

Cable Flame Resistance



We had introduced the cable fire retardant standards, now we will talk about another cable fire protection indicators - flame resistance.

Flame-resistant cables should not only be able to maintain normal operation for a certain period of time while burning, but also ensure that while the fire is being putted away with water and through mechanical shock the cable can maintain continuity.

Here under, we would like to introduce in details:

IEC 60331 & BS6387

◆ IEC60331

Requires the temperature of the furnace to be 750°C/3h, indicating that at 750°C applying a voltage of 300 volts to the cable mounted horizontally burning for 3 hours without the cable breaking down.

◆ BS6387

Requires passing of horizontal combustion experiments, water spray experiments and mechanical shock combustion experiments.

The horizontal combustion experiments are divided into A grade 650°C/3h, B grade 750°C/3h, C grade 950°C/3h and S grade 950°C/3min.

- Class A indicates that a pressure of 300 volts is applied at 650°C for 3 hours without breakdown*
- Class B indicates that a pressure of 300 volts is applied at 750°C for 3 hours without breakdown*
- Class C indicates that a pressure of 300 volts is applied at 950°C for 3 hours without breakdown*
- Class S indicates that a pressure of 300 volts is applied at 950°C for 3 minutes without breakdown*

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Water spray combustion experiment is divided into W level, requiring the application of 300 volts, burning for 15 minutes and then sprayed with water for another 15 minutes without breakdown.

Mechanical Shock combustion experiments are divided into X-level 650°C/15min, Y-level 750°C/15min and Z-level 950°C /15min.

- X-level indicates that at 650° C applying 300 volts at the same time as the combustion happens, every 30 seconds using mechanical shocks the cable should sustain for 15 minutes without breaking down.
- Y-level indicates that at 750° C applying 300 volts at the same time as the combustion happens, every 30 seconds using mechanical shocks the cable should sustain for 15 minutes without breaking down.
- Z-level indicates that at 950° C applying 300 volts at the same time as the combustion happens, every 30 seconds using mechanical shocks the cable should sustain for 15 minutes without breaking down.

BS8434 & EN50200

◆ BS8434-2

Requires experiments through horizontal combustion, water spray experiments and mechanical shock combustion experiments. The 930°C/60 min horizontal combustion experiment, indicates that the cable in question is exposed to flames at 930°C for a period of 60 minutes maintaining electrical continuity. After 60 min of direct flame test, the cable will be tested by water spray combustion and then pouring water for 60 minutes, the cable should maintain electrical continuity. Shock Combustion Experiment at 930 ° C for 60 min while operating applying mechanical shocks every 15 seconds for 15 minutes the cable should maintain electrical continuity

◆ EN50200

Requires the use of horizontal combustion and mechanical shock test. The horizontal combustion test is 830°C + 40 °C/120 min, indicating that at a level of combustion of 842 °C for a period of 120 minutes the cable should remain at all times operational. Shock Combustion test 830°C + 40 °C/120 min and 24 shock requires that at the same time of the implementation of combustion at 842 °C to apply mechanical shocks 24 times the cable should maintain continuity.

◆ EN50200 Annex E

Based on the EN50200 tests, Annex E refers to the indexing of a water spray test. Effecting Water Spray Combustion test while burning for 15 minutes and then flushing for 15 minutes, the Cable should keep running uninterrupted.

For the time being the introduction of cable fire resistance will come to an end with this article, the entire integrated cabling fire resistance topic, the normal transmission cable, such as integrated wiring, building control cables, and more that follow the standards for fire retardant and what concerns the cable outer jacket and whether to use low smoke and no halogen materials. There is more discussion needed about the flame resistance of special industry cables, such as petrochemicals, ships, drilling platforms, etc...