

CSI Model Specification: Fire-Rated Wiring Systems (U.S.)

1 General

Furnish and install a complete UL 2-hour fire-rated, UL Listed wiring system consisting of specified wiring cable, components, and accessories listed specifically for use with the system.

1.1 REFERENCES

- 1.1.1 ANSI/NFPA 70 - National Electrical Code
- 1.1.2 UL 2196
- 1.1.3 UL Fire Resistance Directory
- 1.1.4 CSA C22.2#124
- 1.1.5 UL 44
- 1.1.6 UL 1569

1.2 SUBMITTALS

- 1.2.1 Provide product data for each cable type.
- 1.2.2 Provide manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency specified under Regulatory Requirements.

1.3 QUALIFICATIONS

- 1.3.1 Supplier: Company specializing in manufacturing products specified in this Section.

1.4 REGULATORY REQUIREMENTS

- 1.4.1 Conform to requirements of ANSI/NFPA 70.
- 1.4.2 Conform to requirements of the Electrical Circuit Protective System listing in the UL Fire Resistance Directory.
- 1.4.3 Furnish products listed by Underwriters Laboratories as suitable for the purpose specified.

2 Products

2.1 FIRE-RATED WIRING CABLE

2.1.1 **2-hour fire-rated Mineral Insulated (Pyrotenax MI) or Polymer Insulated (Raychem RHW or Raychem MC)** cables shall be acceptable.

2.1.1.1 The wiring cable shall be listed in the UL Fire resistance Directory.

2.1.1.2 Mineral Insulated wiring Type MI cable shall have:

- Description: ANSI/NFPA 70, Type MI
- Conductor: solid high conductivity copper
- Insulation Voltage Rating: 600 volts
- Cable Temperature Rating: 90 degrees C
- Termination Temperature Rating: 90 degrees C
- Insulation Material: magnesium oxide
- Sheath Material: seamless soft-drawn copper
- Fire Rating: complete cable system shall have a 2-hour fire rating as listed and classified by Underwriters Laboratories, Inc.
- Overjacket: an optional overjacket must be available

2.1.1.3 Polymer insulated Type RHW cable shall have:

- Description: ANSI/NFPA 70, Type RHW
- Conductor: high conductivity copper Class "B" strand, designed to ensure tensile strength under fire conditions
- Insulation Voltage Rating: 600 volts
- Cable Temperature Rating: 90 degrees C dry
- Cable Temperature Rating: 75 degrees C wet
- Termination Temperature Rating: 90 degrees C
- Insulation Material: silicone rubber
- Marking indicating that the cable is Type RHW
- Fire Rating: cable system and equipment grounding conductor shall have a 2-hour fire rating as listed and classified by Underwriters Laboratories, Inc.
- Wet location approval and to be printed "UL RHW"
- Complete system approval including pull box, vertical installation, pulling lubricant and minimum 1-hour splice

2.1.1.4 Polymer insulated Type MC cable shall have:

- Description: ANSI/NFPA 70, Type MC
- Conductor: high conductivity copper
- Insulation Voltage Rating: 600 volts
- Cable Temperature Rating: 90 degrees C dry
- Termination Temperature Rating: 90 degrees C
- Insulation Material: silicone rubber
- Fire Rating: complete cable system shall have a 2-hour fire rating as listed and classified by Underwriters Laboratories, Inc.
- Wet location approval
- Overjacket: an optional overjacket must be available

2.2 COMPONENTS

2.2.1 Mineral Insulated cable components shall be UL Listed/_CCSA_{US} Certified.

2.2.2 Mineral Insulated cable terminations shall consist of Tyco Thermal Controls':
Pyrotenax Model Pyro-Pak (Installation Sheet 545)
or
Pyrotenax Model Quick-Term Termination (Installation Sheet 638)

- 2.2.3 **Polymer Insulated** cable conduits, boxes and connectors shall be UL Listed/CSA Certified.

3 Execution

3.1 EXAMINATION

- 3.1.1 Verify that the factory installed end seals are intact.
- 3.1.2 Verify that no moisture has entered cable.

3.2 STORAGE

- 3.2.1 Cables shall be shipped from the manufacturer with ends sealed against moisture ingress.
- 3.2.2 Protect the exposed cable ends with shrinkable, molded polyolefin end caps or other suitable means such as standard conduit sealing compound and PVC tape.
- 3.2.3 Cable shall be stored in a clean dry location.

3.3 HANDLING

- 3.3.1 Cable shall be uncoiled by rolling or rotating supply reel.
- 3.3.2 Take precautions necessary to prevent damage to cable from contact with sharp objects, such as when pulled over foreign material on sheaves.

3.4 INSTALLATION

- 3.4.1 The wiring cable shall be installed according to the manufacturer's recommendations, the instructions in the Installation Specification or Manual and the requirements of the UL "Electrical Circuit Protection System" listing.

3.5 FIELD QUALITY CONTROL

- 3.5.1 Inspect cable for physical damage and proper connection.
- 3.5.2 Measure tightness of any bolted connections and compare torque measurements with manufacturer's recommended values.
- 3.5.3 Verify continuity of each conductor.
- 3.5.4 Prior to energizing cables, measure insulation resistance of each cable. Tabulate and submit for approval.
- 3.5.5 Provide certification from cable manufacturer that installation is in accordance with their requirements and the requirements of the UL "Electrical Circuit Protection System" listing.

<p>Worldwide Headquarters Tyco Thermal Controls 300 Constitution Drive Menlo Park, CA 94025-1164 USA Tel (800) 545-6258 Fax (800) 596-5004 info@tycothermal.com www.tycothermal.com</p>	<p>Canada Tyco Thermal Controls 250 West Street Trenton, Ontario Canada K8V 5S2 Tel (800) 545-6258 Fax (800) 596-5004</p>	<p>Important: All information, including illustrations, is believed to be reliable. Users, however, should independently evaluate the suitability of each product for their particular application. Tyco Thermal Controls makes no warranties as to the accuracy or completeness of the information, and disclaims any liability regarding its use. Tyco Thermal Controls' only obligations are those in the Tyco Thermal Controls Standard Terms and Conditions of Sale for this product, and in no case will Tyco Thermal Controls or its distributors be liable for any incidental, indirect, or consequential damages arising from the sale, resale, use, or misuse of the product. Specifications are subject to change without notice. In addition, Tyco Thermal Controls reserves the right to make changes—without notification to Buyer—to processing or materials that do not affect compliance with any applicable specification.</p>
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