

## Screw Plug Immersion Heaters Selection Guidelines

### Selecting a Screw Plug Heater

The selection of the proper screw plug immersion heater requires critical engineering judgement. After determining the heat requirement (see the Technical section of this catalog), the proper selection of the screw plug material, heating element sheath material and correct watt density is critical for long life of the heater. The following table may be used as a guide to this selection, along with the Technical Information at the back of this catalog. Ultimate choice is determined by the knowledge of the process and engineering acumen of the plant engineer.

### Application Factors

Heater application is influenced by the following parameters.

- ① The heated media, viscosity, specific heat, density and corrosive properties.
- ② Contaminants or pH present in the media.
- ③ The corrosion resistant properties of heater sheath material.
- ④ Watt density of the heating element—the heat output per square inch.
- ⑤ Screw plug material.

### Typical Applications

See screw plug immersion heater selection guide below for your application.

- Hot Water Storage Tanks
- Warming Equipment
- Preheating all Grades of Oil
- Food Processing Equipment
- Cleaning and Rinsing Tanks
- Heat Transfer Systems
- Process Air Equipment
- Boiler Equipment
- Freeze Protection of Any Fluid

### Screw Plug Immersion Heaters — Selection Guidelines

	①	②	③	④	⑤
Application	Solution or Heater Type	Alkaline or Acid Content (Est. % by Volume)	Sheath Material	Watt Density (W/In <sup>2</sup> )	Screw Plug Material
Water & Very Mild Solutions	Clean Water	pH6 to pH8 Neutral	Copper	45	Brass
	Process Water or Very Weak Solutions	pH5 to pH9 2-3%	Stainless Steel <sup>1</sup>	45	Stainless Steel
	Weak Solutions	5-6%	INCOLOY®	45	Stainless Steel
	Demineralized, Deionized water	—	INCOLOY® Stainless Steel <sup>1</sup>	45	Stainless Steel Stainless Steel
Corrosive & High Viscous Solutions	Mild Corrosive Solution	5-15%	INCOLOY® or Stainless Steel <sup>1</sup>	23	Stainless Steel
	Severe Corrosive Solution	16% or more	INCOLOY®, Stainless Steel or Titanium	15	Stainless Steel
Oil Heating	Low Viscosity Oil	—	Steel	23	Steel
	Medium Viscosity Oil	—	Steel	15	Steel
	High Viscosity Oil	—	Steel	6	Steel
Specialty Heaters	Small Tanks		Stainless Steel <sup>1</sup>		Brass
	Process Water	pH5 to pH9	Stainless Steel <sup>1</sup>	45	Stainless Steel
	Demineralized Water	—	Stainless Steel	23	Steel
	Low Viscosity Oil	—	INCOLOY®	12	Steel
	Pipe Insert Commercial Equipment	Clean Water	Copper	60	Brass

1. Passivated stainless steel recommended for water applications.

**Note** — Liquid level controls are suggested for all immersion heating applications. See Controls section in this catalog.