

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)**

ICS 23.040.20; 23.040.45; 75.200

National foreword

This British Standard reproduces verbatim ISO 14531-3:2006 and implements it as the UK national standard.

The UK participation in its preparation was entrusted by Technical Committee PRI/88/2, Plastics piping for pressure applications, to Subcommittee PRI/88/2/6, Thermoplastics piping for gas supply, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this subcommittee can be obtained on request to its secretary.

Cross-references

The British Standards which implement international publications referred to in this document may be found in the *BSI Catalogue* under the section entitled “International Standards Correspondence Index”, or by using the “Search” facility of the *BSI Electronic Catalogue* or of British Standards Online.

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Summary of pages

This document comprises a front cover, an inside front cover, the ISO title page, pages ii to v, a blank page, pages 1 to 19 and a back cover.

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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)

Tubes et raccords en matières plastiques — Systèmes de tubes en polyéthylène réticulé (PE-X) pour le transport de combustibles gazeux — Série métrique — Spécifications —

Partie 3: Raccords pour assemblage mécanique (y compris transitions PE-X/métal)



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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 14531-3 was prepared by Technical Committee ISO/TC 138, *Plastics pipes, fittings and valves for the transport of fluids*, Subcommittee SC 4, *Plastic pipes and fittings for the supply of gaseous fuels*.

ISO 14531 consists of the following parts, under the general title *Plastics pipes and fittings — Crosslinked polyethylene (PE-X) pipe systems for the conveyance of gaseous fuels — Metric series — Specifications*:

- *Part 1: Pipes*
- *Part 2: Fittings for heat-fusion jointing*
- *Part 3: Fittings for mechanical jointing (including PE-X/metal transitions)*
- *Part 4: System design and installation guidelines*

Introduction

Further to the publication of International Standards for crosslinked polyethylene (PE-X) hot-water pipes, it has become evident that the properties of PE-X, in particular its high fracture resistance and a recently established socket and saddle fusion-jointing capability, render it suitable for use in high-performance gas-distribution systems. The philosophy of ISO 14531 is to provide the basis for the introduction of PE-X gas pipe systems by the specification of a performance envelope beyond that covered by existing PE standards in order to take its application into regimes of higher operating pressures and extremes of operating temperature.

This part of ISO 14531 is therefore one part of a four-part system standard covering pipes, fittings for heat-fusion jointing, fittings for mechanical jointing and design and installation guidelines. The content is suitable for use by procurement authorities and distribution engineers responsible for the design, installation and operation of pipeline systems.

This part of ISO 14531 is structured to ensure the supply of mechanical fittings with an end-load resistance greater than that exhibited by the pipe(s) to which the fittings are connected.

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Part 3: Fittings for mechanical jointing (including PE-X/metal transitions)

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 = 10⁵ N/m² = 100 kPa.