

General Recommendations on the Use of Electric Heating Elements

Safety Guidelines

The safety and performance of this heater is dependent upon proper handling, installation, control and maintenance. Since we cannot anticipate all conditions under which this information and heater, or this heater in combination with other manufacturer's products may be used, it is advised that you conduct your own tests to determine the safety and suitability of this heater in combination with other products in your application.

The Safety Alert Symbol:  is found throughout these installation instructions to identify potential hazards that can result in personal injury. The seriousness of the potential risk is identified by one of these three words:

 **DANGER** – will result in serious injury or death.

 **WARNING** – could result in serious injury or death.

 **CAUTION** – may result in minor or moderate injury.

Read and follow these instructions to minimize risks of electric shock or fire. Save these instructions for future reference.

The electric heating element(s) supplied herein are of rugged construction and if properly installed, operated and maintained, are designed for long life and dependable, trouble-free service.

WARNING

The system designer is responsible for the safety of this equipment and should install adequate back-up controls and safety devices with their electric heating equipment. Where the consequences of failure could result in personal injury or property damage, back-up controls are essential.

WARNING

FIRE HAZARD. Due to the risk of combustion caused by direct contact, radiant heat, or dripping molten metal, the area below a radiant heater and an area of 5 feet surrounding the heater must be kept free of combustible materials. Radiant heaters must have Ground Fault Protection of Equipment. Failure to follow this instruction could result in property damage or personal injury.

NOTICE

IF CHROMALOX ELECTRIC HEATING ELEMENTS ARE INCORPORATED INTO HEATERS SOLD BY OTHERS, THESE INSTALLATION INSTRUCTIONS MUST BE FORWARDED WITH THE HEATING ELEMENTS TO THE PURCHASER OF THOSE HEATERS.

Chromalox[®]
PRECISION HEAT AND CONTROL

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Installation

⚠ WARNING

HAZARD OF ELECTRIC SHOCK. Any installation involving electric heaters must be effectively grounded in accordance with the National Electrical Code to eliminate shock hazard.

1. Electric wiring to heating elements must be installed by a qualified person in accordance with the National Electrical Code or local electrical codes.

2. Type and temperature rating of wire should be suitable for application.
3. Temperature and temperature limiting controls must be considered when wiring to the heater. Radiant heaters as well as other applications must have ground fault protection.

Operation

⚠ WARNING

FIRE HAZARD. Failure to comply with the following could result in personal injury or property damage.

- A. Do not operate heaters at voltages in excess of that marked on heater since excess voltage can shorten heater life.
- B. Do not operate heaters under conditions that result in sheath temperatures higher than the recommended maximum since excess temperatures can cause premature failure and fire.

Generally, sheath materials are limited to the following maximum temperatures.

Sheath Material	Max. Sheath Temp.
Copper	350°F (177°C)
Iron or Steel	750°F (399°C)
Chrome or Stainless Steel	1,200°F (649°C)
INCOLOY®	1,500°F (816°C)
MONEL®	900°F (482°C)

The table above applies to ring, tubular and cartridge element as well as most strip elements.

- A. Chrome Steel Finned Strips — 950°F.

Heaters should not be operated in environments with factors that can destroy the integrity of electrical insulation inside the heater. The following contaminants and others can create current leakage (shock) hazards, permanent heater damage, or cause heater failure and therefore, should be avoided.

- A. Water or water vapors
- B. Grease, oil or oil vapors
- C. Corrosive liquids and vapors
- D. Noxious or reactive gases

Low Megohm Condition — The refractory material used in electric heaters may absorb moisture during transit, storage or when subject to humid environments that will reduce the cold insulation resistance (low megohm). Low megohm may result in a high leakage current to ground and nuisance trips of ground fault protection equipment. Normally, the megohm value increases after heat-up. Typical insulation values are 5 megohm or greater on complete assemblies or 20 megohm on individual unsealed elements. It is recommended that heaters with 1 megohm or less be dried out before applying full power. If dried properly, low megohm will not effect heater life or efficiency.

To correct a low megohm condition, remove terminal enclosure cover, gaskets, and terminal hardware. Bake heaters in an oven at 300 to 500°F for several hours or preferably overnight.

An alternate procedure is to cycle the heater in 10 to 15 minute periods at low voltage until megohm values are normal. Sheath temperatures should not exceed 350°F.

NOTE: Low megohm on heating elements with epoxy or hermetic seals cannot be serviced in the field. Typical resistance values when sealed are 200 megohm or greater.

⚠ WARNING

FIRE OR SHOCK HAZARD. Moisture accumulation in the element refractory material, element over-temperature, or sheath corrosion can cause ground fault to the element sheath, generating arcing and molten metal. Install Ground Fault Protection to prevent property damage.

Limited Warranty:

Please refer to the Chromalox limited warranty applicable to this product at <http://www.chromalox.com/customer-service/policies/terms-of-sale.aspx>.

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103 GAMMA DRIVE, PITTSBURGH, PA 15238
Phone: 800-443-2640 www.chromalox.com