

SECTION 238239.19 - ELECTRIC HEATERS

PART 1 - GENERAL

1.01 BUY AMERICAN REQUIREMENTS

- A. Provide certificates to show that all products meet the following requirements.
 - 1. American Iron and Steel (AIS)
 - 2. Build America, Buy America Act
- B. See Supplementary Conditions for details.

1.02 SUMMARY

- A. Section Includes:
 - 1. Unit heaters with propeller fans and electric-resistance heating coils.
 - 2. Radiant ceiling panels with electric-resistance heating coils.

1.03 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include rated capacities, operating characteristics, furnished specialties, and accessories.
- B. Shop Drawings:
 - 1. Include plans, elevations, sections, and details.
 - 2. Include details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
 - 3. Include details of anchorages and attachments to structure and to supported equipment.
 - 4. Include equipment schedules to indicate rated capacities, operating characteristics, furnished specialties, and accessories.
 - 5. Wiring Diagrams: Power, signal, and control wiring.
- C. Samples: For each exposed product and for each color and texture specified.

1.04 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For unit heaters to include in emergency, operation, and maintenance manuals.

PART 2 - PRODUCTS

2.01 HORIZONTAL UNIT HEATERS (UH-1, UH-2)

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Chromalox, Inc.
 - 2. Modine.
- B. Heaters: Assembly including chassis, electric finned heating coil, fan, motor, and controls. Comply with UL 2021.
- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- D. Cabinet
 - 1. Front Panel: Stamped-steel with individual, adjustable louvers and with removable panels fastened with tamperproof fasteners.
 - 2. Finish: All metal surfaces of the casing shall be phosphate coated to resist corrosion, and finished in almond powder coated paint.
 - 3. Airstream Surfaces: Surfaces in contact with the airstream comply with requirements in ASHRAE 62.1.
 - 4. Surface-Mounted Cabinet Enclosure: Steel with finish to match cabinet.
- E. Coil
 - 1. Electric-Resistance Heating Coil: The electric heating bank shall be of metal sheath heating elements with furnace brazed fins for improved heat transfer. Automatic reset thermal overload protection shall be wired for instantaneous de-energizing of built-in control of contactor holding coil in case of thermal overload. All units shall include a heater contactor.
- F. Fan and Motor
 - 1. Fan: Aluminum propeller directly connected to motor.
 - 2. Motor: Permanently lubricated. Motors shall be of the totally enclosed continuous fan-duty sleeve bearing type equipped with built-in thermal overload protection. Each unit shall be equipped with a combination fan guard/motor support resiliently mounted at four points to absorb any motor vibration.
 - 3. Comply with requirements in Section 230500 "Common Work Results for HVAC."
- G. Controls
 - 1. Controls: Unit-mounted thermostat.
 - 2. Electrical Connection: Factory wire motors and controls for a single field connection with disconnect switch.
- H. Supports
 - 1. Provide manufacturer's support system.

2.02 CONVECTION HEATERS (CH-1)

- A. Manufacturers:
 - 1. Chromalox, Inc.
 - 2. Modine.
- B. Heaters: Assembly including chassis, electric finned heating coil, and controls. Comply with UL 2021.
- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- D. Cabinet
 - 1. Enclosure: Enclosure shall be constructed of reinforced 18 gauge steel. Grilles shall be closely space to restrict entry of foreign objects.
 - 2. Finish: All metal surfaces of the casing shall be chemically coated to resist corrosion, and finished in almond powder coated paint.
 - 3. Surface-Mounted Cabinet Enclosure: Steel with finish to match cabinet.
- E. Coil
 - 1. Electric-Resistance Heating Coil: The electric heating bank shall be of metal sheath heating elements with furnace brazed fins for improved heat transfer. Automatic reset thermal overheat protection shall be wired for instantaneous de-energizing of built-in control of contactor holding coil in case of thermal overload. All units shall include a heater contactor.
- F. Controls
 - 1. Heater shall include an adjustable thermostat.
- G. Supports
 - 1. Provide manufacturer's support system.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine areas to receive electric unit heaters for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Examine roughing-in for electrical connections to verify actual locations before unit-heater installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION OF ELECTRIC UNIT HEATERS

- A. Install equipment exposed to finished areas after walls and ceilings are finished and painted. Avoid damage.

- B. Provide support as required and in accordance with manufacturer's recommendations.
- C. Install electric unit heaters to comply with NFPA 90A.
- D. Install electric unit heaters level and plumb.
- E. Install wall-mounted thermostats and switch controls in electrical outlet boxes at heights to match lighting controls. Verify location of thermostats and other exposed control sensors with Drawings and room details before installation.
- F. Protection: Install finished cabinet units with protective covers during remainder of construction.
- G. Ground equipment in accordance with Section 260526 "Grounding and Bonding for Electrical Systems."
- H. Connect wiring in accordance with Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

END OF SECTION