

DETAILED SPECIFICATION

Field applied insulation with metal cover jacket for above grade piping

1. GENERAL

The pipe shall be field insulated using polyisocyanurate or polyurethane insulation and metal covers for outer jacketing with related sundry items as supplied by GF Urecon Ltd. The insulation of associated 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 INSULATION HALF SHELLS*

*segments shall be supplied for core pipe size $\geq 400\text{mm}\varnothing$ (16in \varnothing)

- a) Material: Rigid polyisocyanurate or polyurethane foam.
- b) Density: (ASTM D1622) 32 kg/m³ (2.0 lbs/ft³).
- c) Compressive strength: (ASTM D1621) 124 to 186 kPa (18 to 27 lbs/in²).
- d) Closed cell content: (ASTM D6226) 90%, minimum.
- e) Water absorption: (ASTM C272) 2.0% by volume.
- f) K factor: (ASTM C518) 0.027 W/m °C (0.19 Btu • in/ft² • hr • °F).
- g) Thickness: typically 50.8 mm (2 in), other thicknesses upon request

Note: The insulation shall be pre-grooved on the inside or slightly oversized to accommodate heat trace cable(s) if applicable.

3. OUTER JACKET ON PIPE INSULATION

The outer protective jacket shall consist of cut and rolled galvanized steel, aluminum or stainless steel sheets in 18 to 24 gauge thickness. Other materials and gauges are available upon request. This material shall be field secured in place with a minimum 50.8 mm (2 in) overlap piece to piece using 13 mm (½ in) wide stainless steel bands and gear clamps. The longitudinal seam shall have a minimum 50.8 mm (2 in) lap and shall be positioned in such a way as to shed water or minimize water ingress. Typical banding spacing is 300 mm (12 in), although closer spacing may be considered for ≥ 400 mm (16 in) diameter jacket. Contact your GF Urecon representative for assistance with the design if required.

- a) Service temperature range: from cryogenic to 93.3 °C (200 °F); the overall factory insulated system limitations are dependent on the core pipe type, insulation and application.
- b) Temperature limitations: minimum ambient installation temperature -34 °C (-29 °F).

General recommendation for metal covers gauge thicknesses:

Galvanized steel

Insulation OD	≤ 457.2 mm (18")	@ 22 ga
Insulation OD	> 457.2 mm (18")	@ 18 ga

Aluminum

Insulation OD	≤ 304.8 mm (12")	@ 20 ga
Insulation OD	> 304.8 mm (12")	@ 18 ga

Stainless Steel

Insulation OD	≤ 304.8 mm (12")	@ 24 ga
Insulation OD	> 304.8 mm (12")	@ 22 ga

4. INSULATION KITS FOR FITTINGS

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

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/m°C (0.19 Btu • in/ft² • hr • °F).
6. Thickness: typically 50.8 mm (2 in), other thicknesses upon request.

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.

5. 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 on plastic pipes. The heat tracing cable shall be fastened to the pipe and fittings with aluminum tape. 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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