AS 4176.8—2010

Australian Standard®

Multilayer pipes for pressure applications

Part 8: Multilayer pipe systems for consumer gas installations with a maximum operating pressure up to and including 5 bar (500 kPa)— Specifications for systems (ISO 17484-1:2006, MOD)

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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

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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 requirements and performance requirements of pipes and joints made of multilayer construction intended to be used for consumer gas installations with a maximum operating pressure up to and including 5 bar (500 kPa).

PE-X and PE pipes composed of one stress-designed layer, adhesive and a barrier layer are also covered by this part of AS 4176.

This Standard is an adoption with national modifications and has been reproduced from ISO 17484-1:2006, *Plastics piping systems—Multilayer pipe systems for indoor gas installations with a maximum operating pressure up to and including 5 (500 kPa)*, Part 1: *Specifications for systems* and its corrigendum ISO 17484-1:2006 Cor.1:2008 which has been added following the source text. The modifications and additional requirements are set out in Appendix ZZ. Appendix ZA has been included to specify requirements on means of demonstrating compliance with 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 17484’ should read ‘this part of AS 4176’.

(c) A full point substitutes for a comma when referring to a decimal marker.

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.

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

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INTRODUCTION

This part of ISO 17484 was developed in response to worldwide demand for minimum specification for multi-layered pipes for indoor gas applications.

Multi-layered pipes are delivered generally as a complete system. Pipes, fittings, tools, etc., are not compatible with components of another brand, generally. An advantage is that all components are perfectly geared to one another, but for repairing, the lack of compatibility might be problematic in the future.

Fire safety of systems

Depending on the construction of the house, pipework layout and other local circumstances, it is possible that additional safety devices are required to fulfill the demands of fire safety. Safety aspects of the system will be described in the planned Part 2.

Code of practice

The planned second part of ISO 17484 will be the code of practice for installation.

Recommendations on design, construction and protection in case of fire of the gas indoor installation are given in EN 1775).

References to ISO/TC 138/SC5 work

Test methods referred to in this part of ISO 17484 have been developed by SC 5 as far as possible. However, not all test methods needed are in the working programme of SC 5. These test methods are placed in Annexes B to K of this part of ISO 17484. It is planned that these tests will be developed as International Standards in the future.

For multilayer pipe construction, consisting of a layer of a reference standard material, an adhesive and a non-stress-designed layer, procedure I and the relevant product standards are followed for all aspects, excluding the aspects of delamination and, if applicable, oxygen permeation.

For example, layers can have the following purposes:

— ability to withstand the pressure;

— ability to realize interlayer adhesion;

— ability to block or greatly diminish incoming UV and/or sunlight;

— ability to mechanically protect the outside layer;

— ability to control the longitudinal expansion;

— ability to give the multilayer pipe a colour (inside layer or outside layer).

Some characteristics can be combined in one layer.

AUSTRALIAN STANDARD

Multilayer pipes for pressure applications

Part 8:
Multilayer pipe systems for consumer gas installations with a maximum operating pressure up to and including 5 bar (500 kPa)—Specification for systems (ISO 17484-1:2006, MOD)

1 Scope

This part of ISO 17484 specifies the general requirements and the performance requirements for multilayer pipe systems based on pipes, fittings and their joints intended to be used for gas supply within buildings.

PE-X and PE pipes composed of one stress-designed layer, adhesive and a barrier layer are also covered by this part of ISO 17484.

This part of ISO 17484 gives guidance for the design of piping systems consisting of multilayer pipes based on thermoplastics, for which at least 60 % of the wall thickness is polymeric material. Polymeric materials intended for stress-designed layers and all inner layers are required to be polyethylene (PE) and/or crosslinked polyethylene (PE-X) in accordance with Annex A of this part of ISO 17484. The outer layer of a metal multilayer is required to be PE or PE-X. PE-RT is considered as PE but with specific properties concerning hoop-stress performance (see 5.4.2.).

This part of ISO 17484 applies to systems that operate at temperatures of − 20 °C up to 60 °C.

For the purpose of this part of ISO 17484, crosslinked polyethylene (PE-X) and adhesive layers are considered as thermoplastic materials.

For sizes greater than 63 mm the requirements of ISO 18225 have to be fulfilled in addition.

This part of ISO 17484 is applicable for piping systems used in buildings to supply gas with a maximum operating pressure up to and including 500 kPa (5 bar) [1)].

This standard applies to the following fuels:

— Category D gaseous fuel: natural gas; see ISO 13623;

— Category E gaseous fuel: LPG vapour, and natural gas or LPG vapour; see ISO 13623.

1) 1 bar = 0,1 MPa = 105 Pa; 1 MPa = 1 N/mm^2