

Building and Plumbing Newsflash 558

Advice on the correct installation of PE pipe

Purpose

To advise industry on the correct selection and installation of polyethylene (PE) pipe (commonly referred to as blue line poly), used as a material for water supply installations.

Background

PE pipe has been widely used in the plumbing industry for many years. PE pipe comes in a range of sizes, is flexible, low in weight and available in long lengths, making it a preferred choice for external water service installations. In recent times, the Department of Housing and Public Works (the department) has become aware of issues associated with PE pipe including pipe leakage resulting from material splitting and holes developing in the material. Although the direct cause of these failings has not been determined, it is timely that the department issue advice on the correct selection and installation of the product.

Product selection

The selection of the correct PE pipe is crucial for ensuring compliance with the Plumbing Code of Australia (PCA) and the referenced standards of the PCA.

Any PE pipe product must be certified under the Australian Building Codes Board WaterMark scheme. The selected material must include labelling identifying the WaterMark approval, the WaterMark trademark logo, the WaterMark approval licence number and the standard to which the product was approved, (AS/NZS 4130). The pipe labelling will also include information on the date of manufacture (DD/MM/YY), PE pipe nominal sizes (DN XX), nominal pressure ratings (PN XX.X), equivalent pipe size standard dimensional ratios (SDR XX.X) and the polyethylene material type (PE XXX). All these items assist in the correct selection of material for compliant use.

Pipes and fittings selected for use must have a pressure rating of at least 1200kpa (PN12.5) complying with AS/NZS3500, Part 1, clause 2.4.1(a). When selecting the pipe, the installer is required to ensure that the selected pipe material's nominal size complies with the equivalent pipe sizes (SDR) outlined in AS/NZS 3500.1 Appendix B, Table B2.

A summary of the installation requirements

All plumbing installations must meet the requirements of the PCA and the referenced standard AS/NZS 3500 Part 1. These requirements include the following.

- **Selection and use of suitable materials (clause 2.3):** Materials and products used in water service shall be selected to ensure suitability for their intended purpose. (Refer to *Precautions when installing PE pipe*, below)
- **Bedding and backfill (clause 5.10):** PE pipe shall be surrounded with no less than 75 millimetres of sand or fine-grain soil, with no hard-edged objects resting against the pipe. Alternatively consideration should be given to installing PE pipe through a conduit of sufficient length and strength to afford adequate protection to the water service and allow ease of replacement.
- **Depth of cover (clause 5.9):** The minimum depth of cover for buried pipes shall comply with those mentioned in AS/NZS 3500.1 Table 5.9 to ensure protection of the water service. Generally, this clause requires a minimum depth of 300 millimetres unless the water service is subjected to vehicle loading which would require a greater depth of between 450 millimetres and 750 millimetres dependant on the above ground surface.
- **Proximity to other services (section 5.2):** Water service pipes are to be kept separate from any other services including gas or electrical and drainage pipes. These separation distances can range between 100 millimetres and 600 millimetres dependant on the size of the water service and the type of neighbouring service. Clauses 5.2.1 through to 5.2.10 provide more specific requirements.
- **Installation in contaminated areas (clause 5.11):** Refer to precautions when installing PE pipe (below).

Precautions when installing PE pipe

When selecting PE pipe as a material for water services, the installer must ensure the conditions into which the pipe will be installed are suitable for the intended purposes. Factors to be considered include the nature of the environment and ground and the possibility of chemical attack and absorption in the installed location—refer AS/NZS 3500.1, clause 2.3

PE pipelines are susceptible to absorption of pesticides, petroleum based and solvent based chemicals and accordingly care must be exercised when installing this material in contaminated ground or grounds that has the potential to become contaminated.

With the increased use of termite chemical barriers close to buildings, water services are potentially exposed to leaching of pesticides through PE pipe into the drinking water supply.

Similarly, care should be taken when installing PE piping at commercial and industrial sites where chemicals are suspected to be onsite. Service stations are an example of such sites.

When completing installations to potential contaminated sites and to sites containing chemical barriers, the installer should consider alternative measures. These may include:

- the use of alternative non-permeable materials like copper
- the use of copper as a transition material where the water service crosses over the termite chemical barrier and enters the building
- avoid installing water services in zones where absorption may occur parallel to the building perimeter when a chemical barrier is to be used

- avoid using PE material at the base of external garden taps. The washing of equipment like paint brushes may result in contaminated water pooling above the pipe and absorption into the water supply.

Notes:

- AS/NZS 3500.1 Clause 5.11 requires that when installing a water service in ground that may be contaminated, the service is to be laid in a watertight corrosion-resistant conduit to provide protection for the service.
- AS/NZS 2033 Installation of polyethylene pipe systems, sets out specific methods for handling, storage, installation, testing and commissioning of PE piping.

More information

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