DETAILED SPECIFICATION

Hi-Temp System to 149°C *(300°F)* with Spiwrap® jacket for above grade

1. GENERAL

This product is recommended for long term above ground installations where the properties of a locked seam metal jacket are desired for hydronic heating or industrial applications.

It is critical that all field installed components of a Hi-Temp foam piping system be installed with special care and attention, ensuring that the system is not only insulated properly, but completely waterproof as well. Should moisture be trapped in the system by any means after commissioning, the moisture could flash off as steam, permanently damaging the insulation and jacketing.

The pipe shall be insulated using the unique U.I.P.® factory insulation process, as supplied by GF Urecon. The insulation of associated joints, fittings and accessories shall be as per GF Urecon's recommendations. All exposed ends of insulation shall be bagged with plastic or sealed with waterproof sealant prior to leaving the factory to prevent moisture ingress during shipping and storage. The product shall be manufactured in accordance to ISO 9001 standards, or approved equal.

2. PIPE PREPARATION

Pipe shall be cleaned of surface dust or dirt to ensure adhesion of the foam to the pipe.

3. INSULATION

a) Material: Rigid polyurethane foam, factory applied.
b) Thickness: 50.8 mm *(2 in)* or as required.
c) Density: (ASTM D1622) 38 to 56 kg/m³ *(2.4 to 3.5 lbs/ft³).*
d) Closed cell content: (ASTM D6226) 90%, minimum.
e) Water absorption: (ASTM D2842) 4.0% by volume.
f) Thermal conductivity: (ASTM C518) 0.020 to 0.026 W/m°C *(0.14 to 0.17 Btu • in/ft² • hr • °F)*.
g) Temperature range: - 45°C to 149°C *(-49°F to 300 °F).*

4. SYSTEM PROPERTIES

a) System compressive strength: (modified ASTM D1621 with PE extruded jacket) approximately 1379 kPa *(200 lbs/in²),* varies with gauge and type of jacket material and pipe diameter.
b) Service temperature range: The overall factory insulated system limitations are dependent on the core pipe type, insulation and application.
c) Temperature limitations: minimum ambient installation temperature -34 °C *(-29 °F)*

5. SPIWRAP® OUTER JACKET

The outer protective jacket shall consist of locked seam, spiral wound round metal jacket:

a.) Galvanized steel:*
- Insulated jacket OD ≤ 457.2 mm (18 in) @ 22 ga
- Insulated jacket OD > 457.2 mm (18 in) @ 18 ga

b.) Aluminum:*
- Insulated jacket OD ≤ 304.8 mm (12 in) @ 20 ga
- Insulated jacket OD > 304.8 mm (12 in) @ 18 ga

c.) Stainless Steel:*
- Insulated jacket OD ≤ 304.8 mm (12 in) @ 24 ga
- Insulated jacket OD > 304.8 mm (12 in) @ 22 ga

*other gauges are available upon request, and may vary dependant on the application and weight.

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6. INSULATED PIPE JOINTS

Insulated pipe joints shall consist of preformed polyisocyanurate foam half shells supplied with metal cover sheet consistent with that on the factory insulated pipe, stainless steel bands and gear clamps. All metal overlaps at the joints and fittings shall be 50.8 mm *(2 in)* minimum and shall be field positioned in such a way as to shed water.

7. INSULATION FOR FITTINGS

7.1 Field applied insulation

Insulation for fittings shall consist of rigid polyisocyanurate foam half shells or field 'foam in place' Hi- Temp polyurethane foam insulation and custom fabricated galvanized steel or aluminum outer protective jacket consistent with that on the factory insulated pipe. All insulation kits shall be supplied complete with silicone caulking, stainless steel bands and gear clamps and screws to suit.

a) Rigid polyisocyanurate or polyurethane foam

1. Density: (ASTM D1622) 32 kg/m^3 *(2.0 lbs/ft^3)*.
2. Compressive strength: (ASTM D1621) 124 to 186 kPa (18 to 27 lbs/in^2).
3. Closed cell content: (ASTM D2856) 90%, minimum.
4. Water absorption: (ASTM C272) 2.0% by volume.
5. K factor: (ASTM C518) 0.027 W/m°C (0.19 Btu • in/ft^2 • hr • °F).
6. Thickness: typically 50 mm (2 in), other thicknesses upon request, shall match pipe insulation thickness.

7.2 Factory insulated fittings

Factory insulated fittings are available with a full range of metal outer protective jackets.

Note: *Physical characteristics are nominal and may vary depending on pipe type and diameter.*

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