

Australian/New Zealand Standard™

**Polybutylene (PB) plumbing pipe
systems**

**Part 2: Polybutylene (PB) pipe for hot
and cold water applications**



AS/NZS 2642.2:2008

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee PL-006, Polyolefin Pipe Systems. It was approved on behalf of the Council of Standards Australia on 31 January 2008 and on behalf of the Council of Standards New Zealand on 22 February 2008.

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The following are represented on Committee PL-006:

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CSIRO Manufacturing & Infrastructure Technology
Certification Interests (Australia)
Energy Networks Association
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PREFACE

This Standard was prepared by the Joint Australian/New Zealand Standards Committee PL-006, Polyolefin Pipe Systems, to supersede AS/NZS 2642.2:1994, *Polybutylene pipe systems, Part 2: Polybutylene (PB) pipe for hot and cold water applications*.

This Standard incorporates Amendment No. 1 (November 2018). The changes required by the Amendment are indicated in the text by a marginal bar and amendment number against the clause, note, table, figure or part thereof affected.

The Standard is Part 2 of a series of polybutylene pipe system Standards; other Standards in the series are as follows:

AS/NZS

- 2642 Polybutylene (PB) plumbing pipe systems
- 2642.1 Part 1: Polybutylene (PB) pipe extrusion compounds
- 2642.3 Part 3: Mechanical jointing fittings for use with polybutylene (PB) pipes for hot and cold water applications

A1 AS ISO/IEC

- 17025 General requirements for the competence of testing and calibration laboratories

Throughout this Standard a coefficient of 1.8 has been used to calculate the design stresses (and pressures) from ultimate stresses (and pressures).

Provision has been made for colours other than black or grey.

Polybutylene pipe can be used with either plastic or metallic fittings, provided that they are in accordance with AS/NZS 2642.3. Requirements set out therein cover compatibility with pipe, toxicity, resistance to leakage and pull-out, as well as thermal and pressure cycling tests.

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.

FOREWORD

The hydrostatic design stresses (hoop stresses) of the pipes specified in this Standard have been determined by the application of a design coefficient 1.8 to the extrapolated 50-year long-term hydrostatic strength value, which is based on a minimum stress regression line.

The wall thicknesses for the pipes specified in this Standard are based on the Barlow formula, which takes into account the hydrostatic design stress of the material and the working pressure and diameter of the pipes.

The equation used to calculate wall thickness is as follows:

$$T_{\min} = \frac{PD_{\max}}{2\sigma + P}$$

$$T_{\max} = 1.10T_{\min} + 0.1$$

where

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

P = working pressure at 20°C, in megapascals

D_{\max} = maximum mean outside diameter, in millimetres

S = hydrostatic design stress of 7.6 MPa at 20°C

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

NOTE: In the interests of serviceability of the pipe a minimum value of 1.6 mm has been applied to T_{\min} , irrespective of the calculated wall thickness.

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Australian/New Zealand Standard Polybutylene (PB) plumbing pipe systems

Part 2: Polybutylene (PB) pipe for hot and cold water applications

1 SCOPE

This Standard specifies materials, dimensions and performance requirements for polybutylene pipe for hot and cold water plumbing applications, including domestic, industrial and agricultural purposes.

In the interests of serviceability of the pipe, and irrespective of the calculated minimum wall thickness, this Standard does not apply to a wall thickness of less than 1.6 mm. The Standard applies to pipes of pressure class PN16 up to 28 mm nominal outside diameter.

NOTES:

- 1 Polybutylene undergoes a crystalline transition after it has cooled from the molten state. As a consequence, pipe manufactured to this Standard will not have achieved its full strength until 10 d after the date of manufacture, i.e. the date stamped on the pipe. Precautions should be taken to ensure that pipe is not released from the manufacturer's control prematurely and installed before gaining full strength.
- 2 Polybutylene pipe manufactured in accordance with this Standard is only considered suitable for use in situations exposed to indirect sunlight if it is stabilized against ultraviolet degradation. The only allowable method of stabilization is by the addition of $2.25 \pm 0.25\%$ of carbon black. Polybutylene pipe should never be used in situations where pipe is exposed to direct sunlight.
- 3 Polybutylene pipe manufactured in accordance with this Standard is intended to be used with fittings complying with AS/NZS 2642.1.

2 APPLICATION

Means for demonstrating compliance with this Standard shall be in accordance with Appendix A.

3 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

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

AS/NZS

1462 Methods of test for plastics pipes and fittings

1462.1 Method 1: Method for determining the dimensions of pipes and fittings

1462.6 Method 6: Method for hydrostatic pressure testing of pipes

1462.14 Method 14: Method for determination of the light transmission of pipe

1462.29 Method 29: Plastics piping and ducting systems—Determination of the long-term hydrostatic strength of thermoplastics materials in pipe form by extrapolation (ISO 9080:2003, MOD)