

DETAILED SPECIFICATION

Spiwrap® jacket with standard U.I.P.® system for above grade piping

1. GENERAL

The pipe shall be insulated using the unique two-fill U.I.P.® factory insulation process, as supplied by GF Urecon Ltd., complete with integral conduit(s) for electric heat trace cable (if required). The insulation of associated joints, fittings and accessories shall be as per GF Urecon's recommendations. The product shall be manufactured in accordance to ISO 9001 Standards, or approved equal.

2. PIPE PREPARATION

Pipe and the spiral metal jacket shall be cleaned of surface dust or dirt to ensure adhesion of the foam to the pipe and inner jacket surface.

3. HEAT TRACING CONDUIT(S)

Heat tracing conduit(s) shall consist of an extruded molding and shall be applied to the pipe prior to application of the insulation. The conduit(s) will be securely fastened to the pipe to prevent the ingress of foam therein during the insulation process. All conduit(s) shall be checked after insulating to ensure they are not blocked. The ends shall be sealed prior to shipping to prevent any foreign material from entering the conduit while in transit or during installation.

4. INSULATION

- Material: Rigid polyurethane foam, factory applied.
- Thickness: 50.8 mm (2 in) or as required.
- Density: (ASTM D1622) 35 to 48 kg/m³ (2.2 to 3.0 lbs/ft³).
- Closed cell content: (ASTM D6226) 90%, minimum.
- Water absorption: (ASTM D2842) 4.0% by volume.
- Thermal conductivity: (ASTM C518) 0.020 to 0.025 W/m°C (0.14 to 0.17 Btu • in/ft² • hr • °F).
- Temperature range: Cryogenic to 93.3 °C (200 °F).

5. SYSTEM PROPERTIES

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

6. 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.

7. INSULATED PIPE JOINTS

a) Butt-fused and welded joints

Insulated pipe joints shall be completed using prefabricated polyisocyanurate or polyurethane foam half shells, metal wraps 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. The insulation shall be pre-grooved on the inside or slightly oversized to accommodate heat trace cable(s) if applicable.

b) Bell x spigot joints

Insulated pipe joints with no mechanical restraints shall be sealed - if the system is not electrically heat traced - with a 152.4 mm (6 in) wide metal wraps consistent with that on the factory insulated pipe complete with stainless steel bands and gear clamps, or 304.8 mm (12 in) to 609.6 mm (24 in) wide metal wraps if traced, depending on pipe size.

8. INSULATION KITS FOR FITTINGS

Insulation kits for fittings shall consist of rigid polyisocyanurate or polyurethane foam half shells complete with a thin polymer coating on all surfaces for strength during transit and installation, and fabricated metal cover consistent with that on the factory insulated pipe. All insulation kits to be supplied complete with stainless steel bands and gear clamps.

a) Rigid polyisocyanurate or polyurethane foam

1. Density: (ASTM D1622) 32 kg/m³ (2.0 lbs/ft³).
2. Compressive strength: (ASTM D1621) 124 to 186 kPa (18 to 27 lbs/in²).
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/m²•°C (0.19 Btu • in/ft² • hr • °F).
6. Thickness: typically 50.8 mm (2 in), other thicknesses upon request, shall match pipe insulation thickness.

b) Polymer coating, GF Urecon BL-20-20EP

1. Two component high density polyurethane coating, black in color.
2. Density: 1170 kg/m³ (73 lbs/ft³).
3. Durometer D scale 60.
4. Tensile strength: 11.10 MPa (1610 lbs/in²).
5. Tear strength: 26.5 N/mm (151 lbs/in).
6. Thickness: 0.51 mm (20 mils) outside surfaces, 0.51 mm (20 mils) inside surfaces.

9. ELECTRIC TRACING SYSTEM

The electric tracing system and associated controls shall be as per the manufacturer's recommendations with particular attention being paid to the watt densities applied through conduits on plastic pipes. All tracing cables and related accessories to be CSA approved and comply with CSA heat tracing standard C22.2 No. 130-03. Standard of acceptance is GF Urecon's Thermocable or approved equal. Please contact your GF Urecon representative for further details and design assistance.

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

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