

Fire Test Standard

BS6387:1994-Fire

Fire with Water and Fire with Mechanical Shock Test

The following test is the internationally recognized UK test used to determine if a cable is capable of maintaining circuit integrity under fire conditions, fire with water and fire with mechanical shock. These tests use a number of alternative time and temperature parameters and depending on the level achieved by the cable, a corresponding letter is assigned to denote the category the cable passed.

Resistance to fire:	Symbol
650 °C for 3 hours	A
750 °C for 3 hours	B
950 °C for 3 hours	C
950 °C for 20 minutes	S

Resistance to fire and water:	Symbol
650 °C for 15 minutes, then for 15 minutes with fire and water	W

Resistance to fire with mechanical shock:	Symbol
650 °C for 15 minutes with 30 seconds hammer blows	X
750 °C for 15 minutes with 30 seconds hammer blows	Y
950 °C for 15 minutes with 30 seconds hammer blows	Z



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IEC60754 - Acid Gas Emissions Test

Due to concerns regarding the amount of acid gas, which can be produced when cables are burnt, this international test determines the amount of gas evolved by burning cables.

The recommended values of the test state that the weighted pH value should not be less than 4.3, when related to 1 liter of water and the weighted value of conductivity should not exceed 10 $\mu\text{s}/\text{mm}$.

IEC60332 Part 3 - Flame Propagation

This test defines the ability of bunched cables to restrict vertical flame propagation when laid in cable trays, or conduit.

The test comprises of 3 categories, each determined by the amount of combustible material in a 1 m sample.

IEC60331 - Fire Test

This international fire test is to establish whether a cable can maintain circuit integrity during and after exposure to fire. A sample is exposed to fire for 3 hours at a temperature of between 750 °C and 800 °C, after 3 hours the fire is extinguished and the current is turned off. After a further 12 hours, the sample of cable is re-energised and must maintain circuit integrity.

IEC61034 - Smoke Density Test

This test measures the smoke emission from electric cables during fire. The test is carried out in a 3 m³ chamber where cable sample is subjected to fire.

The smoke emission and density are measured by transmission a beam of light across the inside of the chamber to a photoelectric cell which measures the amount of light received.

PH30 BS 8434-1:2003

The duration of the test shall be 30 min (15 min for the initial fire and impact phase followed by an additional 15 min for the fire, impact and water phase), during which the cable shall not reach the point of failure.

Conformity to this requirement shall qualify for a 30 min classification.

PH120 BS 8434-2:2003

The duration of the test shall be 120 min (60 min for the initial fire and impact phase followed by an additional 60 min for the fire, impact and water phase), during which the cable shall not reach the point of failure.

Conformity to this requirement shall qualify for a 120 min classification.