

DETAILED SPECIFICATION

PVC casing

with U.I.P.[®] system for above & below grade piping

1. GENERAL

This product is recommended for either above or below ground installations where the properties of a white PVC jacket are desired; primarily for chilled and warm water applications in temperate climates only. The pipe shall be insulated using the unique U.I.P.[®] factory insulation process, as supplied by GF Urecon Ltd.. 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 casing jacket shall be cleaned of surface dust or dirt to ensure adhesion of the foam to the pipe and inner jacket surface.

3. INSULATION

- a) Material: Rigid polyurethane foam, factory applied.
- b) Thickness: 38.1 mm (*1 1/2 in*) or as required.
- c) Density: (ASTM D1622) 35 to 48 kg/m³ (*2.2 to 3.0 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 0.025 W/m °C (*0.14 to 0.17 Btu • in/ft² • hr • °F*).
- g) Temperature range: Cryogenic to 93.3 °C (*200 °F*).

4. SYSTEM PROPERTIES

- a) System compressive strength: (modified ASTM D1621 with casing jacket) approximately 690 to 1379 kPa (*100-200 lbs/in²*), varies with pipe diameter;
- b) Service temperature range: the overall factory insulated system limitations are dependent on the core pipe type, the insulation, the PVC jacket and the application.
- c) Temperature limitations: minimum ambient installation temperature 0 °C (*32 °F*).

5. PVC CASING OUTER JACKET

The outer protective jacket on the PVC jacketed system shall be manufactured from type 1, Grade 1 PVC (cell classification 12454-B) conforming to ASTM resin specification D1784, and shall incorporate a UV inhibitor to ensure long term performance for above ground applications. The PVC jacket wall thickness varies with pipe diameter and urethane foam thickness required, ranging from 1.60 to 12.34 mm (*0.063 to 0.486 in*) for nominal 25.4-609.6 mm (*1 to 24 in*) diameter core pipe.

6. INSULATED PIPE JOINTS

a) Insulated pipe joints, bell x spigot

Insulated pipe joints shall be completed with the application of a single coated polyethylene white tape as supplied by GF Urecon. The white polyethylene tape shall overlap the insulation jacket by a minimum of 76.2 mm (*3 in*) on either side of the joint.

b) Butt-fused, welded, and solvent welded joints

The insulated pipe joints shall be completed using rigid polyisocyanurate or polyurethane foam half shells and the application of a single coated polyethylene white tape as supplied by GF Urecon. The white polyethylene tape shall overlap the insulation jacket by a minimum of 76.2 mm (3 in) on either side of the joint.

7. INSULATION KITS FOR FITTINGS

Insulation kits for fittings shall consist of rigid polyisocyanurate or polyurethane foam half shells with the following characteristics:

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 38.1 mm (1 ½ in), other thicknesses upon request, shall match pipe insulation thickness.

The insulation half shells shall be jacketed with either:

- a) Single coated polyethylene white tape, spirally applied with a minimum 19 mm (¾ in) overlap onto itself and 76.2 mm (3 in) onto the adjacent factory insulated piping jackets.
- b) White PVC covers with PVC roll stock for the ends, supplied complete with white PVC tape for all seams.

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

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