Australian STANDARD

# Mechanical jointing fittings for use with crosslinked polyethylene (PE-X) for pressure applications

# Part 5: Plastics pipes and fittings—Crosslinked polyethylene (PE-X) pipe systems for the conveyance of gaseous fuels—Metric series—Specifications—Fittings for mechanical jointing (including PE-X/metal transitions) (ISO 14531-3:2006, MOD)

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 23 March 2011.
This Standard was published on 13 April 2011.

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The following are represented on Committee PL-006:

- Certification Interests (Australia)
- Energy Networks Association
- Engineers Australia
- Master Plumbers, Gasfitters and Drainlayers New Zealand
- National Plumbing Regulators Forum
- New Zealand Water and Waste Association
- Plastics Industry Pipe Association of Australia
- Plastics New Zealand
- Plumbing Products Industry Group
- Water Services Association of Australia

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This Standard was issued in draft form for comment as DR AS/NZS 2537.5.

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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Originated in Australia as part of AS 2537—1982.
Previous edition part of AS 2537—1994.
Jointly revised and redesignated AS/NZS 2537.5:2011.
Reissued incorporating Amendment No. 1 (December 2018) and redesignated as AS 2537.5:2011.



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

ISBN 978 0 7337 9829 0

# PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee PL-006, Polyolefin Pipe Systems to supersede in part, AS 2537—1994, *Mechanical jointing fittings for use with crosslinked polyethylene (PE-X) pipe for hot and cold water applications*.

*This Standard incorporates Amendment No. 1 (December 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.*

A1 Amendment No. 1 to this Standard was prepared by the Australian members of Joint Standards Australia/Standards New Zealand Committee PL-006, Polyolefin Pipe Systems. As a consequence of Amendment No. 1, which was published as an Australian-only Amendment, the designation of this Standard has been changed from AS/NZS 2537.5:2011 to AS 2537.5:2011.

This Standard is an adoption with national modifications and has been reproduced from ISO 14531-3:2006, *Plastics pipes and fittings—Crosslinked polyethylene (PE-X) pipe systems for the conveyance of gaseous fuels—Metric series—Specifications*, Part 3: *Fittings for mechanical jointing (including PE-X/metal transitions)*. The modifications and additional requirements are set out in Appendix ZZ. Appendix ZA has been included to specify requirements on means of demonstrating compliance with this Standard.

The objective of this Standard is to specify the general aspects of mechanical jointing fittings made for use with crosslinked polyethylene pipes in gaseous fuel applications.

In this Standard, there is a partial pressure limitation for liquefied petroleum gas (LP Gas). The aim of this limitation is to prevent the formation of aliphatic hydrocarbon liquids under normal service conditions and subsequent deleterious effects on the long term performance of the pipe. At a partial pressure of 300 kPa absolute, the dewpoint for a typical propane LP Gas is below 0°C. The designer of a cross-linked polyethylene reticulation system should be aware that if service temperatures lower than this are likely to occur or if LP Gas containing significant quantities of butane gases are to be reticulated, the partial pressure limitation must be revised to avoid condensation of hydrocarbon liquids.

Other parts of AS/NZS 2537 are:

AS/NZS
2537.1 Part 1: Plastics piping systems for hot and cold water installations—Crosslinked polyethylene (PE-X)—General (ISO 15875-1, MOD)
2537.2 Part 2: Plastics piping systems for hot and cold water installations—Crosslinked polyethylene (PE-X)—Fittings (ISO 15875-3:2003, MOD)
2537.3 Part 3: Plastics piping systems for hot and cold water installations—Crosslinked polyethylene (PE-X)—Fitness for purpose of the system (ISO 15875-5:2003, MOD)
2537.4 Part 4: Plastics piping systems for hot and cold water installations—Crosslinked polyethylene (PE-X)—Guidance for the assessment of conformity (ISO/TS 15875-7:2003, MOD)

As this Standard is reproduced from an International Standard, the following applies:

(a) Its number does not appear on each page of text and its identity is shown only on the cover and title page.

(b) In the source text 'this part of ISO 14531' should read 'this part of AS/(NZS) 2537'.

(c) A full point substitutes for a comma when referring to a decimal marker.

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 normative terms in footnotes to tables are deemed to be requirements of this Standard.

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# Mechanical jointing fittings for use with crosslinked polyethylene (PE-X) pipe for pressure applications

Part 5:

Plastics pipes and fittings—Crosslinked polyethylene (PE-X) pipe systems for the conveyance of gaseous fuels—Metric series—Specifications—Fittings for mechanical jointing (including PE-X/metal transitions) (ISO 14531-3:2006, MOD)

## 1 Scope

This part of ISO 14531 specifies the physical properties and mechanical-performance requirements for full-end-load-resistant mechanical fittings for use in the connection of crosslinked polyethylene (PE-X) pipes conforming to ISO 14531-1 and in the construction of transition assemblies for joining PE-X pipes to metal pipes having plain spigot, screw thread, compression socket and flange terminations. In addition, it lays down dimensional requirements and specifies some general material properties (including chemical resistance) together with a classification scheme for PE-X fitting materials produced in the form of pipe.

This part of ISO 14531, when used in conjunction with the other parts of ISO 14531, provides the basis for the design, manufacture and installation of PE-X piping systems (PE-X pipes, PE-X fusion fittings and mechanical fittings) for the supply of category D and category E hydrocarbon-based fuels (see ISO 13623) at

a) maximum operating pressures (MOPs) up to and including 16 bar [1] and

b) a maximum operating temperature of +60 °C and

c) a minimum operating temperature of

   1) −50 °C

   2) −35 °C

   3) −20 °C.

Conformity to this part of ISO 14531-3 of mechanical fittings produced in accordance with ISO 10838-1, ISO 10838-2 or ISO 10838-3 may be claimed subject to the satisfactory conclusion of the tests listed in 5.6 and an end-use restriction on operating temperatures to the temperature range −20 °C to +40 °C.

NOTE It is recognized that mechanical fittings conforming to ISO 10838-1, ISO 10838-2 or ISO 10838-3 are limited to a maximum operating temperature of 40 °C. Provision is made in ISO 14531-4 for the use on a restricted-temperature basis of ISO 10838 fittings conforming to 5.6 in conjunction with PE-X pipes conforming to ISO 14531-1. The fitting manufacturer's technical file should also be consulted for relevant supporting information.

For installation purposes, this part of ISO 14531 provides for the jointing of mechanical fittings to PE-X pipes within the temperature range −5 °C to +40 °C.

1) 1 bar = $10^5$ N/$m^2$ = 100 kPa.



 