



**SLOVENSKI STANDARD**  
**oSIST prEN ISO 15875-2:2024**  
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**Cevni sistemi iz polimernih materialov za napeljave z vročo in hladno vodo -  
Zamreženi polietilen (PE-X) - 2. del: Cevi (ISO/DIS 15875-2:2024)**

Plastics piping systems for hot and cold water installations - Crosslinked polyethylene (PE-X) - Part 2: Pipes (ISO/DIS 15875-2:2024)

Kunststoff-Rohrleitungssysteme für die Warm- und Kaltwasserinstallation – Vernetztes Polyethylen (PE-X) – Teil 2: Rohre (ISO/DIS 15875-2:2024)

Systèmes de canalisations en plastique pour les installations d'eau chaude et froide - Polyéthylène réticulé (PE-X) - Partie 2: Tubes (ISO/DIS 15875-2:2024)

**Ta slovenski standard je istoveten z: prEN ISO 15875-2**

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# DRAFT International Standard

## ISO/DIS 15875-2

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

#### Part 2: Pipes

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

*Partie 2: Tubes*

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## ISO/DIS 15875-2:2024(en)

### 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](http://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](http://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 of the voluntary nature of standards, 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 [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by the 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 collaboration with the European (CEN) Technical Committee CEN/TC 155, *Plastics piping systems and ducting systems*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 15875-2:2003), which has been technically and editorially revised.

The main changes compared to the previous edition are as follows:

- the normative references have been updated;
- pipe material has been specified more precisely;
- Amendment 1 (2007) to ISO 15875-2 has been incorporated;
- a Formula for the 110 °C reference curve has been added;
- new [Clause 4.4](#) "Barrier layer material" has been added;
- new [Clause 4.4.1](#) "Thermal stability of the barrier layer material" with requirements on the thermal stability of the material has been added;
- new [Clause 4.4.2](#) "Thermal stability of the adhesive layer material" with requirements on the thermal stability of the material has been added;
- new [Clause 4.4.3](#) "Thermal stability of the outer layer material" with requirements on the thermal stability of the material has been added;
- new [Clause 5.4](#) "Oxygen permeability" has been added;
- [Clause 6.2](#), the diameter range has been extended up to 250 mm;
- new [Clause 6.3](#) "Pipes with barrier layer - Dimensions of pipes" has been added;

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- [Clause 7, Table 12](#), resistance to internal pressure, new test parameter have been added: 20 °C / 22 hours and 95 °C / 2 500 hours;
- [Clause 8](#), the point in time, when the minimum degree of crosslinking shall be reached, has been defined;
- [Table 13](#), a new crosslinking method has been added: PE-Xe - UV light initiated crosslinking;
- new [Annex A](#) "Pipe construction" with [Figures A.1, A.2](#) and [A.3](#) and [Clause A.2](#) "Position of the barrier layer" has been added;
- [Annex B](#) (formerly [Annex A](#)) "Derivation of  $S_{calc,max}$  values" has been changed from informative to normative;
- new [Annex C](#) for the proof of the thermal stability of materials has been added
- the standard has been editorial revised.

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

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

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## ISO/DIS 15875-2:2024(en)

### Introduction

The System Standard ISO 15875, of which this document is Part 2, 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 material and components, other than pipes, are specified in ISO 15875-1 and ISO 15875-3. 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 pipes.

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 2: Pipes

### 1 Scope

This document specifies the characteristics of pipes 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 document.

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

ISO 15875 covers a range application classes, design pressures and pipe dimension 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 15875-1), 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 PE-X pipes for hot and cold water installations, which are intended to be connected to fittings conforming to ISO 15875-3, whereby the joints conform to the requirements of ISO 15875-5.

It is applicable to PE-X pipes with and without barrier layer.

NOTE 2 In the case of PE-X pipes provided with a thin barrier layer, e.g. to prevent or greatly diminish the diffusion of gases and the transmission of light through the pipe wall, the design stress requirements are totally met by the base PE-X pipe.

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

NOTE 3 The test results obtained from a specific piping system test according to ISO 15875-5 cannot be transferred to other combinations of pipes and 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 527-1:2019, *Plastics — Determination of tensile properties — Part 1: General principles*

ISO 527-2:2012, *Plastics — Determination of tensile properties — Part 2: Test conditions for moulding and extrusion plastics*

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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 1167-2, *Thermoplastics pipes, fittings and assemblies for the conveyance of fluids — Determination of the resistance to internal pressure — Part 2: Preparation of pipe test pieces*

ISO 2505, *Thermoplastics pipes — Longitudinal reversion — Test method and parameters*

ISO 2578:1993-08, *Plastics - Determination of time-temperature limits after prolonged exposure to heat*

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

ISO 4065, *Thermoplastics pipes — Universal wall thickness table*

ISO 6259-1:2015, *Thermoplastics pipes — Determination of tensile properties — Part 1: General test method*

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 10508, *Plastics piping systems for hot and cold water installations — Guidance for classification and design*

ISO 11922-1, *Thermoplastics pipes for the conveyance of fluids — Dimensions and tolerances — Part 1: Metric series*

ISO 13760, *Plastics pipes for the conveyance of fluids under pressure — Miner's rule — Calculation method for cumulative damage*

ISO 15874-2, *Plastics piping systems for hot and cold water installations — Polypropylene (PP) — Part 2: Pipes*

ISO 15875-1:2003, *Plastics piping systems for hot and cold water installations — Crosslinked polyethylene (PE-X) — Part 1: General*

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

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

ISO 15876-2, *Plastics piping systems for hot and cold water installations — Polybutene (PB) — Part 2: Pipes*

ISO 17455, *Plastics piping systems — Multilayer pipes — Determination of the oxygen permeability of the barrier pipe*

ISO 21003-2, *Multilayer piping systems for hot and cold water installations inside buildings — Part 2: Pipes*

ISO 22391-2, *Plastics piping systems for hot and cold water installations — Polyethylene of raised temperature resistance (PE-RT) — Part 2: Pipes*

### **3 Terms and definitions**

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

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

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

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### 3.1

#### barrier layer material

functional layer material which provides the specific property as a barrier layer to reduce the permeation of light or a specific medium or gas (e.g. oxygen) into the conveyed fluid and which is linked to the intended application of the pipe

Note 1 to entry: Barrier layer materials are seen by definition as materials/layers which do not contribute to the stress bearing properties of the pipe.

Note 2 to entry: PE-X pipes with a barrier layer embedded between two stress designed PE-X layers are not covered by this document, for these the ISO 21003 series apply

Note 3 to entry: In accordance with [clause 4.1](#) the total layer thickness of the additional outer layers (including barrier layer, adhesive layer, outer layer and other non-stress designed layers) shall not be larger than 0,40 mm. For pipes with a total layer thickness of the additional outer layers larger than 0,40 mm the ISO 21003 series apply.

### 3.2

#### adhesive layer material

functional embedded layer material, which provides adhesion between two pipe layer materials

Note 1 to entry: Adhesive layer materials are seen by definition as materials/layers, which do not contribute to the stress bearing properties of the pipe.

Note 2 to entry: PE-X pipes with an adhesive layer embedded between two stress designed PE-X layers are not covered by this document, for these the ISO 21003 series apply

Note 3 to entry: In accordance with [clause 4.1](#) the total layer thickness of the additional outer layers (including barrier layer, adhesive layer, outer layer and other non-stress designed layers) shall not be larger than 0,40 mm. For pipes with a total layer thickness of the additional outer layers larger than 0,40 mm the ISO 21003 series apply.

### 3.3

#### outer layer material

pipe layer material exposed to the outer environment intended for protection, identification by colour or coverage of other pipe layers

Note 1 to entry: Outer layer materials are seen by definition as materials/layers, which do not contribute to the stress bearing properties of the pipe.

Note 2 to entry: Multiple (outer) layers can be applied to the pipes on the outer diameter side of the pipe wall (with or without barrier or adhesive layers). The total thickness of all combined additional outer layers shall be not more than 0,40 mm.

Note 3 to entry: PE-X pipes with embedded between two stress designed PE-X layers are not covered by this document, for these the ISO 21003 series apply

Note 4 to entry: In accordance with [clause 4.1](#) the total layer thickness of the additional outer layers (including barrier layer, adhesive layer, outer layer and other non-stress designed layers) shall not be larger than 0,40 mm. For pipes with a total layer thickness of the additional outer layers larger than 0,40 mm the ISO 21003 series apply.

### 3.4

#### pipes with barrier layer

plastics pipes provided with a thin additional outer barrier layer, (e.g. to prevent or greatly diminish the diffusion of gases and the transmission of light through the pipe wall) and where the PE-X base pipe exclusive of any addition of additional (outer) layers meets the design stress requirements

Note 1 to entry: Such pipes typically have an outside (barrier) layer of maximum 0,40 mm thickness, including any adhesive. Pipes with an outer layer greater than 0,40 mm are considered as multilayer pipes (see Reference [9]), with the outer layer then being the first of multiple layers rather than having only barrier function.