

**APPLICATION OF PVC AND ZEROTOX IN CABLES****PVC (FR)-Flame Retardant PVC**

PVC insulated, bedding and sheathed cables are inherently flame retardant. In a fire situation normal PVC cables will burn only with difficulty, but in certain conditions, for example when cables are installed vertically, PVC will burn and can cause a fire to spread rapidly throughout a building or the cable basement of a substation or power station.

A disastrous fire at La Spezia power station in 1967 led to the development of flame retardant PVC which, even in a serious fire situation, would limit the extent of the damage to the immediate vicinity of the fire. Such materials, known generally as Flame Retardant (FR) PVC are freely available and are widely used for in-air installations.

**Low Halogen (LHFR) PVC Cables**

The halogen free compounds available in the early 1980's although exhibiting superb flame retardant properties and no HCL gas emission and very little smoke, were not as mechanically robust as traditional PVC cables.

As a comprehensive solution, cables with reduced halogen emission were introduced which in a fire situation give off less than half the acid gas of a standard PVC cable. These cables, known as Low Halogen (LHFR) cables, are still available and may be used where there is minimal danger to personnel in the event of a fire. They are flame retardant and retain the mechanical strength of PVC, but when burning give off copious smoke and should therefore not be considered for use in enclosed areas where limited visibility could be a danger.

**Zerotox Halogen Free Cables**

When PVC cables are involved in a fire they produce dense black smoke and hydrochloric acid gas (HCl) fumes, which are both toxic and highly corrosive. The early 80's saw the development of halogen free cable bedding and sheathing materials, which were flame retardant, produced very little smoke and no corrosive acid gases. Such cables known as Non-Halogenated, Low Smoke and Fume, Flame retardant (NHLSFR) cables are now widely used in high rise buildings, in the mines, in power stations, substations, computer installations and anywhere where the smoke and fumes emitted from burning PVC could endanger life or result in damage to electrical or electronic equipment or the fabric of the building itself.

CBI-electric: african cables introduced its ZEROTOX range of non-halogenated low smoke and fume, flame retardant cables in 1983. The cables were made to comply with a draft British Standard, later to be issued as BS 6724 in 1986. The requirements for halogen free cables in the SABS 1507-1990 were based on the BS specification. In 1990, BS 6724 was revised and called for higher values of both tensile strength and elongation at break of the non-halogenated sheathing compound. The new ZEROTOX cables fully meet the requirements of the revised British Standard.

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