International Standard

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

Part 5: Fitness for purpose of the system

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

Partie 5: Aptitude à l'emploi du système

Reference number
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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 document 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).

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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.

This document was prepared by 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 Committee for Standardization (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 15875-5:2003), which has been technically revised. It also incorporates the Technical Corrigendum ISO 15875-5:2003/Cor. 1:2007 and the Amendment ISO 15875-1:2003/Amd. 1:2020.

The main changes are as follows:

— the Scope has been specified more precisely;

— the normative references have been updated;

— certain terms and definitions have been specified more precisely;

— in subclause 0 - Thermal cycling test has been adopted for bigger dimensions up to DN 250.

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.

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Introduction

The ISO 15875 series specifies the requirements for a piping system consisting of pipe, fitting and the jointing made of it, when the pipe is made from crosslinked polyethylene (PE-X). The ISO ISO 15875 series consists ISO 15875-1, ISO 15875-2, ISO 15875-3 and ISO 15875-5, and covers the requirements and related test methods for all components used in the system (e. g. pipes and fittings). In addition, the ISO 15875 series includes requirements and related test methods to verify the performance and compatibility of the jointing of components.

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 the ISO 15875 series:

— ISO 15875 series 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 of the piping system are specified in ISO 15875-1, ISO 15875-2 and ISO 15875-3. ISO/TS 15875-7 gives guidance for the assessment of conformity.

This document specifies the characteristics of fitness for purpose of the piping systems.

At the date of publication of this document, standards for piping systems of other plastics materials used for the same application include:

— the ISO 15874 series,

— the ISO 15875 series,

— the ISO 15876 series,

— the ISO 15877 series,

— the ISO 21003 series, and

— the ISO 22391 series.

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

Part 5: Fitness for purpose of the system

1 Scope

This document specifies the characteristics of the fitness for purpose of 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 appropriate to the class of application (see ISO 15875-1:2025, Table 1).

This document also specifies the test parameters for the test methods referred to herein.

This document is applicable to joints between pipes conforming to ISO 15875-2 and fittings made of plastics and non-plastics materials conforming to ISO 15875-3, for hot and cold water installations.

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)

ISO 3501, *Plastics piping systems — Mechanical joints between fittings and pressure pipes — Test method for resistance to pull-out under constant longitudinal force*

ISO 3503, *Plastics piping systems — Mechanical joints between fittings and pressure pipes — Test method for leaktightness under internal pressure of assemblies subjected to bending*

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 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 13056, *Plastics piping systems — Pressure systems for hot and cold water — Test method for leaktightness under vacuum*

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*

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

ISO 19892, *Plastics piping systems — Thermoplastics pipes and fittings for hot and cold water — Test method for the resistance of joints to pressure cycling*

ISO 19893, *Plastics piping systems — Thermoplastics pipes and fittings for hot and cold water — Test method for the resistance of mounted assemblies to temperature cycling*

3 Terms, definitions, symbols and abbreviated terms

For the purpose of this standard, the terms and definitions, symbols and abbreviated terms given in ISO 15875-1, ISO 15875-2 and ISO 15875-3 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/

4 Generic requirements, instructions and explanations

4.1 Designation PE-X

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

4.2 Application classes, design pressures and pipe dimension classes restrictions

ISO 15875-1 covers a range of 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.

4.3 Application classes - Responsibility of the purchaser or specifier

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.

4.4 Use of the parts of the ISO 15875 series

This document is intended to be used only in conjunction with all the other parts of the ISO 15875 series.

NOTE According to the scope, this document is applicable to joints between pipes conforming to ISO 15875-2 and fittings made of plastics and non-plastics materials conforming to ISO 15875-3, for hot and cold water installations.

4.5 Completeness of tests

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

4.6 Test result interchangeability restriction

The test results for a specific combination of a pipe and a fitting, obtained from a piping system test according to this document, cannot be transferred to other combinations of pipes and fittings.

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