Select the Element Sheath Material

Sheath Material Selection

CORROSION. In addition to selecting a sheath material that is compatible with the heated medium, other factors that affect corrosion need to be considered:

1. The temperature of the corrodent — As temperature increases the degree of corrosion increases. Also remember that usually the element temperature is higher than the material it is heating.

2. The degree of aeration to which a corrodent is exposed — Stagnant conditions can deprive the stainless steels of oxygen, which is required to maintain their corrosion resistant surface.

3. Velocity of the corrodent — Increased velocity can increase the corrosion rate.

Note: See pages 16-12 through 16-20 for the recommended sheath materials for many immersion heating applications. If you are purchasing the material you are heating, check with the supplier for their recommendations.

Optional Element Sheath Materials

304 Stainless Steel — A Chromium (18-20%), Nickel (8-11%), Iron Alloy used in the food industry, sterilizing solutions, air heating and many organic and inorganic chemicals.

321 Stainless Steel — A Chromium (17-20%), Nickel (9-13%), Iron Alloy modified with the addition of titanium to prevent carbide precipitation and the resulting intergranular corrosion that can take place in certain mediums when operating in the 800-1200°F (427-649°C) temperature range.

Incoloy® 840 — A Nickel (18-20%), Chromium (18-22%), Iron Alloy. Incoloy 840® has about 10% less nickel than Incoloy® 800. Used in many air heating applications where it has exhibited superior oxidation resistance at less cost than Incoloy 800®.

Incoloy® 825 — A Nickel (38-46%), Chromium (19.5-23.5%), Molybdenum (2-3%) Iron alloy. Consult Tempco for more information.

Select Optional Flange and Gasket Materials

Optional flange materials include:

* 304, 304L Stainless Steel
* 316L Stainless Steel
* Incoloy® 800

Gaskets of different types, including spiral wound metal with non-metallic filler, are available to properly seal any flanged heater. Gasket material choice depends on operating conditions and fluid compatibility. Consult TEMPCO for help with your selection.

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