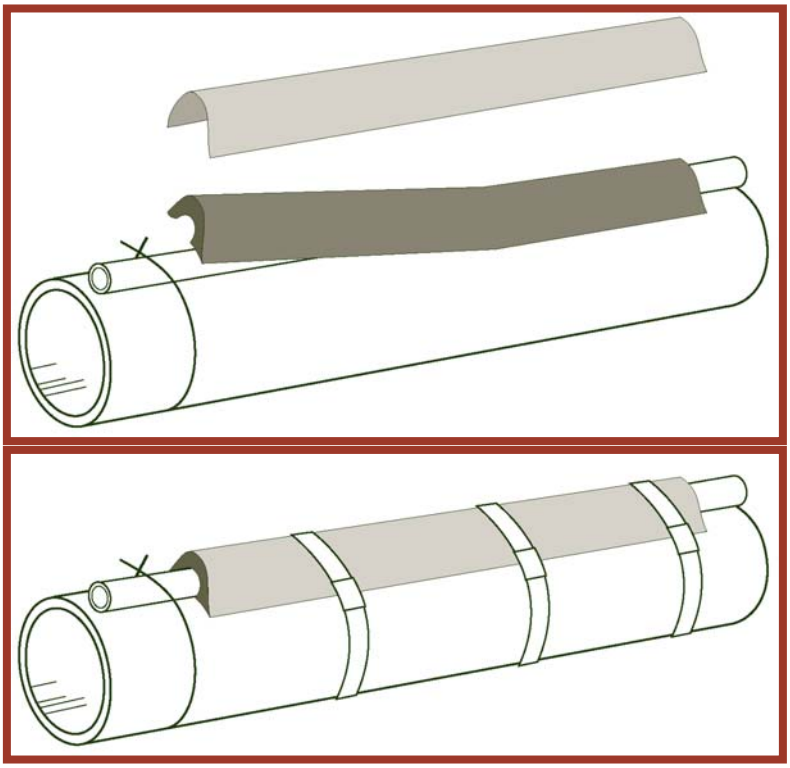
THERMO Tips

SnapTrace® Jackets - The Optimum Heating System For Benzoic Acid Lines



Simple and Easy to Install

1. Temporarily Wire Tracer in Place.
2. Press SnapTrace Over the Tracer Tube.
3. Place Steel Jacket Over the Tracer Tube.
4. Attach Tracer With S.S. Bands.

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Benzoic acid is an aromatic carboxylic acid that melts at 121.7°C (251°F), and boils at 249°C (480°F). The density of the acid is 1.3 g/cm^3 @ 20°C (81.16 lb/ft^3 @ 68°F). It is slightly soluble in water and relatively soluble in alcohol and ether; derivatives are valuable in industry, commerce and medicine.

Method Of Keeping The Chemical Liquid

Stainless steel tubing tracers with heat transfer compound and strap-on galvanized steel or stainless steel jackets provide the optimum heating system for maintaining benzoic acid lines above the melt point and supplying heat for emergency melt out situations. The conduction tracing system establishes a high thermal connection between the steam tracers and the benzoic acid lines. Stainless steel tubing is generally selected to avoid problems with corrosive attack by the acid in case a leak should occur in the system. Depending upon design parameters, the steam supply may be as high as 14-bar g (200 psig) to provide heat for melt-out in case the acid solidifies during shutdown.

SnapTrace pre-formed heat transfer compound is used to advantage in tracing applications where the extruded preshaped strips are installed in just a few seconds by snapping them over the tubing tracers. Maximum heat transfer is assured by a uniform thickness of conductive material over the tracers once this melt flow product expands. This system allows the use of the entire surface area of the tubing to contact the pipe increasing the heat transfer rate by 1000% or more over bare convection tracers of the same size. And, the simple installation method for SnapTrace reduces labor charges considerably over the installation of fully jacketed systems or bolt-on pipe heating jackets. The easy to install extruded compound remains flexible at temperatures as low as minus 12°C (+ 10°F) so it can be applied in sub-freezing weather and maintains it effectiveness over a temperature range of -73°C (-100°F) to 208°C (406°F).

Anchoring SnapTrace and Steel TFK Jackets

In a modern tracing system, the tracer and SnapTrace are completely covered and anchored in place by strap–on galvanized steel or stainless steel jackets (sometimes referred to as TFK Jackets or Channels). The tracers are immobile and always in intimate contact with the process pipe due to the restraining action of the heat transfer compound surrounding the tracer and the steel jackets that are held in place by stainless steel straps tensioned by a tool rated for a force of

up to 1000 lbs. In this system, the tracer maintains its thermal bond and high heat transfer rate for as long as the piping system is in service.

Strap-On Conduction Tracing Jackets

Strap-on conduction tracing jackets also provide the optimum heating method for materials such as asphalt, adipic acid, dimethyl tetephthalate (DMT) phthalic anhydride and sulfur among other materials that must be kept at temperatures above 110°C (225°F). Conduction tracing jackets can replace fully jacketed systems at a 50% to 90% reduction in cost. SnapTrace material cost and installation rates are much lower than fully jacketed systems and also provide cost advantages and more flexibility than bolt-on pipe heating jackets while delivering the same heat transfer rates.

Strap-on conduction tracing jackets not only reduce the initial investment in the heating system, but also reduce maintenance and production "down-time" costs because this system is relatively fast and easy to install and repair. Long length coils of tubing may be cut to length for each tracing circuit. The tubing is deburred, and then fittings are installed simply by tightening the nut on a compression fitting. The system can be completely aligned before tightening the fitting, thereby simplifying adjustments.

Strap-On Conduction Tracing Jackets Versus Clamp-On Pipe Heating Jackets

Tests on multiple pipe sizes using steam as the heating medium have proven that a 3/4-inch O.D. (20mm) tubular tracer with heat transfer compound covered by a TFK-7 steel strap-on jacket will provide the same heat transfer rate as a bolt-on pipe-heating jacket. Here is why heat transfer rates are the same:

1. The shape of the TFK-7 jacket allows the contact base to spread to some degree when strapped to the process pipe under high tension, providing a minimum arc length of contact between the base of the jacket and the pipe of approximately 1.8125 inches. It is equal to or slightly greater than the arc length of contact of 1.8 inches between each bolt-on pipe heating jacket and the process pipe.

2. 3/4-inch O.D. (20mm) tracers with TFK-7 strap-on jackets and bolt-on pipe heating jackets provide substantially the same contact surface area at the heated pipe wall 0.150ft^2 per linear foot (0.0457m^2 per linear meter).

3. Both systems utilize heat transfer compounds to enhance the heat transfer rate from the heating element to the heated pipe.

4. Both systems have steel metallic elements that may be strapped, clamped or bolted to piping in order to permanently anchor the tracer or heater to the surface of the heated pipe.

More On Benzoic Acid

Benzoic acid is widely used in the manufacture of phenol, caprolactam, plasticizers and as a mordant for dyes. It is also used as an intermediate in the pharmaceutical, textile, herbicide and perfume industries. Benzoic acid may be converted to sodium benzoate, benzoyl chloride and benzoyl benzoate. Sodium benzoate is a commonly used food preservative.

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