AS/NZS 4130:2018

Australian/New Zealand Standard™

Polyethylene (PE) pipes for pressure applications

STANDARDS Australia

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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 19 September 2018 and by the New Zealand Standards Approval Board on 5 September 2018.
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The following are represented on Committee PL-006:

Association of Accredited Certification Bodies
Australian Building Codes Board
Australian Industry Group
Energy Networks Australia
Engineers Australia
New Zealand Employers and Manufacturers Association (Central)
Plastics Industry Pipe Association of Australia
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This Standard was issued in draft form for comment as DR AS/NZS 4130:2017.

Australian/New Zealand Standard™

Polyethylene (PE) pipes for pressure applications

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee PL-006, Polyolefin Pipe Systems, to supersede AS/NZS 4130:2009, *Polyethylene (PE) pipes for pressure applications*.

The objective of this document is to provide a standard specification for manufacturers and purchasers of polyethylene pipes used for pressure applications.

This revision deletes the separate Series 2 gas pipes dimension Table 3, and amalgamates the Series 2 pipes into the Series 1 dimension Table 2.

The various tables are correspondingly renumbered throughout the Standard. For clarity, the terminology Series 3 has been retained.

Installation requirements are covered by AS/NZS 2033, Installation of polyethylene pipe systems and AS/NZS 4645, Gas distribution networks.

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

The terms ‘normative’ and ‘informative’ are used in a Standard to define the application of the appendices or annexes to which they apply. A ‘normative’ appendix or annex is an integral part of a Standard, whereas an ‘informative’ appendix or annex is only for information and guidance.

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FOREWORD

This Standard covers two series of pipe dimensions. Series 1 for general pressure and fuel gas applications and Series 3 fuel gas applications (nominal inside diameter series).

HDS values for the Series 1 water pipes (C = 1.25) are given in the table below.

Pipes made from similar polyethylene compounds from different manufacturers may need to be evaluated to ensure compatibility in welding and similar operations (refer to AS/NZS 2033).

Resistance to rapid crack propagation (RCP) has not been included as a requirement in this Standard. RCP is a potential failure mode in thick wall pipes carrying compressible fluids and operating at high stresses and low temperatures.

Wall thicknesses for the specified pipes have been calculated from equations that take into account the hydrostatic design stress (HDS) of the material and the working pressure and diameter of the pipe. In the interest of serviceability of the pipe and irrespective of the calculated minimum wall thickness, this Standard does not provide for a wall thickness of less than 1.6 mm.

HDS VALUES FOR SERIES 1 (C = 1.25)

Compound	Series 1 HDS (MPa)
PE 80	6.3
PE 100	8.0

By convention, plastics pipe systems are often designed on the basis of 50 year extrapolated test data. This is established international practice but is not intended to imply the service life of pressure pipe is limited to 50 years. For correctly manufactured and installed systems, the actual life cannot be predicted, but can logically be expected to be well in excess of 100 years before major rehabilitation is required.

STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

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1 SCOPE AND APPLICATION

1.1 Scope

This Standard specifies requirements for polyethylene pipes for the conveyance of fluids under pressure. Such fluids include, but are not restricted to, water, recycled or reclaimed water, wastewater, slurries, compressed air, and fuel gas. Fuel gas includes natural gas, liquefied petroleum gas (LPG) in the vapour phase and LPG/air mixtures.

Pipes that do not contain carbon black, in conformance with this Standard, are not intended for extended exposure in direct sunlight.

1.2 Application

Pipes intended for the transmission of fuel gas are hereinafter referred to as 'gas pipes' and shall be operated up to a MAOP of 1050 kPa gauge.

The test requirements specified in this Standard may be achieved by alternative test methods if such methods can be shown to provide equal or greater accuracy than those specified herein. In all cases of dispute, the methods specified in this Standard shall be considered the reference test methods.

1.3 Demonstration of conformance to this Standard

Appendix A sets out the means by which conformance with this Standard shall be demonstrated by a manufacturer for the purpose of product certification.

2 NORMATIVE REFERENCES

The following documents are indispensable for the application of this Standard.

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

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

1462 Methods of test for plastics pipes and fittings

1462.24 Part 24: Determination of resistance to crack propagation—Test methods for slow crack growth in notched pipes (notch test)

AS/NZS

1462 Methods of test for plastics pipes and fittings

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

1462.4 Part 4: Method of determining reversion UPVC pipes

1462.6 Part 6: Thermoplastics pipes, fittings and assemblies for the transport of fluids under pressure—Resistance to internal pressure

1462.26 Part 26 Determination of weathering resistance of plastics pipes for external storage

1462.28 Part 28: Method for the assessment of the degree of pigment or carbon black dispersion in polyolefin pipes, fittings and compounds