



Technical Information Sheet

The North American Fire Test Standards (for evaluation of the ability of electrical cables to maintain circuit integrity under fire conditions), UL 2196 and ULC S139-00, are two of the most discerning fire tests for electrical cable anywhere in the world. They are based on the same fire test protocol that is used for all types of fire-rated construction elements - doors, floors, etc. - modified to allow for testing of electrical integrity of the circuit during the test and the subsequent impact of a fireman's hose stream.

Full details of each manufacturer's listings can be found on the UL Online Certifications web site by entering

"<http://database.ul.com/cgi-bin/XYV/cgifind.new/LISEXT/1FRAME/index.html>"

in the address field and typing "FHIT" in the "UL Category Code" field on the resulting search page. Tyco Thermal Controls Listings are Systems # 10, 17, 22, 27, 31). Also on that site is the "UL Guidelines for Electrical Circuit Protective Systems", which is paraphrased below:

UL Electrical Circuit Protective Systems Guide

Fire ratings apply only to the combination of components and materials specified in the individual system. Components and materials are not intended to be interchanged between systems. Electrical circuit protective systems are intended to be fastened to a concrete or masonry wall or a concrete floor-ceiling assembly.

- The normal temperature rise in ANSI/UL 2196 is intended to represent a fully developed interior building fire.
- Each design of fire-resistive cable is tested. The system contains the construction details of the tested configuration.
- Cable is tested as a complete system. The system includes the cable and/ or raceway support, couplings, boxes/conduit bodies, optional splices, vertical supports, grounding conductors, pulling lubricants, cable tray, etc. Cable or raceway supports need to hold the cable in place during the fire and hose stream. The hardware, clamps, strut, etc., are generally stated to be made of steel.
- Systems that require a raceway are tested with the minimum raceway diameter and the minimum raceway type with their respective coupling(s). Raceways having larger diameters are acceptable. Raceways with greater wall thickness are also acceptable. Intermediate metal conduit (IMC) or rigid metal conduit (RMC) are acceptable for use in systems where electrical metallic tubing (EMT) is specified.
- The raceway is intended to be connected together using the coupling type referenced in the system, such as steel setscrew type for EMT or threaded types of coupling for IMC and RMC. No other couplings are intended to be used unless noted in the specific system.
- If a box, conduit body, supports (such as a grip), splice or other components are tested, it is noted in the system.
- If a splice is tested, it is also described in the system. Boxes should be sized per the method described in the NEC.
- The maximum distance between the supports is described in the individual systems and must not be exceeded even if an alternate raceway is used.
- The support requirements are for both the horizontal and vertical configuration unless otherwise noted in a specific system. Cable installed in a vertical raceway is not sup-

ported by the raceway. The maximum vertical distance tested and the cable support mechanism (s) are detailed in the system (This is in contrast to MI or MC cable, where a support on the outside of the cable also supports the conductors.)

- A dedicated raceway is the required configuration unless otherwise noted in the system. The system will specify an allowable ground wire. If not specified, the ground should be the same as the fire-rated wire described in the system. Use of any other ground wire violates the system fire rating.
- Authorities Having Jurisdiction should be consulted as to the specific requirements covering the installation and use of these systems.

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