

## Fire and Life-Safety Group (FLS)

# Fiber Optic Cables Policies and Procedures

### Introduction

This document was prepared to list some but not all of the requirements based on the latest edition of adopted codes in 2004. Please ensure that all the requirements of applicable codes at the time of new installations or changes to existing installations are verified and implemented.

The following code sections are taken from the National Electrical Code (NFPA-70). FLS believes that outdoor cable should not be installed within buildings in lengths greater than 50 feet if it does not meet the requirements of NFPA-70. If cables are installed in air ducts or plenums, the cable is to be fire-resistant and have low smoke production. If cables are installed in vertical risers (i.e. shafts), the cable is to be a type that can prevent carrying fire from floor to floor. General-purpose cables installed inside buildings are to resist the spread of fire. If outdoor cables do not meet these code requirements, they should not be used inside buildings. For all cable installation, please consult NFPA-70.

Although this section is written specifically for Fiber Optic cables, for all cable installations, please ensure compliance with the requirements of the National Electrical Code (NFPA-70). Also, please ensure that no cables or conduits pass through stair enclosures unless such cables or conduits serve the stair. In addition, all penetrations through fire-rated assemblies are to be fire-stopped.

### General requirements

Section 770.49 of NFPA-70 states that optical fiber cables installed as wiring within buildings are to be listed as being resistant to the spread of fire in accordance with sections 770.50 and 770.51.

Section 770.50 states that optical fiber cables in a building are to be listed as being suitable for the purpose, and cables are to be marked in accordance with table 770.50.

Exception No. 1 states that optical fiber cables are not required to be listed and marked when the length of the cable within the building, measured from the point of entrance, does not exceed 50 ft. and the cable enters the building from outside and is terminated in an enclosure.

Exception No. 2 states that conductive optical fiber cable is not required to be listed and marked when the cable enters the building from the outside and is run in rigid metal conduit or intermediate metal conduit and such conduits are grounded to an electrode.

Exception No. 3 states that nonconductive optical fiber cables are not required to be listed and marked when the cable enters the building from the outside and is run in a raceway installed in compliance with NFPA-70 Chapter 3.

**NFPA 70 - Table 770.50: Cable Markings**

Cable Marking	Type	Reference
OFNP	Nonconductive optical fiber plenum cable	770.51(A)
OFCP	Conductive optical fiber plenum cable	770.51(A)
OFNR	Nonconductive optical fiber riser cable	770.51(B)
OFRCR	Conductive optical fiber riser cable	770.51(B)

OFNG	Nonconductive optical fiber general-purpose cable	770.51(C)
OFCG	Conductive optical fiber general-purpose cable	770.51(C)
OFN	Nonconductive optical fiber general-purpose cable	770.51(D)
OFC	Conductive optical fiber general-purpose cable	770.51(D)

### **Requirements for specific cable types**

Section 770.51 states that optical fiber cables are to be listed in accordance with 770.51(A) through (D), and optical fiber raceways are to be listed in accordance with 770.51(E) through (G).

#### **Plenum cables**

Section 770.51(A) states that types OFNP and OFCP optical fiber plenum cables are to be listed as being suitable for use in ducts, plenums, and other space used for environmental air and are to be listed as having adequate fire-resistant and low smoke-producing characteristics.

#### **Riser cables**

Section 770.51(B) states that types OFNR and OFCR optical fiber riser cables are to be listed as being suitable for use in a vertical run in a shaft or from floor to floor and are to be listed as having fire-resistant characteristics capable of preventing the carrying of fire from floor to floor.

#### **General-purpose cables**

Section 770.51(C) states that types OFNG and OFCG general-purpose optical fiber cables are to be listed as being suitable for general-purpose use, with the exception of risers and plenums, and are to be listed as being resistant to the spread of fire.

Section 770.51(D) states that types OFN and OFC optical fiber cables are to be listed as being suitable for general-purpose use, with the exception of risers, plenums, and other spaces used for environmental air, and are to be listed as being resistant to the spread of fire.

#### **Plenum raceways**

Section 770.51(E) states that plenum optical fiber raceways are to be listed as having adequate fire-resistant and low smoke-producing characteristics.

#### **Riser raceways**

Section 770.51(F) states that riser optical fiber raceways are to be listed as having fire-resistant characteristics capable of preventing the carrying of fire from floor to floor.

#### **General-purpose raceways**

Section 770.51(G) states that general-purpose optical fiber cable raceway is to be listed as being resistant to the spread of fire.