

**SECTION 21 0533**  
**HEAT TRACING FOR FIRE SUPPRESSION PIPING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Self-regulating parallel resistance electric heating cable.

**1.02 REFERENCE STANDARDS**

- A. IEEE 515.1 - IEEE Standard for the Testing, Design, Installation, and Maintenance of Electrical Resistance Trace Heating for Commercial Applications; 2012.
- B. ITS (DIR) - Directory of Listed Products; current edition.
- C. NFPA 13 - Standard for the Installation of Sprinkler Systems; 2016.
- D. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- E. UL (DIR) - Online Certifications Directory; current listings at database.ul.com.

**1.03 ADMINISTRATIVE REQUIREMENTS**

- A. Preinstallation Meeting: Conduct a preinstallation meeting one week prior to the start of the work of this section; require attendance by all affected installers.
- B. Coordinate the work with other trades to provide ground fault protection for electric heat tracing circuits as required by NFPA 70.
- C. Coordinate the work with other trades to provide circuit breaker ratings suitable for installed circuit lengths.

**1.04 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate electric heat tracing layout, electrical terminations, thermostats, controls, branch circuit connections, and \_\_\_\_\_.
- C. Field Quality Control Submittals: Indicate test reports and inspection reports.

**1.05 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

**PART 2 PRODUCTS**

**2.01 SELF-REGULATING PARALLEL RESISTANCE ELECTRIC HEATING CABLE**

- A. Manufacturers:
  - 1. Chromalox, Inc: [www.chromalox.com](http://www.chromalox.com).
  - 2. Raychem.
- B. Provide products listed, classified, and labeled by UL (DIR), ITS (DIR), or testing firm acceptable to authorities having jurisdiction (AHJ) specifically for use on branch sprinkler lines in accordance with NFPA 13.
- C. Factory Rating and Testing: Comply with IEEE 515.1.
- D. Heating Element:
  - 1. Provide pair of parallel No. 16 tinned, nickel coated, or \_\_\_\_\_ stranded copper bus wires embedded in cross linked conductive polymer core with varying heat output in response to temperature along its length.
  - 2. Terminations: Waterproof, factory assembled, non-heating leads with connector at one end and water-tight seal at opposite end.
  - 3. Capable of crossing over itself without overheating.
- E. Insulated Jacket: Flame retardant polyolefin.
- F. Cable Cover: Provide tinned copper and polyolefin outer jacket with UV inhibitor.

- G. Maximum Power-On Operating Temperature: 150 degrees F.
- H. Maximum Power-Off Exposure Temperature: 185 degrees F.

## **2.02 CABLE OUTER JACKET MARKINGS**

- A. Name of manufacturer, trademark, or other recognized symbol of identification.
- B. Catalog number, reference number, or model.
- C. Month and year of manufacture, date coding, applicable serial number, or equivalent.
- D. Agency listing or approval.
- E. Applicable environmental or area use requirements, such as NEMA 4, Type 4, IP ratings, and hazardous (classified) location markings including temperature rating.
- F. Any applicable warning/caution statements such as "WARNING: De-energize circuit before removing cover.

## **2.03 CONNECTION KITS**

- A. Provide power connection, splice/tee, and end seal kits compatible with the heating cable and without requiring cutting of the cable core to expose bus wires.
- B. Furnish with NEMA 4X rating for prevention of corrosion and water ingress.
- C. Provide UV stabilized components.

## **2.04 ACCESSORIES**

- A. Provide Accessories As Indicated or As Required for Complete Installation, Including but Not Limited To:
  - 1. High temperature, glass filament tape for attachment of heating cable to metal piping.
  - 2. Aluminum self-adhesive tape for attachment of heating cable to plastic piping.
  - 3. Heat-conductive putty.
  - 4. Cable ties.
  - 5. Silicone end seals and splice kits.
  - 6. Installation clips.
  - 7. Warning labels for attachment to exterior of piping insulation. Refer to Section 22 0553.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that piping and equipment are ready to receive work.
- B. Verify field measurements are as shown on shop drawings.
- C. Verify required power is available, in proper location, and ready for use.

### **3.02 PREPARATION**

- A. Clean all surfaces prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer.

### **3.03 INSTALLATION**

- A. Install in accordance with manufacturer's recommendations.
- B. Comply with installation requirements of IEEE 515.1, NFPA 70, Article 427, and applicable requirements of NFPA 13.
- C. Apply heating cable linearly on pipe with fiberglass tape only after piping has successfully completed any required pressure testing.
- D. Comply with applicable local code requirements.
- E. Identification:
  - 1. After thermal insulation installation, apply external pipeline decals to indicate presence of the thermal insulation cladding at intervals not to exceed 20 ft including cladding over each valve or other equipment that may require maintenance.

F. Electronic Supervision:

1. Provide positive confirmation that circuit is energized in accordance with the requirements of NFPA 13.

**3.04 PROTECTION**

A. Protect installed products from damage until Date of Substantial Completion.

**END OF SECTION 21 0533**

