

Specification for Underground Pre-Insulated Pipe

Pre-insulated pipe

All thermally insulated underground pipe work shall be 'Permapipe' pre-insulated carrier pipe encapsulated in rigid polyurethane insulation to required thickness with protective outer casing. The pre-insulated pipe system shall be of Australian manufacture and under certification of ISO 9001:2008 quality system.

Carrier Pipe

The pipe shall be suitable for the specified pressure and temperature. All ends of all pipes shall be suitably prepared for connection.

Outer Casing

The protective outer casing shall be selected as to provide an adequate level of mechanical protection to the insulation and carrier pipe when installed under ground.

Class 3: Standard mechanical protection - unplasticised PVC (PVC-U) to AS/NZS 1254

Class 2: Medium mechanical protection - high density polyethylene to AS/NZS 4131

Class 1: High mechanical protection - twin wall corrugated polypropylene to AS/NZS 5065

Insulation

Insulation shall be CFC free rigid polyurethane foam, machine injected into the annular void between the carrier pipe and outer casing by a factory process with the following physical properties:

Density – 45kg/m³

Thermal Conductivity - .022 w/mK at 20°C

Compressive Strength – 270 kPa

Closed Cell Content - >90% by volume minimum

Thickness of Insulation

Insulation thickness shall be as per the Building Code of Australia section J5.4 requirements or of such thickness as to prevent condensation forming on the outer casing at a minimum.

Fittings

Bends, tees, reducing joins and straight joins shall be site insulated using two part rigid polyurethane foam. All fittings shall be metal sheathed and correctly vapour sealed with a heat shrink sleeve. Site insulation shall only be carried out by trained personnel.

Alternatively, all fittings may be factory insulated to the above specification, leaving only straight joints for site reinstatement.

PIPING & INSULATION SYSTEMS

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Installation

Trenching

To AS/NZS 2566.

Pressure Testing

Ensure all pipes are pressure tested to the requirements of the contract specification. Any leaks are to be identified and repaired prior to the reinstatement of exposed fittings.

Site Welds

Carrier pipe and fittings should be welded in accordance with the project specification. Heat shields must be used during welding to avoid damaging the exposed polyurethane ends.

Site Reinstatement of Fittings

Fittings are to be reinstated only after the pressure test has been signed off.

Follow the following procedure when reinstating fittings on site. Adequate PPE is required to be worn when using polyurethane foam on site.

1. Ensure welds/connections have been pressure tested and signed off.
2. Install sheet metal casing around fitting and seal ends with tape
3. Use a holesaw to drill a 32mm hole in the sheetmetal casing
4. Mix parts A & B to the required quantity and pour polyurethane mixture into the sheetmetal casing
5. Clean off excess foam once expanded
6. Apply heatshrink wrap or bituminised tape to prevent moisture ingress and complete the vapour barrier

Contact Permapipe Systems for more detailed instructions if required.

Permapipe Systems provide the site reinstatement kits as our standard system. Due to the challenging nature of site conditions, this system gives the contractor the most flexibility, guaranteeing the quickest possible lead times to ensure project deadlines are achieved.

Alternatively, Permapipe Systems can provide carrier fittings fully insulated, leaving only straight joints for site reinstatement.

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