

Australian/New Zealand Standard™

**Polyethylene (PE) compounds for
pressure pipes and fittings**



Standards Australia



STANDARDS
NEW ZEALAND
Te Kaitiaki Take Kōwhiri

AS/NZS 4131:2001

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 9 June 2001 and on behalf of the Council of Standards New Zealand on 8 June 2001. It was published on 25 July 2001.

The following interests are represented on Committee PL-006:

Association of Rotational Moulders (Australasia)
AusPoly
AUSTAP
Australian Association of Certification Bodies
Australian Gas Association
CSIRO Building, Construction and Engineering
Institution of Engineers Australia
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Australian/New Zealand Standard™

Polyethylene (PE) compounds for pressure pipes and fittings

Originated in Australia in part as AS K125—1963.
Originated in New Zealand in part as NZS 1189:1953. (endorsement of BS 1973:1953).
Previous edition AS/NZS 4131:1997.
Second edition 2001.

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Jointly published by Standards Australia International Ltd, GPO Box 5420, Sydney, NSW 2001
and Standards New Zealand, Private Bag 2439, Wellington 6020

ISBN 0 7337 3958 X

PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committees PL-006, *Polyolefin Pipe Systems*, to supersede AS 4131—1997, PE pipe compounds.

The objective of this document is to provide a standard specification for manufacturers and purchasers of these products.

This revision is based largely on the latest ISO and CEN documents and consequently provides for compatibility of compounds of different origin.

Changes in this revision include the introduction, where possible, of terminology and definitions adopted in ISO standards. The long-term hydrostatic pressure properties of the compounds are referred to as the long term prediction level (LPL) when evaluated in accordance with ISO/DIS 9080 (which is a revision of ISO TR 9080).

Limits to toluene extracts and maximum particle sizes for carbon black additives have been introduced to limit these as crack initiation sites in service.

The Committee considered at length the requirements for slow crack growth (SCG) and for the PE 100 materials adopted a minimum test value of 500 hours following ISO/CEN decisions for gas applications. These materials are intended for use in high pressure gas and water applications. A second category, PE 100–165, was introduced with these materials being required to meet a minimum SCG test period of 165 hours. These requirements will be kept under review pending developments in ISO/CEN Standards.

Rapid Crack growth Propagation resistance (RCP) requirements have been increased to differentiate PE 100 materials from PE 80 materials for high pressure water and gas applications.

The means of demonstrating compliance with this Standard (Appendix A) have been modified for minimum sampling and testing frequency plans to include Batch Release Tests, Process Verification Tests and Type Tests requirements to simplify and improve product quality verification.

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

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

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STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

Australian/New Zealand Standard**Polyethylene (PE) compounds for pressure pipes and fittings****1 SCOPE AND APPLICATION****1.1 Scope**

This Standard specifies requirements for polyethylene compounds (PE 63, PE 80 and PE 100) suitable for manufacturing polyethylene pipe and fittings for pressure applications. Minimum requirements are given for materials, additives and long-term pressure performance.

Methods of demonstrating compliance with this Standard are given in Appendix A.

NOTE: Compounds complying with this Standard are not intended for use with gas containing more than 1% aromatics by volume. Where aromatic content is greater than this, testing for resistance to gas constituents should be carried out in accordance with ISO 4437.

1.2 Application

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.

2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS

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| 1049 | Telecommunication cables—Insulation, sheath and jacket |
| 1199 | Sampling procedures and tables for inspection by attributes |
| 1145 | Determination of tensile properties of plastics materials |
| 1745 | Outdoor weathering of plastics in the Australian environment |
| 1745.2 | Part 2: Guide for design purposes |
| 1984 | Vernier callipers (metric series) |
| 2033 | Installation of polyethylene pipe systems |
| 2101 | Internal micrometers (including stick micrometers) (metric series) |
| 2102 | Micrometer callipers for external measurement |
| 2193 | Methods for calibration and grading of force-measuring systems of testing machines |
| 2700 | Colour standards for general purposes |

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|--------|---|
| 3500 | National Plumbing and Drainage Code |
| 3500.0 | Part 0: Glossary of terms |
| 4020 | Products for use in contact with drinking water |
| 4130 | Polyethylene (PE) pipes for pressure applications |