

Compact Heater Enables Versatile Heating System Design

FIREROD® cartridge immersion heaters are ideal for replacing large screw-plug immersion heaters. The heater packages up to 300 W/in² (46.5 W/cm²) in a compact unit, enabling a versatile heating system design.

FIREROD immersion heaters are complete with a stainless steel ¾ inch National Pipe Thread Taper (NPT) double threaded fitting, which allows conduit boxes to be added. They are also sealed at the lead end with a silicone rubber seal.

Solid copper leads with silicone rubber sleeves are provided for unrestricted wiring. These units are recommended for immersion in water of 90+ percent water soluble solutions.

Features and Benefits

Nickel-chromium resistance wire precisely centered in the unit

- Ensures even and efficient distribution of heat to the sheath

Magnesium oxide (MgO) insulation compacted to the proper density

- Results in high dielectric strength and contributes to faster heat-up

Alloy 800 sheath

- Resists corrosion from water

Metalurgically-bonded conductor pins

- Overlaps the resistance wire inside the core, ensuring trouble-free electrical continuity

Lead end with silicone rubber seal

- Protects the heater against moisture contamination

Stainless steel fittings

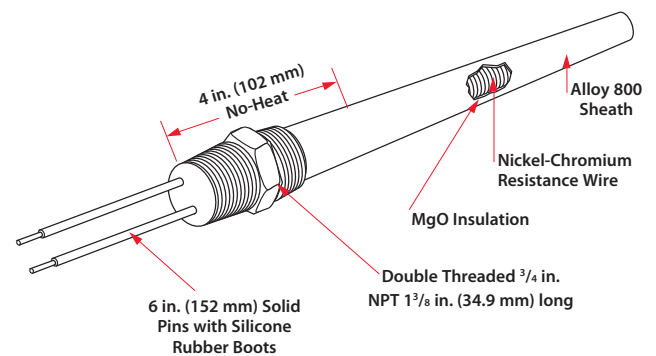
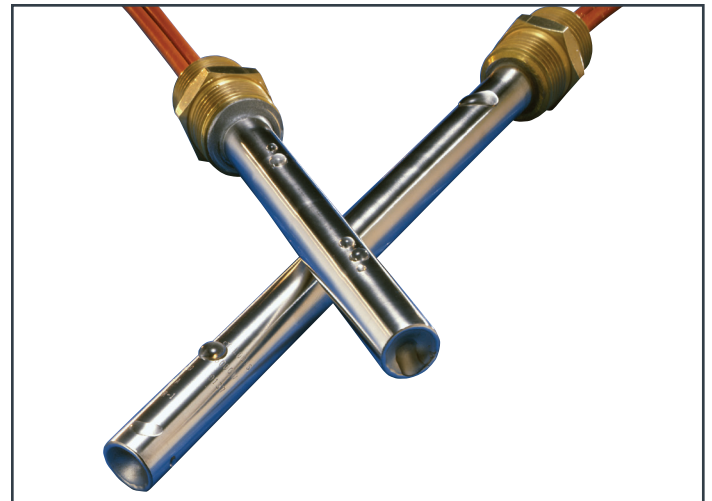
- Offers availability for use in corrosive applications

Horizontal through the wall tank mounting

- Provides faster set-up

240 and 480VAC voltage

- Allows wiring flexibility for heater use in particular applications



Performance Capabilities

- Maximum operating temperature in water up to 212°F (100°C) at atmospheric pressure
- Maximum watt density up to 300 W/in² (46.5 W/cm²)
- Maximum voltage up to 480VAC

Typical Applications

- Plastic reclamation
- Food preparation
- Lab equipment

Applications and Technical Data

The small size and large capacity of FIREROD immersion heaters are ideal for use in cramped quarters. When heating liquids of low viscosity, FIREROD heaters have high watt density to pack more heat into tight spots. For water heating applications, a rating of 150 to 300 W/in² is recommended. Laboratory tests show that under certain conditions, ratings as high as 700 W/in² are safe. For longer life at high watt densities, the FIREROD heater:

- Should not be contained in the main body of the liquid or in a restricted space
- Should be covered with liquid at all times
- Should not be allowed to cycle on and off too frequently
- Should not form scale build up

When heating viscous liquids, such as oils, watt densities must be kept low to prevent carbonization at the heater sheath. FIREROD cartridges offer advantages for heating viscous materials where long life and high quality outweigh usual economic considerations.

As in all immersion applications, scale build-up on the sheath and sludge on the bottom of the tank must be carefully controlled to ensure long heater life.

Equipped with smaller threaded fittings than conventional immersion heaters, FIREROD heaters leave space for more units in the same location. Replacement of single FIREROD units in multi-heater assemblies is fast and easy to avoid discarding the complete assembly.

Moisture resistant seals are available for protection against damp atmospheres.

Threaded fittings are furnished in stainless steel. FIREROD heaters are designed with alloy 800 sheaths; however, other sheath materials can be provided on made-to-order FIREROD units.

Fittings and sheath material should be appropriate for the specific liquid material being heated.

Sheath Material Compositions

Sheath Materials	Chemical Composition															
	Al	C	Co	Cr	Cu	Fe	Mn	Mo	Ni	P	S	Si	Ta	Ti	V	W
Nickel Alloys Alloy 800	0.15-0.6	0.1		19-23	0-75	Bal	1.5		30-35		0.015	1.0		0.15-0.6		
Stainless Steels 304 316		0.08 ^① 0.08 ^①		18-20 16-18		Bal Bal	2 ^① 2 ^①		8-12 10-14			1 ^① 1 ^①				

^① Maximum

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