

# Flammability of High Frequency and Data Cables

Cables for information transmission inside of building or plants and laid on the surface of a wall are a potential source for propagation of fire.

Since several years it is a fundamental requirement to those indoor cables to be flame retardant. In the past PVC sheathed cables had been the standard choice. They are flame retardant but in case of a real fire they propagate fire and produce corrosive acid gas as well.

Newly developed halogen free materials like our FRNC materials (flame-retardant-non-corrosive) with strongly improved characteristics in the case of fire offers today a smart and well proved alternative.

Following aspects emphasises the improved properties:

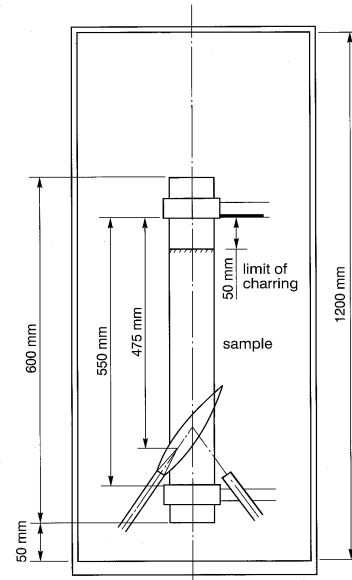
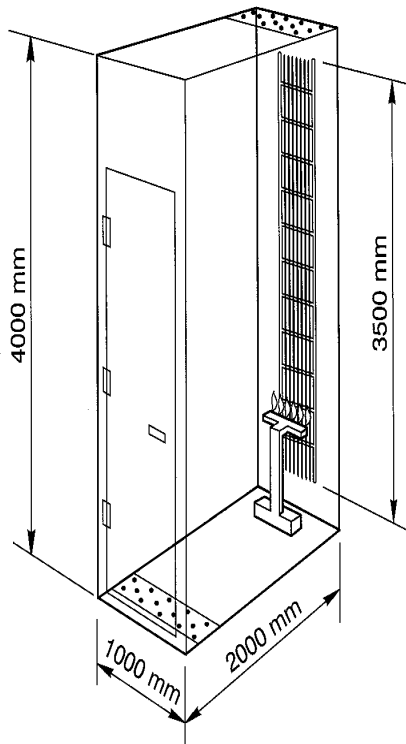
- no fire propagation along the cable tray
- no emission of corrosive crack products, which could produce acid in combination with water. This aspect is directly linked with the halogen content of the materials, which is zero in case of FRNC materials.
- low smoke emission
- in special applications: keeping up the electrical functionality (i.e. insulation) under fire

In order to measure and to compare this aspects, a couple of test methods had been developed, which are shown in the following survey. The ability of a cable to avoid fire propagation is tested by two different methods. In standardisation there had been documented two categories of flame propagation test.

German standard	International standard	Content
DIN VDE 0472 part 804 B	IEC 60332-1	Flammability of a single cable sample
DIN VDE 0472 Part 804 C	IEC 60332-3 Cat. C	Flame propagation of a cable bundle
DIN VDE 0472 Part 813	IEC 60754-2	Corrosiveness of fire gases
DIN VDE 0472 part 816	IEC 61034-1	Measurement of smoke density
DIN VDE 0472 Part 814	IEC 60331	Electrical insulation under fire
DIN 4102 part 12	-	Functionality of an electrical cable system

The behaviour of a single cable sample is tested according to VDE 0472 part 804 **category B**, during **category C** of this standard is to test the behaviour of a cable bundle.

The enclosed graphics show the test equipment, which is following the typical application and environment of those cables. Cables for category B normally are installed in horizontal areas with low cable concentration and nearly no riser areas.



Category C is planned for those cables which are installed as a riser cable so that a large number of cables are running between the floors.

It depends on the certain object which class of flammability should be required. In doubt it is the best to choose the higher requirement of category C to improve safety.

	<b>DIN VDE 0472 part 804 B flame propagation of a single cable</b>	<b>DIN VDE 0472 part 804 C flame propagation of a cable bundle</b>
Number of cables	1	depend. on type, typ. >20
Sample length	60 cm	360 cm
Test duration	65 sec	20 min

The test according to category B could be reached with PVC material.

The propagation test according to DIN VDE 0472 part 804 C needs halogen free flame retardant material.