870-4.20	6.8.1	BS 7870-4.20	6.8.2	F100	a
Elongation at low temperature (sheath)	BS 7870-1	Table B1	BS EN 60811-505	4.3	F5	b
Flame propagation on single cable	BS 7870-4.20	7.10.1	BS EN 60332-1-2	-	F25	a
Flame propagation on multiple cables	BS 7870-4.20	8.1.8.2	BS EN 60332-3-24	-	F50	a

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Tests, Facilities Required and Test Frequencies Continued.

Test description	**Requirement**		**Test Method**		**Freq**	**Avail**
	Specification	Clause	Specification	Clause		
Four hour voltage test	BS 7870-4.20	7.10	BS 7870-2	3.2.5	F25	a
Impact test at low temperature (sheath)	BS 7870-1	Table B2	BS EN 60811-506	-	F5	b
Insulation, application	BS 7870-4.20	4.2.3	BS 7870-4.20	7.3	F50	a
Insulation, hot set test	BS 7870-4.20	7.3	BS EN 60811-507	-	F25	a
Insulation, thickness & concentricity	BS 7870-4.20	4.2.3	BS 7870-2	2.1.1	F50	a
Insulation, shrinkage test	BS 7870-4.20	7.3	BS EN 60811-502	-	F25	a
Insulation screen, application	BS 7870-4.20	4.2.4	BS 7870-4.20	7.5.1	F50	a
Insulation screen, strippability	BS 7870-4.20	7.5.2	BS 7870-2	2.2.8.1	F25	a
Insulation screen, resistivity	BS 7870-4.20	7.5.3	BS 7870-2	3.9.1	F50	a
Insulation screen, cutting test (where applicable)	BS 7870-4.20	6.4	BS 7870-2	2.2.11	F100	a
Insulation water content	BS 7870-4.20	7.3	BS 7870-2	2.5.10	F25	a
Insulation screen thickness	BS 7870-4.20	4.2.4	BS 7870-4.20	7.3	F50	a
Insulation water absorption	BS 7870-1	Table B1	BS EN 60811-402	4.4	F5	a
Insulation resistance constant (insulation)	BS 7870-1	Table B1	BS 7870-2	3.3.1	F5	b
Insulation resistance constant (sheath)	BS 7870-1	Table B2	BS 7870-1	3.3.4	F5	b
Irregularities of insulation and screen	BS 7870-4.20	7.6	BS 7870-2	2.1.10.5	F50	a
Long duration test	BS 7870-4.20	8.3	BS 7870-2	5.4.8	F5	o
Marking - legend	BS 7870-4.20	4.7	BS 7870-4.20	6.7	F100	a
Marking - legibility	BS 7870-4.20	4.7	BS 7870-4.20	6.7	F100	a

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Tests, Facilities Required and Test Frequencies Continued.

Test description	**Requirement**		**Test Method**		**Freq**	**Avail**
	Specification	Clause	Specification	Clause		
Metallic screen, application	BS 7870-4.20	4.5	BS 7870-4.20	7.7	F50	a
Metallic screen gap	BS 7870-4.20	4.5	BS 7870-2	2.1.6.2	F5	a
Metallic screen resistance	BS 7870-4.20	4.5	BS 7870-2	3.1.1	F100	a
Ozone resistance test	BS 7870-1	Table B1	BS EN 60811-403	-	F5	o
Oversheath, application	BS 7870-4.20	4.6	BS 7870-4.20	7.8	F50	a
Oversheath, pressure test at high temperature	BS 7870-1	Table B2	BS EN 60811-508	4.4	F5	b
Oversheath, shrinkage test	BS 7870-4.20	8.1.6 & 8.1.7	BS EN 60811-503 BS 7870-4.20	- 8.1.7	F5	a
Oversheath, thickness	BS 7870-4.20	7.8	BS 7870-2	2.1.2	F50	a
Partial discharge test	BS 7870-4.20	6.6	BS 7870-2	3.10.1	F100	a
Properties after exposure to UV (non black sheathed cables)	BS 7870-1	Table B2	BS 7870-2	2.4.20	F5	o
Smoke emission	BS 7870-4.20	7.9.2	BS EN 61034-2	-	1/yr	b
Tear resistance (sheath)	BS 7870-1	Table B2	BS 7870-2	2.2.2.2	F5	a
Tensile strength and elongation before/after ageing in air (insulation)	BS 7870-1	Table B1	BS EN 60811-401 BS EN 60811-501	- 4.2	F25	a
Tensile strength and elongation before/after ageing in air (sheath)	BS 7870-1	Table B2	BS EN 60811-401 BS EN 60811-501	- 4.3	F25	a
Tensile strength and elongation before/after ageing in air bomb (insulation)	BS 7870-1	Table B1	BS EN 60811-412	-	F5	b

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Tests, Facilities Required and Test Frequencies Continued.

Test description	Requirement		Test Method		Freq	Avail
	Specification	Clause	Specification	Clause		
Sequential Electrical Tests						
Partial discharge	BS 7870-4.20	8.2.2	BS 7870-2	3.10.1	1/5yr	o
Bending test	BS 7870-4.20	8.2.3	BS 7870-2	2.4.1.7	1/5yr	o
Tan δ in relation to voltage	BS 7870-4.20	8.2.4	BS 7870-2	3.11.3.1	1/5yr	o
Tan δ in relation to temperature	BS 7870-4.20	8.2.5	BS 7870-2	3.11.1	1/5yr	o
Heat cycle test	BS 7870-4.20	8.2.6	BS 7870-2	3.8.1	1/5yr	o
Impulse voltage test	BS 7870-4.20	8.2.7	BS 7870-2	3.2.4.2	1/5yr	o
Four hour voltage test	BS 7870-4.20	8.2.8	BS 7870-2	3.2.5	1/5yr	o
Sealing and drumming	BS 7870-4.20	4.8	Visual	-	man	a
Voltage test on complete cable	BS 7870-4.20	6.5	BS 7870-2	3.2.1.1	F100	a
Water blocking tape resistivity	BS 7870-4.20	7.8.1	BS 7870-2	3.14	F25	a
Water blocking tape swell height	BS 7870-4.20	7.8.2	BS 7870-2	2.5.9	F25	a
Water blocking tape moisture content	BS 7870-4.20	7.8.3	BS 7870-4.20	D2	F25	a
Water penetration test	BS 7870-4.20	8.1.5	BS 7870-2	2.4.9	F5	b
Water immersion test (sheath)	BS 7870-1	Table B2	BS 7870-2	2.2.12	F5	a
Water blocking tape characterisation	BS 7870-4.20	8.1.11	BS 7870-4.20	D1	F5	a

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Part 4 : Specification for distribution cables with extruded insulation for rated voltages of 11kV and 33kV.
Section 4.20 : Three core 11kV cables

Schedule of Samples for Type Approval

The selection of samples for type approval is based on the guidelines given in the cable specification. Reference should be made to BS 7870-4.20 Annex C.

The samples selected will depend on the scope of approval sought. For guidance the following notes detail typical sample requirements.

- Separate samples will be required to cover conductor constructions that include stranded shaped or circular or solid shaped or circular variants.
- Separate samples will be required to cover XLPE and EPR insulation variants, if required.
- Tests performed on a conductor size within the range 70 – 300mm^2 will give approval for all sizes within that range for cables of a similar type and construction.
- Tests performed on a cable with stranded copper or stranded aluminium conductors will be accepted as valid for similar cables with stranded conductors of the other metal and conductor profile.
- Tests performed on a cable with a strippable semi-conducting core screen will cover similar cables with a fully bonded screen.

The approval application should indicate the material options for which approval is sought. BASEC will identify the construction alternatives required to gain approval covering the required options.

At the absolute discretion of BASEC consideration can be given to the evaluation of type test reports performed on cables to the BS 7870-4.20 specification (including the long term test), as an alternative to carrying out type testing. Such reports must be produced by a BASEC approved laboratory and must cover all of the applicable elements required by the standard to be considered.

The BS 7870-4.20 cable specification requires that a long term test be conducted at specified intervals. BASEC may wish to witness this test being carried out, including the witnessing of the step breakdown voltage tests carried out at predetermined intervals

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Part 4 : Specification for distribution cables with extruded insulation for rated voltages of 11kV and 33kV.
Section 4.20 : Three core 11kV cables

Surveillance Following Approval to Scheme F

Surveillance will be performed at the place of manufacture. Testing on cables, sample or components will be witnessed by the BASEC representative. Testing will follow the frequency defined in the Table 1. Samples of cable will be saved by the manufacturer and the selection of test samples and the tests to be performed will be selected by BASEC. The manufacturer will be advised which tests will be performed so that sample preparation, as necessary, can take place before the surveillance visit.

Samples will be selected at the rate given in the table below:

Cable Length				Number of samples
Multicore cables		Single core cables		
Above km	Up to & including km	Above km	Up to & including km	
2	10	4	20	1
10	20	20	40	2
20	30	40	60	3
etc.	etc.	etc.	etc.	etc.

The manufacturer shall advise BASEC every 3 months of the proposed BS 7870-4.20 cable production planned for the following 3 months (both quantity and cable type). BASEC will in turn advise the manufacturer of the sample requirements (cable type and quantity) and will also advise the test regime to be witnessed, in line with Table 1.

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Power Cables with extruded insulation and their accessories for rated voltage from 1kV (Um=1,2kV) up to 30kV (Um=36kV). Part 2 : Cables from rated voltages from 6kV (Um=7,2kV) up to 30kV (Um=36kV).

Table 1 : Tests, Facilities Required and Test Frequencies.

Test description	**Requirement**		**Test Method**		**Freq**	**Avail**
	Specification	Clause	Specification	Clause		
Ageing test on complete cable	IEC 60502-2	19.7.5	IEC 60811-401	-	F25	a
Armour wire and/or tape dimensions	IEC 60502-2	13.4/13/5 & 17.7.3	IEC 60502-2	17.7.1/17.7.2	F5	a
Carbon black content (black PE sheaths)	IEC 60502-2	Table 22	BS EN 60811-605	-	F5	b
Conductor examination	IEC 60502-2	17.4	IEC 60228	-	F50	a
Conductor resistance	IEC 60502-2	16.2	IEC 60228	-	F100	a
Conductor screen, resistivity	IEC 60502-2	18.2.10.3	IEC 60502-2	Annex D	F5	a
Copper wire screen resistance	IEC 60502-2	16.2	IEC 60228	-	F100	a
d.c. voltage test on oversheath (where applicable) Spark test on oversheath (where applicable)	IEC 60502-2	16.5	IEC 60229	3.1 3.2	F100 man	a a
Double tape armour thickness	IEC 60502-2	13.7	IEC 60502-2	13.7	F5	a
External diameter measurement (where applicable)	IEC 60502-2	17.8	IEC 60811-203	-	F100	a
Flame propagation on single cable (ST1,ST2 & SE1 sheathed cables only)	IEC 60332-1-2	-	IEC 60332-1-2	-	F25	b
Four hour voltage test (type test) Four hour voltage test (sample test)	IEC 60502-2	18.3.4.2 17.9.4	IEC 60502-2	18.3.4.1 17.9	F5 F25	a a
Gaps in concentric conductor	IEC 60502-2	11.1/11.2	IEC 60502-2	11.2	F50	a
Impulse test	IEC 60502-2	18.3.5.2	IEC 60502-2	18.3.5.1	F5	a
Insulation thermal stability (PVC insulation)	IEC 60502-2	Table 18	IEC 60811-405	-	F5	b
Insulation hot set test	IEC 60502-2	Table 19 & 23	IEC 60502-2 IEC 60811-507	Table 19 & 23 -	F25	a

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Table 1 : Tests, Facilities Required and Test Frequencies.

Test description	**Requirement**		**Test Method**		**Freq**	**Avail**
	Specification	Clause	Specification	Clause		
Insulation, thickness	IEC 60502-2	17.5.2 & Tables 5-7	IEC 60811-201	-	F100	a
Insulation, elastic modulus of HEPR	IEC 60502-2	Table 19	IEC 60811-501	-	F5	b
Insulation, hardness of HEPR	IEC 60502-2	Table 19	IEC 60502-2	Annex E	F5	b
Insulation, shrinkage test of XLPE	IEC 60502-2	Table 19	IEC 60811-502	-	F5	a
Insulation screen, strippability (where applicable)	IEC 60502-2	19.23.3	IEC 60502-2	19.23.2	F25	a
Insulation screen, resistivity	IEC 60502-2	18.2.10.3	IEC 60502-2	Annex D	F5	a
Insulation resistance at ambient temperature	IEC 60502-2	Table 15	IEC 60502-2	18.3.2.1	F5	a
Insulation resistance at maximum conductor temperature	IEC 60502-2	Table 15	IEC 60502-2	18.3.3.1	F5	a
Lead sheath thickness (where applicable)	IEC 60502-2	17.6.1	IEC 60502-2	17.6.2/17.6.3	F50	a
Loss of mass (PVC sheath ST2)	IEC 60502-2	Table 21	IEC 60811-409	-	F5	a
Metal screen	IEC 60502-2	10.2	IEC 60502-2	10.1	F50	a
Oil immersion test (elastomeric sheaths)	IEC 60502-2	Table 23	IEC 60811-404	-	F5	b
Oversheath shrinkage (PE sheathed cables only)	IEC 60502-2	Table 22	IEC 60811-503	-	F5	a
Oversheath thickness	IEC 60502-2	14.3/17.5.3	IEC 60811-202	-	F100	a
Ozone resistance (EPR &HEPR insulation)	IEC 60502-2	19.12.2	IEC 60811-403	-	F5	o
Partial discharge	IEC 60502-2	16.3	IEC 60885-3	-	F100	a
Pressure test at high temperature (insulation & sheath)	IEC 60502-2	19.9.2	IEC 60811-508	-	F5	b

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Table 1 : Tests, Facilities Required and Test Frequencies.

Test description	**Requirement**		**Test Method**		**Freq**	**Avail**
	Specification	Clause	Specification	Clause		
Resistance to cracking of PVC insulation & sheath	IEC 60502-2	19.11.2	IEC 60811-509	-	F5	a
Separation layer material	IEC 60502-2	14.2	IEC 60502-2	14.2	F5	a
Separation layer thickness	IEC 60502-2	13.3.3	IEC 60502-2	13.3.3	F100	a
Tensile strength and elongation before/after ageing in air (insulation)	IEC 60502-2	Table 17	IEC 60811-401/501	-	F25	a
Tensile strength and elongation before/after ageing in air (sheath)	IEC 60502-2	Table 20	IEC 60811-401/501	-	F25	a
Test at low temperature (PVC insulation & sheath)	IEC 60502-2	19.10.2	IEC 60811-504/505/506	-	F5	b
Thickness of extruded inner covering	IEC 60502-2	Table 8	IEC 60502-2	8.2.3	F50	a
Thickness of lapped inner covering	IEC 60502-2	8.2.4	IEC 60502-2	8.2.4	F50	a
Type tests sequential electrical tests						
Bending test	IEC 60502-2	18.2.4	IEC 60502-2	18.2.4	1/5yr	o
Partial discharge	IEC 60502-2	18.2.5	IEC 60885-3	-	1/5yr	o
Tan δ	IEC 60502-2	Table 15 & 18.2.6	IEC 60502-2	18.2.5	1/5yr	o
Heat cycle test	IEC 60502-2	18.2.5/18.2.7	IEC 60502-2	18.2.7	1/5yr	o
Impulse test followed by voltage test	IEC 60502-2	18.2.8	IEC 60230 IEC 60502-2	- Table 11	1/5yr	o
Four hour voltage test	IEC 60502-2	18.2.9	IEC 60502-2	18.2.9	1/5yr	o

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Table 1 : Tests, Facilities Required and Test Frequencies.

Test description	**Requirement**		**Test Method**		**Freq**	**Avail**
	Specification	Clause	Specification	Clause		
Voltage test on complete cable	IEC 60502-2	16.4.5	IEC 60502-2	16.4.2-16.4.4	F100	a
Water penetration test (where applicable)	IEC 60502-2	Annex F	IEC 60502-2	Annex F	F5	o
Water absorption test	IEC 60502-2	Table 18 & 19	IEC 60811-402	-	F5	a

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Schedule of Samples for Type Approval

The selection of samples for type approval is based on the guidelines given in the cable specification BS 6622 Annex G, which has been used as a basis for the determination of the scope of approval. This is used in the absence of any specified recommendations in the IEC 60502-2 specification.

The samples selected will depend on the scope of approval sought. For guidance the following notes detail typical sample requirements.

- Separate samples will be required to cover conductor constructions that include stranded circular or solid circular variants.
- Separate samples will be required to cover XLPE, EPR and HEPR insulation variants, if required.
- Tests performed on a conductor size within the range 70 – 300mm^2 will give approval for all sizes within that range for cables of a similar type and construction.
- Tests performed on a conductor size outside that range will give approval for the next two standard smaller sizes on the smallest cable tested and for the next two standard larger sizes on the largest cable tested.
- Tests performed on a cable with stranded copper or stranded aluminium conductors will be accepted as valid for similar cables with stranded conductors of the other metal.
- Tests performed on a cable with a strippable semi-conducting core screen will cover similar cables with a fully bonded screen.
- Tests performed on a 3 core cable shall be accepted as valid for single core cables, otherwise of the same type, for the same range of conductor sizes.
- Tests performed successfully on one voltage rating will be accepted as demonstrating capability to produce cables of a lower voltage rating which utilise the same materials and processing methods.

The approval application should indicate the material options for which approval is sought. BASEC will identify the construction alternatives required to gain approval covering the required options.
At the absolute discretion of BASEC consideration can be given to the evaluation of type test reports performed on cables to the IEC 60502-2 specification, as an alternative to carrying out type testing. Such reports must be produced by a BASEC approved laboratory and must cover all of the applicable elements required by the standard to be considered.

The IEC 60502-2 (Annex A) details the methodology for the calculation of component dimensions. BASEC will as part of the Product Certification Requirements, verify the application of these design principles, by the applicant.

Surveillance Following Approval to Scheme F

Surveillance will be performed at the place of manufacture. Testing on cables, sample or components will be witnessed by the BASEC representative. Testing will follow the frequency defined in the Table 1. Samples of cable will be saved by the manufacturer and the selection of test samples and the tests to be performed will be selected by BASEC. The manufacturer will be advised which tests will be performed so that sample preparation, as necessary, can take place before the surveillance visit.

Samples will be selected at the rate given in IEC 60502-2 Table 12, which is summarised below:

Table 2

Cable Length				Number of samples
Multicore cables		Single core cables		
Above km	Up to & including km	Above km	Up to & including km	
2	10	4	20	1
10	20	20	40	2
20	30	40	60	3
etc.	etc.	etc.	etc.	etc.

The manufacturer shall advise BASEC every 3 months of the proposed IEC 60502-2 production planned for the following 3 months (both quantity and cable type). BASEC will in turn advise the manufacturer of the sample requirements (cable type and quantity) and will also advise the test regime to be witnessed, in line with Table 1.

17 SCHEME G REQUIREMENTS

Scheme G covers uninsulated overhead line cables, and will be developed as required.

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