

Australian Standard<sup>®</sup>

**Multilayer pipes for pressure applications**

**Part 1: Multilayer piping systems for hot and cold water plumbing applications—General (ISO 21003-1:2008, MOD)**

**STANDARDS**  
Australia



This Australian Standard® was prepared by Committee PL-006, Polyolefin Pipe Systems. It was approved on behalf of the Council of Standards Australia on 3 March 2010. This Standard was published on 30 March 2010.

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The following are represented on Committee PL-006:

- Certification Interests (Australia)
  - Energy Networks Association
  - Engineers Australia
  - Master Plumbers, Gasfitters and Drainlayers New Zealand
  - National Plumbing Regulators Forum
  - New Zealand Water and Waste Association
  - Plastics Industry Pipe Association of Australia
  - Plastics New Zealand
  - Plumbing Products Industry Group
  - Water Services Association of Australia
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## PREFACE

This Standard was prepared by the Australian members of the Joint Standards Australia/Standards New Zealand Committee PL-006, Polyolefin Pipe Systems, to supersede, in part, AS 4176—1994, *Polyethylene/aluminium and cross-linked polyethylene/aluminium macro-composite pipe systems for pressure applications*.

After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this Standard as an Australian Standard rather than an Australian/New Zealand Standard.

The objective of this Standard is to specify the general aspects of pipes and joints made of multilayer construction intended to be used for hot and cold water plumbing installations.

This Standard is an adoption with national modifications and has been reproduced from ISO 21003-1:2008, *Multilayer piping systems for hot and cold water installations inside buildings*, Part 1: *General*. The modifications and additional requirements are set out in Appendix ZZ.

The term ‘normative’ has been used in this Standard to define the application of the annex or appendix to which it applies. A ‘normative’ annex or appendix is an integral part of a Standard.

As this Standard is reproduced from an International Standard, the following applies:

- (a) Its number does not appear on each page of text and its title appears only on the cover page.
- (b) In the source text, ‘this part of ISO 21003’ should read ‘this part of AS 4176’.
- (c) A full point should be substituted for a comma when referring to a decimal marker.

None of the normative references listed in Clause 2 have been adopted as Australian or Australian/New Zealand Standards.

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## INTRODUCTION

The system standard of which this is Part 1 specifies the requirements for a multilayer piping system.

The multilayer piping system is intended to be used for hot and cold water installations inside buildings.

In respect of potentially adverse effects on the quality of water intended for human consumption caused by the products covered by ISO 21003:

- no information is provided as to whether the products may be used without restriction in any of the member states of the EU or EFTA;
- it should be noted that, while awaiting the adoption of verifiable European criteria, existing national regulations concerning the use and/or the characteristics of these products remain in force.

Requirements and test methods for components of the piping system are specified in ISO 21003-2 and ISO 21003-3. Characteristics relating to fitness for purpose (mainly for joints) are covered in ISO 21003-5. ISO/TS 21003-7 gives guidance on the assessment of conformity.

This part of ISO 21003 specifies the general aspects of multilayer piping systems.

For ancillary equipment, separate standards can apply.

Guidance on installation of plastics piping systems made from various materials intended to be used for hot and cold water installations is given in ENV 12108.

Other system standards which, at the date of publication of this part of ISO 21003, had been published for plastics piping systems used for the same application are listed in Annex A.

## AUSTRALIAN STANDARD

**Multilayer pipes for pressure applications**

## Part 1:

**Multilayer piping systems for hot and cold water plumbing applications—General (ISO 21003-1:2008, MOD)****1 Scope**

This part of ISO 21003 specifies the general aspects of multilayer piping systems intended to be used for hot and cold water installations inside buildings for the conveyance of water — whether or not the water is intended for human consumption (domestic systems) or heating systems — under specified design pressures and temperatures appropriate to the class of application (see Table 1).

ISO 21003 is a reference product standard (see 3.4.3). It is applicable to multilayer pipes, fittings, their joints, and also to joints with components made of other plastics and non-plastics materials intended to be used for hot and cold water installations. This part of ISO 21003 is intended for use in conjunction with all the other parts of ISO 21003.

ISO 21003 applies only to multilayer pipes with their inner layer made of plastics.

It covers a range of service conditions (application classes) and design pressures. It is not applicable for values of design temperature,  $T_D$ , maximum design temperature,  $T_{max}$ , and malfunction temperature,  $T_{mal}$ , in excess of those in Table 1.

NOTE 1 It is the responsibility of the purchaser or specifier to make the appropriate selections from these aspects, taking into account their particular requirements and any relevant national regulations and installation practices or codes.

The polymeric materials used for the stress-resisting layers are the following: polybutylene (PB), polyethylene of raised temperature resistance (PE-RT), crosslinked polyethylene (PE-X), polypropylene (PP) and chlorinated poly(vinyl chloride) (PVC-C).

The PE-X used shall be fully crosslinked and shall comply with the requirements of the relevant reference product standard (ISO 15875).

NOTE 2 For the purpose of ISO 21003, crosslinked polyethylene (PE-X) as well as adhesives are considered as thermoplastic materials.

Solid-wall pipes with thin outer layers (applied as protection layers or barrier layers, for instance) are not covered by ISO 21003 but are specified in the Amendments to ISO 15874-2, ISO 15875-2 and ISO 15876-2. The total thickness of such outer layers, including the thickness of the adhesives used, shall be  $\leq 0,4$  mm.