

FIRE PERFORMANCE CABLES

The development of electric cables for fire situations has meant that Fire Performance cables have become an almost everyday requirement in the construction industry globally, but the general subject of fire performance cables can be a complex one. The need for cables to continue to perform in the event of a fire is more prevalent today than ever before, and in the case of public buildings the need to reduce the toxicity content in the materials used to produce cables carries equal importance.

The dangers of fire would include the safety of people and the continuous functioning of electrical circuits required to maintain safety. In the case of electric cables their construction may need to

address some or all of the following; fire survival, fire resistance, fire propagation, flame retardancy, smoke emission and toxicity.

Even if the electrical circuit was not the cause of a fire, the electric cable may very well be engulfed in a fire that has started elsewhere. Consequently the compounds that the cable is produced from should not contribute to the fire, help spread it, or emit gases during combustion that could harm people or damage equipment. Another aspect to consider is that the density of smoke generated in the event of a fire should not be sufficient to obscure emergency exit signs. Most cable standards therefore include some kind of fire performance and testing requirements, but there are many in existence.

Fire Test Standards for Cables

Here are a selection of standards used in relation to fire tests for cables :-

- BS 6387** : Performance requirements for cables required to maintain circuit integrity under fire conditions
- EN 50266** : Common test methods for cables under fire conditions - Test for vertical flame spread of vertically-mounted bunched wires or cables
- EN 50267** : Common test methods for cables under fire conditions - Tests on gases evolved during combustion of materials from cables
- EN 50200** : Method of test for resistance to fire of unprotected small cables for use in emergency circuits
- BS 8434-1** : Methods of test for assessment of the fire integrity of electric cables. Test for unprotected small cables for use in emergency circuits. (EN 50200 with addition of water spray)
- BS 8434-2** : Methods of test for assessment of the fire integrity of electric cables. Test for unprotected small cables for use in emergency circuits. (EN 50200 with a 930°C flame and with water spray)
- IEC 60331** : Tests for electric cables under fire conditions
- IEC 60332** : Tests on electric and optical fibre cables under fire conditions
- IEC 60754** : Test on gases evolved during combustion of materials from cables
- IEC 61034** : Measurement of smoke density of cables burning under defined conditions.

HALOGEN FREE OR LOW SMOKE & FUME MATERIALS

As outlined in the previous subject certain cable types are designed with the performance capability of surviving fire conditions for a specified period, whilst other cable types may be manufactured using polymer compounds that generate lower smoke and fume emissions. In such cases the cables may be identified as being Halogen Free, Low Smoke & Fume (LSF), Low Smoke Zero Halogen (LSZH), or Zero Halogen Low Smoke (ZHLS).

These compare favourably with traditional electric cables that were likely to generate noxious emissions of gases in fire situations, that may have been manufactured and installed many years ago, prior to the introduction of the most recent cable standards and the development of new environmentally friendly compounds.

It is equally important that the materials used in the manufacture of cable management products, including cable cleats, cable clamps cable glands, their seals, and any shrouds that are required to be fitted, can offer the same high level of compliance in the way of lower smoke and fume emissions.

Some cables, but not all, that bear Low Smoke & Fume and /or Zero Halogen characteristics may have an inner cable bedding that is extruded from a compound which has not been fully cured during the manufacturing process. This is often referred to as a soft bedding, and this itself brings an additional factor to consider when selecting appropriate cable sealing glands to suit cables having this characteristic.



CABLE JOINTS, CABLE TERMINATIONS, CABLE GLANDS, CABLE CLEATS, FEEDER PILLARS, FUSE LINKS, ARC FLASH, CABLE ROLLERS, OUT-OUTS

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