AS 4176.2—2010

Australian Standard®

Multilayer pipes for pressure applications

Part 2: Multilayer piping systems for hot and cold water plumbing applications—Pipes (ISO 21003-2:2008, MOD)

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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- 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

This Standard was issued in draft form for comment as DR AS 4176.2.

Standards Australia wishes to acknowledge the participation of the expert individuals that contributed to the development of this Standard through their representation on the Committee and through the public comment period.

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Originally as AS 4176—1994.
Revised in part as AS 4176.2—2010.

Published by Standards Australia GPO Box 476, Sydney, NSW 2001, Australia

ISBN 978 0 7337 9445 2

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 21003-2:2008, *Multilayer piping systems for hot and cold water installations inside buildings*, Part 2: *Pipes*. 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.

Statements expressed in normative terms in footnotes to tables are deemed to be requirements of this 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.

The references to International Standards should be replaced by references to the following Australian/New Zealand Standards:

Reference to International Standard ISO		*Australian or Australian/New Zealand Standard* AS	
527	Plastics—Determination of tensile properties	1145	Determination of tensile properties of plastic materials
527-1	Part 1: General principles	1145.1	Part 1: General principles
527-2	Part 2: Test conditions for moulding and extrusion plastics	1145.2	Part 2: Test conditions for moulding and extrusion plastics

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INTRODUCTION

The system standard of which this is Part 2 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 material and components other than pipes are specified in ISO 21003-1 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 characteristics of pipes.

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 2:

Multilayer piping systems for hot and cold water plumbing applications—Pipes (ISO 21003-2:2008, MOD)

1 Scope

This part of ISO 21003 specifies the characteristics of pipes for 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 of ISO 21003-1:2008).

It also specifies the test parameters for the test methods referred to in this part of ISO 21003.

ISO 21003 is a reference product standard. 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 only in conjunction with all the other parts of ISO 21003.

ISO 21003 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 of ISO 21003-1:2008.

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-designated 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 purposes 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 $\leqslant$ 0,4 mm.