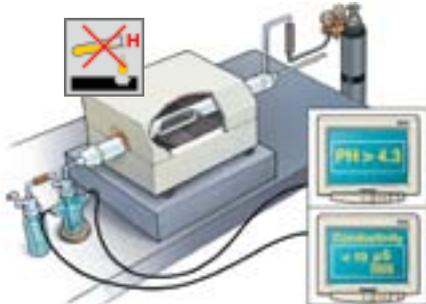


THE MOST IMPORTANT TEST PROCEDURES AND THEIR FUNCTIONS



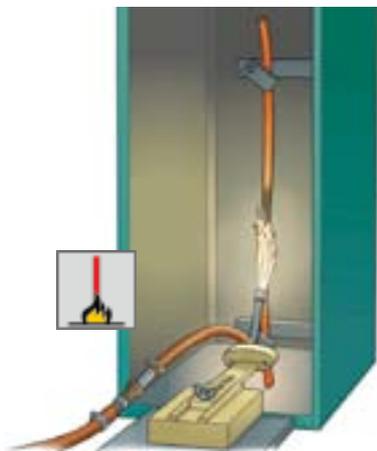
Test on gases evolved during combustion

This test procedure provides information if the insulation material of the cable sheath creates corrosive gases in the event of fire.

Halogen parts or other material in small quantities can be easily identified with this test due to the strong change of pH and conductivity. The conductivity is $< 10\text{mS/mm}$

Standards

- IEC 60754-1 and IEC 60754-2
- EN 50267-2-1, EN 50267-2-2
- EN 50267-2-3
- VDE 0482-267 part 2-1, 2-2 and 2-3



Test for vertical flame propagation (single insulated wire or cable)

This test method tests a cable sample (length: 60 cm) for burning behaviour.

The flame must extinguish itself, and the burn damage must not reach the upper end of the cable sample.

Standards

- IEC 60332-1-2
- EN 60332-1-2
- VDE 0482-332-1-2

Test for vertical flame spread (bunched wires or cables)

This test method tests a cable bundle (length: 360 cm) with regard to fire propagation.

The flames must extinguish themselves, and burn damage must not exceed a defined height.

Standards

- IEC 60332-3-22 up to 25 Cat. A-D
- EN 60332-3-22 up to 25 Cat. A-D
- VDE 0482-332-3-22 up to 25 Cat. A-D



Measurement of smoke density

This test checks smoke development when burning the cable or the impairment of the visibility by burning cables.

The reduction in light transparency is measured in a standard chamber.

Standards

- IEC 61034-1 and IEC 61034-2
- EN 61034-1 and EN 61034-2
- VDE 0482-1034 part 1 and 2

THE MOST IMPORTANT TEST PROCEDURES AND THEIR FUNCTIONS

Test of circuit integrity (FE/PH)

This test establishes whether a single cable can maintain circuit integrity during and after exposure to a fire for a time period of at least 180 minutes. Cables which fulfil the requirements of this test are marked with "FE180" after their type designation.

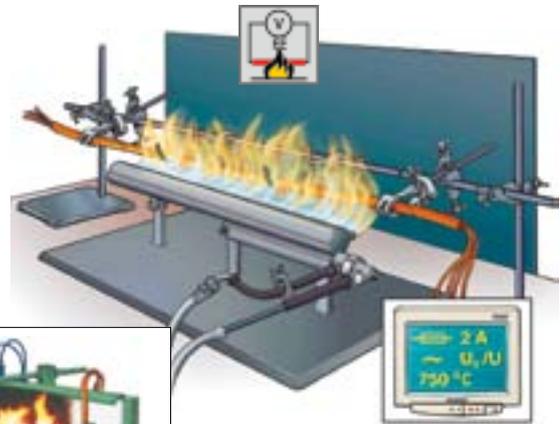
There is no obligation to test the cable for functional integrity beyond the designated period.

Remark:

This test is not equivalent to the test for functional integrity in accordance with DIN 4102-12

Test of circuit integrity (fire and water)

- BS 6387 (cat.W) [650°C, 3A]
- VdS 3423 [>830°C, 3A]
- EN 50200 Annex E [>830°C, 2A]

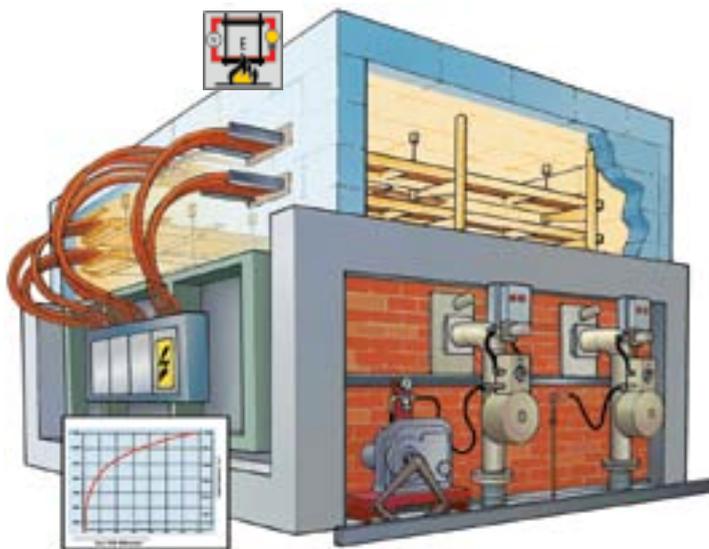


Test of circuit integrity (fire alone)

- IEC 60331-11/-21/-23/-25 [>750°C]
- BS 6387 (cat. C) [950°C]
- VDE 0472-814 [>750°C]

Test of circuit integrity (fire and mechanical shock)

- IEC 60331-1/-2 [>830°C, 2A]
- EN 50200 (PH) [>830°C, 2A]
- EN 50362 [> 830°C, 2A]
- BS 6387 (cat.Z) [950°C, 3A]



Test of system circuit integrity of electrical cable installations

This standard describes the requirements and the actions to achieve the enhanced functional integrity of complete electrical cable installations in the event of fire.

While the circuit integrity (FE/PH) provides only for the test of single cables, the cables here are tested in connection with practical support and fixing systems.

It is important to appreciate that there is no connection between the two standards - circuit integrity (FE/PH) and system circuit integrity (E).

The test is carried out and certified from state recognised institutes.

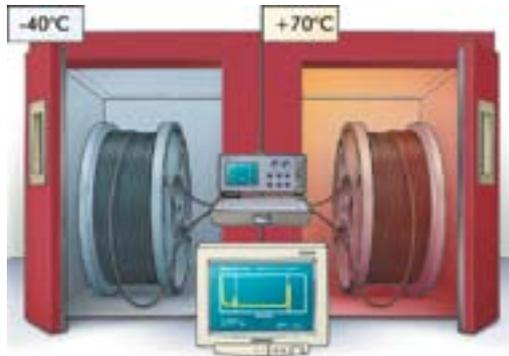
Standards

- DIN 4102 part 12 (E30-E90)
- NBN 713-020 (Rf1, Rf1 1/2)

Better than the standard!

This test (E30-E90) is the only worldwide standard for guaranteeing functional integrity of the complete electrical cable installation, including the support and fixing components, under normal operating conditions.

THE MOST IMPORTANT TEST PROCEDURES AND THEIR FUNCTIONS



Temperature change and humidity

This test procedure checks the electrical parameters (LF and HF) of a data cable following temperature or humidity changes. Test conditions for the temperature and humidity dependent measurements must simulate the worst conditions.

Standard

- IEC 60794-1-2F1

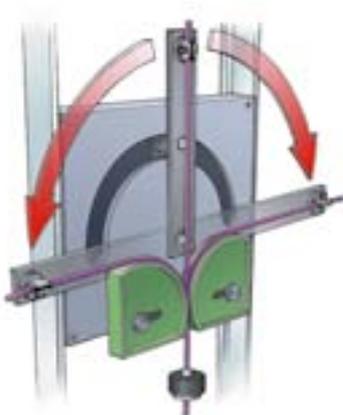
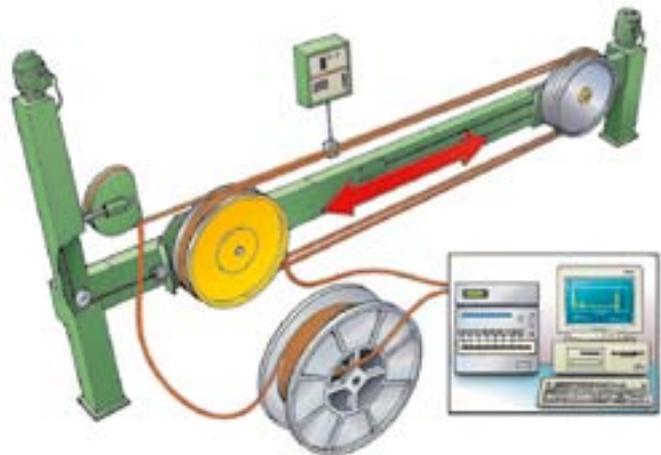
Tensile performance

This test checks the behaviour of the electrical LF and HF parameters as a function of the pulling force of the data cable, such as that occurring during draw-in. This is not a destructive test.

This means that the cable is loaded with the maximum allowable pulling force.

Standard

- IEC 60794-1-2-E1B



Repeated bending

The behaviour of a data cable is determined by bending a cable sample forwards and backwards 180 degrees several times. Afterwards, the cable must still fulfil the electrical LF and HF parameters according to the EN 50173 standard.

Standard

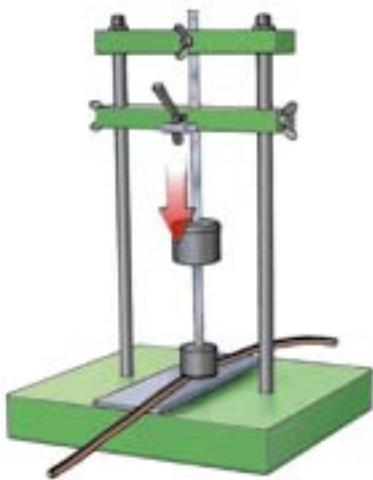
- IEC 60794-1-2-E6

Hammer blow

In order to determine the resistance of a data cable against impacts, a wedge is allowed to fall vertically onto the cable. Afterwards, the cable must still fulfil the electrical LF and HF parameters according to the EN 50173 standard.



THE MOST IMPORTANT TEST PROCEDURES AND THEIR FUNCTIONS



Impact

The fall of a heavy tool, device, stone, etc. onto the cable is simulated here. The weight is allowed to fall vertically onto an intermediate steel piece that transmits the force to the cable sample. No damage to the cable sheath may occur.

Standard

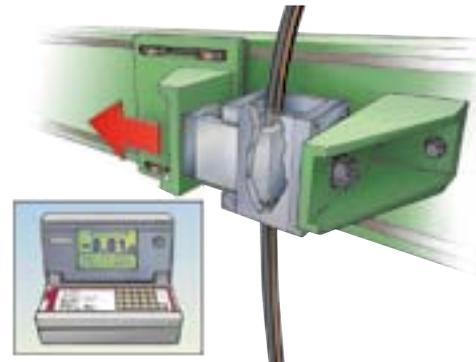
- IEC 60794-1-2-E4

Crush resistance

The purpose of this test is to determine the ability of a data cable to withstand transverse pressure. After that, the electrical LF and HF parameters must still correspond to the EN 50173 standard.

Standard

- IEC 60794-1-2-E3

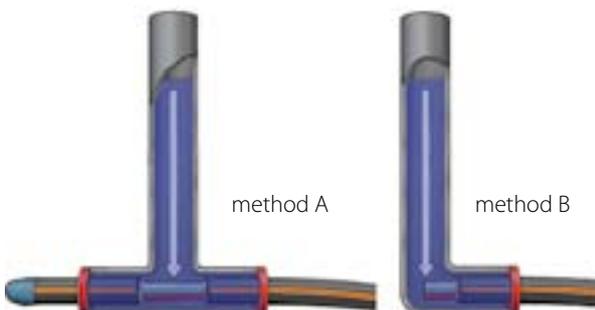
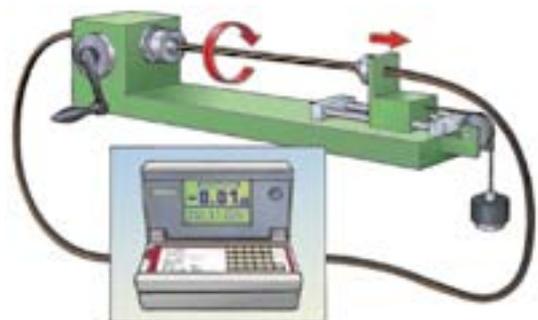


Torsion

During installation, a fibre optic cable must withstand torsion forces in addition to tension, transverse pressure and bending loads. Thus, a cable sample is turned about its own axis. Attenuation deviations are documented during the test. Neither fibre nor sheath materials may be damaged during the test.

Standard

- IEC 60794-1-2-E7



Water penetration

This method checks whether all interstices of a fibre optic outdoor cable are continuously filled with a compound that prevents water from entering the cable. Determining test criteria are the time and the maximum dispersal of the water within the sample. Datwyler uses the more difficult test method B exclusively.

Standard

- IEC 60794-1-2-F5-A/B