AS 5082.1—2007
(Incorporating Amendment No. 1)

AS 5082.1—2007

Australian STANDARD

Polybutylene (PB) plumbing pipe systems—Metric series

Part 1: Metric polybutylene (PB) pipes for hot and cold water applications

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 27 November 2006.
This Standard was published on 21 February 2007.

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- AUSTAP
- CSIRO Manufacturing & Infrastructure Technology
- Certification Interests (Australia)
- Energy Networks Association
- Engineers Australia
- Master Plumbers, Gasfitters and Drainlayers New Zealand
- New Zealand Water & Waste Association
- Plastics Industry Pipe Association of Australia
- Plastics New Zealand
- Water Services Association of Australia

This Standard was issued in draft form for comment as DR 05541.

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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First published as AS 5082.1—2007.
Reissued incorporating Amendment No. 1 (November 2018).

Published by SAI Global Limited under licence from Standards Australia Limited, GPO Box 476, Sydney, NSW 2001, Australia

ISBN 0 7337 8032 6

PREFACE

This Standard was prepared by the Joint Australia/New Zealand Standards Committee PL-006, Polyolefin Pipe Systems at the request of pipe and fittings importers. After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this series of Standards as Australian Standards rather than Australian/New Zealand Standards.

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 AS 5082 series consists of the following:

AS	
5082	Polybutylene (PB) plumbing pipe systems—Metric series
5082.1	Part 1: Metric polybutylene (PB) pipes for hot and cold water applications
5082.1	Part 2: Mechanical and fusion jointing systems

NOTE: For polybutylene extrusion compounds refer to Australian/New Zealand Standard AS/NZS 2642.1, *Polybutylene (PB) plumbing pipe systems—Polybutylene (PB) extrusion compounds*.

This series of Standards differs from the relevant parts of the AS/NZS 2642 series for PB pipe systems as follows:

(a) The outside diameters of the pipes follow the metric dimensions, in accordance with ISO 161-1, *Thermoplastics pipes for the conveyance of fluids—Nominal outside diameters and nominal pressures,* Part 1: *Metric series*, as distinct from the diameters in the AS/NZS 2642 series, which follow copper pipe compatible diameters.

(b) The size range of pipes within the AS 5082 series is greater, and a number of test requirements have been based on the ISO 15876 series, *Plastics piping systems for hot and cold water installation—Polybutylene (PB)*.

(c) The jointing system allows for fusion jointing.

It is not intended that the AS 5082 series of Standards will replace the AS/NZS 2642 series, which will be limited to plumbing sizes and pressure classes. To differentiate between both metric- and imperial-based systems, in particular given the closeness of the outside diameter tolerances for the 18 mm (nominal diameter) AS/NZS 2642 pipe and the 16 mm metric outside diameter pipe, both Standards will run concurrently to allow both systems to be marked or labelled differently.

Care should be taken to avoid mismatching of AS/NZS 2642 pipes or fittings with products complying with this series of Standards.

Statements expressed in normative 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

The hydrostatic design stresses (hoop stresses) of the pipes specified in this Standard have been determined by the application of a design factor of 1.5 to the extrapolated ISO 9080, *Plastics piping and ducting systems—Determination of the long-term hydrostatic strength of thermoplastics materials in pipe form by extrapolation,* 50 year 97.5% LPL of the predicted hydrostatic strength at 20°*C*.

For pipe sizes 16 mm and 20 mm, the increased pipe thickness specified was determined to satisfy fusion serviceability requirements.

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:

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

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

where

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

P = working pressure at 20°C, in megapascals

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

σ = hydrostatic design stress at 20°C.

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

NOTES:

1 In the interests of serviceability of the pipe for fusion jointing a minimum value of 2.2 mm has been applied to $T_{\min}$, irrespective of the calculated wall thickness.

2 Values have been rounded to one decimal place.

STANDARDS AUSTRALIA

Australian Standard
Polybutylene (PB) plumbing pipe systems—Metric series

Part 1: Metric polybutylene (PB) pipes for hot and cold water applications

1 SCOPE

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

In the interests of serviceability of the pipe, and irrespective of the calculated minimum wall thickness, a minimum wall thickness of 1.6 mm is intended for pipes joined together with mechanical fittings and 2.2 mm is intended for pipes joined together by fusion.

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 days 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 ±0.25% of carbon black. Polybutylene pipe should never be used in situations where pipe is continuously exposed to direct sunlight.

3 Polybutylene pipe manufactured in accordance with this Standard is intended to be used with fittings complying with AS 5082.2. Solvent cementing polybutylene pipe by means of solvent cement is not satisfactory.

4 Type tests specified in Clauses 9.1, 9.4, 9.7, 10.2 and 10.3 are tests performed on pipe, following the crystalline transition time, to assess compliance of finished product with this Standard; however, it may also be convenient for product manufacturers to use those tests for quality control purposes during manufacture.

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 attributes
1199.1	Part 1:	Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection
5082		Polybutylene (PB) plumbing pipe systems—Metric series
5082.2	Part 2:	Mechanical and fusion jointing systems