Standards for Electric Cables

T L Journeaux

PRYSMIAN
CABLES & SYSTEMS

What are standards?

- A standard is a document, established by consensus and approved by a recognized body, that provides, for common and repeated use, rules, guidelines or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context (BS 0)

- Compliance with standards may provide a means of demonstrating achievement of essential product safety requirements (CE mark) or form a basis for product certification

How are standards developed

- Worldwide through the International Electrotechnical Commission as an IEC standard
- European through European Committee for Electrotechnical Standardisation (CLC) as an EN standard
- Nationally through British Standards (BSI) as a BS standard

Different types of standard

- Product standard

  specify construction, materials, tests and usage for a family of products
- Test method standard

  specify a test method for a particular performance characteristic
- Guides to use

  give guidance on the use of products including limiting conditions, periodic verification, package and storage
- Application standards

  give information on the selection, use and installation of products for particular applications

Product standards

- Prescriptive specification of voltage designation, conductor sizes, core identification, marking, dimensions, insulation and sheathing materials, construction

- Prescriptive specification of tests to be applied including electrical, constructional, dimensional, mechanical and fire tests.

Important product standards

- BS6004 PVC insulated, non-armoured cables 450/750V for electric power, lighting and internal wiring
- BS7211 Thermosetting insulated, non armoured cables 450/750V for electric power, lighting and internal wiring having low emission of smoke and corrosive gases when affected by fire
- BS6500 Flexible cords 300/500V for use with appliances and equipment intended for domestic, office and similar environments

6491x

6242y

6181y

3182y

Important product standards

- BS5467 Thermosetting insulated, armoured cables 600/1000V and 1900/3300V
- BS6724 Thermosetting insulated, armoured cables 600/1000V and 1900/3300V, having low emission of smoke and corrosive gases when affected by fire

6942x

6943x

Important product standards

- BS7629 300/500V fire resistant electric cables having low emission of smoke and corrosive gases when affected by fire

FP200 Gold

FPPlus

FPPLus Flex

Test method standards

- Specify the apparatus and test procedure for a particular performance test
- Recommended requirements may be given
- Particularly related to fire performance characteristics
- Growing trend for “stand alone” test methods with requirements given in application standard rather than product standard

Some important test method standards

- BS EN50200 European test method for fire resistance of fire alarm cables

- BS8434-1 and BS8434-2 UK only test method for fire resistance of fire alarm cables called up by BS5839-1

- BS6387 Widely used UK test method for fire resistance of cables which also includes other performance tests

Guides to use

- Either given in an Appendix to the Product standard or as a stand alone standard

- Gives guidance on safety, intended usage, limiting conditions (voltage, current carrying capacity, pulling tension, bending, support spacing, storage temperature, installation temperature and operating temperature)

Important guides to use

- BS7540 Guide to use for cables with a rated voltage not exceeding 450/750V
- Part 1: General guidance
- Part 2: Harmonized cable types
- Part 3: National standard cables

Application standards

- Application standards may be Standards giving requirements or Codes of practice giving recommendations

- Application standards give requirements for complete installations and specify how products should be used and installed to achieve overall system requirements

Important application standards

- BS7671 Requirements for Electrical Installations – IEE Wiring Regulations
- BS5839-1 Code of practice for system design, installation, commissioning and maintenance of fire detection and fire alarm systems for buildings
- BS5266-1 Code of practice for the emergency lighting of premises

Demonstration of compliance

- Test report (manufacturer / third party)
- Test certificate (manufacturer / third party)
- Approval certificate
- Third party product certification including system of ongoing product surveillance

Marking for Compliance with standards

- Manufacturer's declaration by marking of the BS number on the product
- Use of the CE mark
- Use of a certification mark from an accredited certification body to give an independent mark of quality