AS/NZS 1477:2017

Australian/New Zealand Standard™

PVC pipes and fittings for pressure applications

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee PL-021, PVC, ABS and Polyamide Pipe Systems. It was approved on behalf of the Council of Standards Australia on 24 April 2017 and by the New Zealand Standards Approval Board on 10 May 2017.
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The following are represented on Committee PL-021:

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Australian Chamber of Commerce and Industry
Chemistry Australia
Energy Networks Association
Engineers Australia
Local Government New Zealand
New Zealand Employers and Manufacturers Association (Central)
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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee PL-021, PVC, ABS and Polyamide Pipe Systems, to supersede AS/NZS 1477:2006.

The objective of this Standard is to provide a standard specification for manufacturers and purchasers of PVC pipe and fittings for pressure applications.

This Standard provides for injection-moulded fittings with main diameters greater than DN 150 with parallel solvent-welded sockets. These fittings are predominantly imported fittings and have no specific requirements for colour or titanium dioxide to provide UV protection.

Additional marking requirements have been specified for these fittings to highlight the parallel sockets, the need for gap-filling solvent cements and additional UV protection when used outdoors.

The test criteria specified in this Standard apply to pipes and fittings at the time of manufacture. They are not to be used to assess the results from tests on pipes or fittings that have already been in service.

Appendix B sets out the provisions for best environmental practice PVC for PVC-U pressure pipe. These provisions are in accordance with the credit criteria established by the Green Building Council of Australia in their Green Star rating program.

For best environmental practice PVC satisfying the provisions of Appendix B, an attestation of compliance for upstream materials such as chlorine and vinyl chloride, is necessary. Such attestations can take the form of a declaration of conformity prepared and maintained in accordance with ISO/IEC 17050, *Conformity assessment—Supplier's declaration of conformity*, Part 1: *General requirements*, and Part 2: *Supporting documentation*. Part 1 addresses the contents of the declaration of conformity and the procedures necessary to ensure ongoing compliance. Part 2 addresses the documentation required to support a declaration of conformity including the contents, traceability, availability and retention period.

Statements expressed in mandatory terms in notes to tables are deemed to be requirements of this Standard.

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

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FOREWORD

This Standard contains dimensions for two ranges of pipe sizes, Series 1 and Series 2. Series 1 pipes are a metric pipe size and Series 2 pipes have dimensions that are compatible with cast iron pressure pipe and fittings.

Pipe dimensions are determined using maximum hoop stresses according to nominal size as follows:

(a) A hydrostatic design stress of 11.0 MPa under static hydrostatic conditions for calculating the minimum wall thickness of pipes of nominal sizes up to and including DN 150.

(b) A hydrostatic design stress of 12.3 MPa under static hydrostatic conditions for pipes of nominal size greater than DN 150. The higher hydrostatic design stress for larger diameter pipes is based on test results obtained by the manufacturers and is in accordance with international practice.

The maximum out-of-roundness on outside diameters is applicable to Classes PN 9, PN 12, PN 15, PN 16, PN 18 and PN 20. No such tolerance is placed on sizes in Classes PN 4.5 and PN 6 because the thinner walled pipes may easily be re-rounded when inserted into sockets.

The minimum and maximum wall thicknesses are calculated as follows:

$$T_{\min} = \frac{PD_{\text{m min}}}{2S + P}$$

$$T_{\max} = 1.10T_{\min} + 0.20$$

where

$T_{\min}$ = minimum wall thickness, in millimetres

P = maximum allowable working pressure at 20°C, in megapascals

$D_{\text{m min}}$ = minimum mean outside diameter, in millimetres

S = hydrostatic design stress, in megapascals, in the static condition at 20°C:

11.0 MPa for nominal sizes DN 10 to DN 150 mm

12.3 MPa for nominal sizes DN 175 to DN 575 mm

$T_{\max}$ = maximum wall thickness, in millimetres

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S E C T I O N 1 S C O P E A N D G E N E R A L

1.1 SCOPE

This Standard specifies requirements for PVC pipes and fittings for pressure applications for use below ground or above ground, where they are not exposed to direct sunlight.

Appendix B sets out additional requirements for pipes and fittings classed as best environmental practice PVC-U for pressure applications.

NOTE: Requirements for the installation and use of pipes and fittings manufactured to this Standard are set out in AS/NZS 2032 and AS/NZS 2566.1, as applicable.

1.2 APPLICATION

Appendix A specifies a means of demonstrating conformance with this Standard. Appendix A defines the minimum requirements for a sampling and testing plan. Where variations to this plan are made, demonstrations of conformance with the minimum requirements may be necessary.

1.3 NORMATIVE REFERENCES

The following are the normative documents referenced in this Standard:

NOTE: Documents referenced for informative purposes are listed in the Bibliography.

AS

1199		Sampling procedures for inspection by attributes
1199.1	Part 1:	Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection
1646		Elastomeric seals for waterworks purposes
1722		Pipe threads of Whitworth form
1722.2	Part 2:	Fastening pipe threads
2888		Methods of testing plastics waste fittings
2888.1	Method 1:	Method of determining the suitability of connection threads of BSP form
681		Elastomeric seals—Material requirements for pipe joint seals used in water and drainage applications
681.1	Part 1:	Vulcanized rubber

AS ISO

7		Pipe threads where pressure-tight joints are made on the threads
7.1	Part 1:	Dimensions, tolerances and designation
7.2	Part 2:	Verification by means of limit gauges