
**Cevni sistemi iz polimernih materialov za napeljave z vročo in hladno vodo -
Zamreženi polietilen (PE-X) - 3. del: Fitingi (ISO/DIS 15875-3:2024)**

Plastics piping systems for hot and cold water installations - Crosslinked polyethylene (PE-X) - Part 3: Fittings (ISO/DIS 15875-3:2024)

Kunststoff-Rohrleitungssysteme für die Warm- und Kaltwasserinstallation– Vernetztes Polyethylen (PE-X)– Teil3: Formstücke (ISO/DIS 15875-3:2024)

Systèmes de canalisations en plastique pour les installations d'eau chaude et froide - Polyéthylène réticulé (PE-X) - Partie 3: Raccords (ISO/DIS 15875-3:2024)

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Plastics piping systems for hot and cold water installations — Crosslinked polyethylene (PE-X) —

Part 3: Fittings

*Systèmes de canalisations en plastique pour les installations
d'eau chaude et froide — Polyéthylène réticulé (PE-X) —*

Partie 3: Raccords

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

ISO 15875-3 was prepared by the European Committee Standardization (CEN) Technical Committee CEN/TC 155, *Plastics pipings systems and ducting systems*, in collaboration with ISO Technical Committee ISO/TC 138, *Plastics pipes, fittings and valves for the transport of fluids*, Subcommittee SC 2, *Plastics pipes and fittings for water supplies*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 15875-3:2003), which has been technically revised with the following changes:

- More clarity for Plastics fitting body material not identical to PE-X due to a distinction between:
 - Plastics fitting body material not identical to PE-X, but specified by other ISO standards
 - Plastics fitting body material not identical to PE-X and not specified by other ISO standards
- New clause for plastics material of auxiliary fittings parts subjected to mechanical stress
- New introduction of a 2,500 h at 95 °C confirmation test

A list of all parts in the ISO 15875 series can be found on the ISO website.

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Introduction

The System Standard ISO 15875, of which this document is Part 3, specifies the requirements for a piping system when made from crosslinked polyethylene (PE-X). The piping system is intended to be used for hot and cold water installations.

In respect of potential adverse effects on the quality of water intended for human consumption, caused by the product covered by ISO 15875 (all parts):

- ISO 15875 (all parts) provides no information as to whether the product may be used without restriction in any of the Member States of the EU or EFTA;
- it should be noted that, while awaiting the adoption of verifiable European criteria, existing national regulations concerning the use and/or the characteristics of this product remain in force.

Requirements and test methods for materials and components, other than fittings, are specified in ISO 15875-1 and ISO 15875-2. Characteristics for fitness for purpose (mainly for joints) are covered in ISO 15875-5. ISO/TS 15875-7 gives guidance for the assessment of conformity.

This document specifies the characteristics of the fittings.

At the date of publication of this standard, System Standards for piping systems of other plastics materials used for the same application include ISO 15874, ISO 15875, ISO 15876, ISO 15877, ISO 21003 and ISO 22391.

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Plastics piping systems for hot and cold water installations — Crosslinked polyethylene (PE-X) —

Part 3: Fittings

1 Scope

This document specifies the characteristics of fittings for crosslinked polyethylene (PE-X) piping systems intended to be used for hot and cold water installations within buildings for the conveyance of water, whether or not intended for human consumption (domestic systems) and for heating systems under design pressures and temperatures according to the class of application (see ISO 15875-1).

It also specifies the test parameters for the test methods referred to in this standard.

The designation crosslinked polyethylene is used together with the abbreviation PE-X throughout ISO 15875, including this document.

ISO 15875 covers a range of service conditions (application classes) and design pressure classes. For values of design temperature (T_D), maximum temperature (T_{max}) and malfunction temperature (T_{mal}) and service times in excess of those defined in ISO 15875-1, this document does not apply.

NOTE 1 It is the responsibility of the purchaser or specifier to make the appropriate selections from these application classes (see ISO 15875 part 1), taking into account their particular requirements and any relevant national regulations and installation practices or codes.

The ISO 15875 standards series is a piping system standard.

This document shall only be used in conjunction with all the other parts of ISO 15875. This document is applicable to fittings made from PE-X or other plastics or non-plastics materials, which are intended to be connected to pipes conforming to ISO 15875-2 for hot and cold water installations, whereby the joints conform to the requirements of ISO 15875-5.

In order to comply with this standard all requirements of this document have to be met.

NOTE 2 The test results obtained from a specific piping system test according ISO 15875 part 5 cannot be transferred to other combinations of pipes and fittings.

This document is applicable to fittings of the following types:

- mechanical fittings;
- electrofusion fittings;

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 228-1, *Pipe threads where pressure-tight joints are not made on the threads — Part 1: Dimensions, tolerances and designation*

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ISO 1133-1, *Plastics — Determination of the melt mass-flow rate (MFR) and melt volume-flow rate (MVR) of thermoplastics — Part 1: Standard method*

ISO 1167-1, *Thermoplastics pipes, fittings and assemblies for the conveyance of fluids — Determination of the resistance to internal pressure — Part 1: General method*

ISO 1167-3, *Thermoplastics pipes, fittings and assemblies for the conveyance of fluids — Determination of the resistance to internal pressure — Part 3: Preparation of components*

ISO 1167-4, *Thermoplastics pipes, fittings and assemblies for the conveyance of fluids — Determination of the resistance to internal pressure — Part 4: Preparation of assemblies*

ISO 3126, *Plastics piping systems — Plastics components — Determination of dimensions*

ISO 7686, *Plastics pipes and fittings — Determination of opacity*

ISO 9080, *Plastics piping and ducting systems — Determination of the long-term hydrostatic strength of thermoplastics materials in pipe form by extrapolation*

ISO 10147, *Pipes and fittings made of crosslinked polyethylene (PE-X) — Estimation of the degree of crosslinking by determination of the gel content*

ISO 15875-1, *Plastics piping system for hot and cold water installations — crosslinked polyethylene (PE-X) — Part 1: General*

ISO 15875-2, *Plastics piping system for hot and cold water installations — crosslinked polyethylene (PE-X) — Part 2: Pipes*

ISO 15875-5, *Plastics piping system for hot and cold water installations — crosslinked polyethylene (PE-X) — Part 5: Fitness for purpose of the system*

EN 681-1, *Elastomeric seals — Materials requirements for pipe joint seals used in water and drainage applications — Part 1: Vulcanized rubber*

EN 681-2, *Elastomeric seals — Materials requirements for pipe joint seals used in water and drainage applications — Part 2: Thermoplastic elastomers*

EN 10088-1, *Stainless steels — Part 1: List of stainless steels*

EN 10226-1, *Pipe threads where pressure-tight joints are made on the threads — Part 1: Taper external threads and parallel internal treads — Dimensions, tolerances and designation*

ISO 2768-1, *General tolerances — Part 1: Tolerances for linear and angular dimensions without individual tolerance indications*

ISO 2768-2, *General tolerances — Part 2: Geometrical tolerances for features without individual tolerance indications*

ISO 6506-1, *Metallic materials — Brinell hardness test — Part 1: Test method*

ISO 6509-1, *Corrosion of metals and alloys — Determination of dezincification resistance of copper alloys with zinc — Part 1: Test method*

ISO 6509-2, *Corrosion of metals and alloys — Determination of dezincification resistance of copper alloys with zinc — Part 2: Assessment criteria*

ISO 6957, *Copper alloys — Ammonia test for stress corrosion resistance*

3 Terms and definitions, symbols and abbreviated terms

For the purposes of this document, the terms and definitions, symbols and abbreviated terms given in ISO 15875-1 and the following apply.

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ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <https://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

3.1 General

3.1.1 fitting

component of a piping system, which connects two or more pipes and/or fittings together, without any further function.

3.2 Mechanical fittings

3.2.1 compression fitting

fitting with internal support in which the joint is made by screwing a union nut along a thread to compress a ring on the outside wall of the pipe and finally to cause a clamping of the pipe between the ring and the inner support of the fitting.

Note 1 to entry: The fitting may be with or without elastomeric sealing element.

3.2.2 radial press fitting

fitting, with internal support in which the joint is made by a radial compression of a ring with a pressing tool on the outside wall of the pipe to cause a clamping of the pipe between the ring and the inner support of the fitting.

Note 1 to entry: The fitting may be with or without sealing element.

3.2.3 axial press fitting

fitting with internal support in which the joint is made by an axial movement of a sleeve with a pressing tool to cause a clamping of the pipe between the sleeve and the inner support of the fitting.

Note 1 to entry: The fitting may be with or without sealing element.

3.2.4 push-fit fitting

fitting, which incorporates a sealing element, a gripping device and uses optionally an internal support. The joint is made by pushing the pipe into the fitting and a seal is achieved without the use of heat or tools.

Note 1 to entry: In some designs, this type of joint can be disconnected and re-connected or disconnected and the fitting re-used elsewhere.

Note 2 to entry: The internal support can be an integrated part of the fitting or a separate part (supporting sleeve).

3.2.5 radial shrink fitting

fitting, with internal support in which the joint is made by a radial shrinking of the PE-X pipe and an previously expanded visco-elastic polymeric ring on the outside wall of the pipe to cause a clamping of the pipe between the ring and the inner support of the fitting.

Note 1 to entry: The fitting may be with or without sealing element.

Note 2 to entry: to entry The internal support can be an integrated part of the fitting or a separate part (supporting sleeve).