

**Plastics piping systems for hot and cold water  
installations - Polyethylene of raised temperature  
resistance (PE-RT) - Part 1: General**

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN ISO 22391-1:2010 sisaldab Euroopa standardi EN ISO 22391-1:2009 ingliskeelset teksti.

Standard on kinnitatud Eesti Standardikeskuse 28.02.2010 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.

Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 01.12.2009.

Standard on kättesaadav Eesti standardiorganisatsioonist.

This Estonian standard EVS-EN ISO 22391-1:2010 consists of the English text of the European standard EN ISO 22391-1:2009.

This standard is ratified with the order of Estonian Centre for Standardisation dated 28.02.2010 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.

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The standard is available from Estonian standardisation organisation.

ICS 23.040.01, 91.140.60, 93.025

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ICS 23.040.01; 91.140.60; 93.025

English Version

**Plastics piping systems for hot and cold water installations -  
Polyethylene of raised temperature resistance (PE-RT) - Part 1:  
General (ISO 22391-1:2009)**

Systèmes de canalisations en plastique pour les  
installations d'eau chaude et froide - Polyéthylène de  
meilleure résistance à la température (PE-RT) - Partie 1:  
Généralités (ISO 22391-1:2009)

Kunststoff-Rohrleitungssysteme für die Warm- und  
Kaltwasserinstallation - Polyethylen erhöhter  
Temperaturbeständigkeit (PE-RT) - Teil 1: Allgemeines  
(ISO 22391-1:2009)

This European Standard was approved by CEN on 4 November 2009.

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EUROPÄISCHES KOMITEE FÜR NORMUNG

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## Foreword

This document (EN ISO 22391-1:2009) has been prepared by Technical Committee ISO/TC 138 "Plastics pipes, fittings and valves for the transport of fluids" in collaboration with Technical Committee CEN/TC 155 "Plastics piping systems and ducting systems" the secretariat of which is held by NEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2010, and conflicting national standards shall be withdrawn at the latest by June 2010.

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### Endorsement notice

The text of ISO 22391-1:2009 has been approved by CEN as a EN ISO 22391-1:2009 without any modification.

# Contents

Page

Foreword .....	iv
Introduction .....	v
1 Scope .....	1
2 Normative references .....	1
3 Terms, definitions, symbols and abbreviated terms .....	2
3.1 Terms and definitions .....	2
3.2 Symbols .....	5
3.3 Abbreviated terms .....	6
4 Classification of service conditions .....	7
5 Material .....	8
5.1 General .....	8
5.2 Influence on water intended for human consumption .....	8
5.3 Reprocessable material .....	8
6 System performance requirement .....	8
Bibliography .....	9

## Introduction

The System Standard, of which this is Part 1, specifies the requirements for a piping system and its components when made from polyethylene of raised temperature resistance (PE-RT). 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 products covered by ISO 22391, the following are relevant.

- a) This part of ISO 22391 provides no information as to whether the products can be used without restriction.
- b) Existing national regulations concerning the use and/or characteristics of the products remain in force.

This part of ISO 22391 specifies the general aspects of the plastics piping system. At the date of publication of this part of ISO 22391, System Standards Series for piping systems of other plastics materials used for the same application are the following:

ISO 15874 (all parts), *Plastics piping systems for hot and cold water installations — Polypropylene (PP)*

ISO 15875 (all parts), *Plastics piping systems for hot and cold water installations — Crosslinked polyethylene (PE-X)*

ISO 15876 (all parts), *Plastics piping systems for hot and cold water installations — Polybutylene (PB)*

ISO 15877 (all parts), *Plastics piping systems for hot and cold water installations — Chlorinated poly(vinyl chloride) (PVC-C)*

# Plastics piping systems for hot and cold water installations — Polyethylene of raised temperature resistance (PE-RT) —

## Part 1: General

### 1 Scope

This part of ISO 22391 specifies the general characteristics of piping systems made of

- polyethylene of raised temperature resistance (PE-RT), Type I, and
- polyethylene of raised temperature resistance (PE-RT), Type II,

intended to be used for hot and cold water installations within buildings for the conveyance of water, whether or not the water is intended for human consumption (domestic systems) and for heating systems, under specified design pressures and temperatures appropriate to the class of application.

This part of ISO 22391 covers a range of service conditions (classes of application), design pressures and pipe dimension classes, and also specifies test parameters and defines terms. In conjunction with the other parts of ISO 22391, it is applicable to PE-RT pipes, fittings, their joints and to joints having components of PE-RT, as well as of other plastics and non-plastics materials, respectively, used for hot and cold water installations.

It is not applicable to values of design temperature, maximum design temperature or malfunction temperature in excess of those it specifies.

**NOTE** It is the responsibility of the purchaser or specifier to make the appropriate selections from these aspects, taking into account their particular requirements and any relevant national regulations and installation practices or codes.

### 2 Normative references

The following referenced documents are indispensable for the application 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 472, *Plastics — Vocabulary*

ISO 1043-1, *Plastics — Symbols and abbreviated terms — Part 1: Basic polymers and their special characteristics*

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

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

ISO 22391-3, *Plastics piping systems for hot and cold water installations — Polyethylene of raised temperature resistance (PE-RT) — Part 3: Fittings*

ISO 22391-5, *Plastics piping systems for hot and cold water installations — Polyethylene of raised temperature resistance (PE-RT) — Part 5: Fitness for purpose of the system*

### 3 Terms, definitions, symbols and abbreviated terms

#### 3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 472 and ISO 1043-1 and the following apply.

##### 3.1.1 Geometrical terms and definitions

###### 3.1.1.1

###### **nominal size**

**DN**  
numerical designation of the size of a component, which is a convenient round number, approximately equal to the manufacturing dimensions in millimetres (mm)

###### 3.1.1.2

###### **nominal size**

###### **DN/OD**

nominal size, related to outside diameter

###### 3.1.1.3

###### **nominal outside diameter**

$d_n$   
specified diameter, in millimetres, assigned to a nominal size DN/OD

###### 3.1.1.4

###### **outside diameter (at any point)**

$d_e$   
measured outside diameter through the cross-section at any point of a pipe or spigot end of a fitting, rounded up to the nearest 0,1 mm

###### 3.1.1.5

###### **mean outside diameter**

$d_{em}$   
measured length of the outer circumference of a pipe or spigot end of a fitting in any cross-section, divided by  $\pi$  ( $\approx 3,142$ ) rounded up to the nearest 0,1 mm

###### 3.1.1.6

###### **minimum mean outside diameter**

$d_{em, min}$   
minimum value of the mean outside diameter as specified for a given nominal size

###### 3.1.1.7

###### **maximum mean outside diameter**

$d_{em, max}$   
maximum value of the mean outside diameter as specified for a given nominal size

###### 3.1.1.8

###### **mean inside diameter of socket**

$d_{sm}$   
arithmetical mean of two measured inside diameters perpendicular to each other at the mid-point of the socket length