

Flame propagation test for CAT 6A S/FTP

Abstract:

This Document gives a complete overview of performance exhibited by CAT 6A S/FTP when exposed to a Flame Propagation test and also helps to determine the Flame Propagation tendency of the cables in a vertical cable tray. The test Consist of Exposing cable samples to a flame ignition source having LPG fuel flow 9.6 lit/min for 20 min. The test Facility, Test Specifications, Application of FR cable, Performance Evaluation of Results are also Covered.

Introduction:

The Digital revolution is around the corner with digital India, E-governance, Smart Cities, IoT and Big Data/Analytics taking a Definite Shape. Sterlite is at forefront of this technological revolution with experience and expertise in undertaking end-to-end creation of telecom infrastructure & applications. Therefore, for delivering smarter networks and for Connecting every home to bring up transformation in everyday living it becomes very important that the Cables we manufacture are Free from Risk and other Hazards. One such Risk that is normally seen in Data cables is the Flame Propagation behaviour of the Data Cable.

Electrical cables are frequently blamed by the media and fire authorities as the cause of building fires however it is often not the failure of the cable which starts a fire but the misuse of the cable by frayed or damaged insulation, overloading due to incorrect or insufficient circuit protection, short circuit or over voltage. These situations can cause high temperatures in the cable conductors or electrical arcing which may heat the cable insulation and any surrounding combustible materials to start a fire.

To avoid such Circumstances we have manufactured CAT 6A S/FTP which under the above situations, or in cases where a fire is started by another unrelated cause, will not burn or at least will not help spread a fire through the building.

Before Flame propagation test



During Flame propagation test



After Flame Propagation test



Applications:

These S/FTP cables that have successfully passed Flame Propagation test can be established in Multi storey Buildings (Riser Cables) or in Environment where risk of Flame ignition is high. This would Stop the propagation of Flame from one floor to other in a multi storey building and thus reduce the risk of heavy damage. Moreover, as the outer Sheath of S/FTP cable is made up of Low smoke zero Halogen (LSZH) material these halogen free cables do not produce any dangerous acid/gas combination when exposed to flame. LSZH cables reduce the amount of Toxic and corrosive gas emitted during combustion.

Today there are various cable flame propagation test standards written by Technical standards committees in Europe and USA. These common standards Propose test methods intended to determine if the electric cables or materials They are made from are self-extinguishing (Flame Retardant). Thus we have Performed Fire propagation test for Category- C material (LSZH) as per Test standard IEC 332-3.



Photo Showing Flame propagation test performed in Independent laboratory with Specified test Standard.

Test Specifications:

LPG Fuel flow	9.6 ± 0.5 lit/min
Air flow	60-70 lit/min
Height of Vertical Tray	4 metre
Length of each sample	3.5 metre
No of cable samples kept for flame propagation test	97
Distance between Fire Source and cable to be tested	30 cm
To Comply the testing the max. Affected area should be less than 2.5 m from fire source height	



Fig showing the length of vertical Tray and cable



Fig Showing equipment required to assist flame propagation test



Fig Showing arrangement of test setup as per specified standard

Performance evaluation and Conclusion:

As per the test specification, to comply the test the maximum affected (Charred) area should be 2.5m from Fire Source Height. After the test it was observed that only 1.5m of the CAT 6A S/FTP cable was affected (Charred) that clearly indicated that the cable has passed the flame propagation test with the best margin and now the cable can be safely used by the Customers without any risk of Flame Propagation.

