

# SVENSK STANDARD

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**Plaströrssystem – Varm- och kallvatteninstallationer – Polyeten med förhöjd temperaturbeständighet (PE-RT) – Del 3: Rördelar (ISO 22391-3:2009)**

**Plastics piping systems for hot and cold water installations – Polyethylene of raised temperature resistance (PE-RT) – Part 3: Fittings (ISO 22391-3:2009)**



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The European Standard EN ISO 22391-3:2009 has the status of a Swedish Standard. This document contains the official English version of EN ISO 22391-3:2009.

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EUROPEAN STANDARD

**EN ISO 22391-3**

NORME EUROPÉENNE

EUROPÄISCHE NORM

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English Version

**Plastics piping systems for hot and cold water installations -  
Polyethylene of raised temperature resistance (PE-RT) - Part 3:  
Fittings (ISO 22391-3:2009)**

Systèmes de canalisations en plastique pour les  
installations d'eau chaude et froide - Polyéthylène de  
meilleure résistance à la température (PE-RT) - Partie 3:  
Raccords (ISO 22391-3:2009)

Kunststoff-Rohrleitungssysteme für die Warm- und  
Kaltwasserinstallation - Polyethylen erhöhter  
Temperaturbeständigkeit (PE-RT) - Teil 3: Formstücke  
(ISO 22391-3:2009)

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

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## Foreword

This document (EN ISO 22391-3:2009) 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of an identical text or by endorsement, at the latest by June 2010, and conflicting national standards shall be withdrawn at the latest by June 2010.

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

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### Endorsement notice

The text of ISO 22391-3:2009 has been approved by CEN as a EN ISO 22391-3:2009 without any modification.

## Introduction

The System Standard, of which this is Part 3, 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 3: Fittings

### 1 Scope

This part of ISO 22391 specifies the characteristics of fittings for 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 the design pressures and temperatures appropriate to the class of application according to ISO 22391-1.

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 test methods. In conjunction with the other parts of ISO 22391, it is applicable to fittings made of PE-RT, as well as to those made of other materials, intended to be fitted to pipes conforming to ISO 22391-2 for hot and cold water installations, the joints of which are in accordance with ISO 22391-5.

This part of ISO 22391 is applicable to the following types of fitting:

- mechanical fittings;
- socket fusion fitting;
- electrofusion fittings;
- fittings with incorporated inserts.

It is not applicable to values of design temperature, maximum design temperature or malfunction temperature in excess of those specified in ISO 22391-1.

**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 7-1, *Pipe threads where pressure-tight joints are made on the threads — Part 1: Dimensions, tolerances and designation*

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

ISO 1133-1, *Plastics — Determination of the melt volume-flow rate (MVR) and the melt mass-flow rate (MFR) 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 1167-2, *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 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 long-term hydrostatic strength of thermoplastic materials in pipe form by extrapolation*

ISO 23711, *Elastomeric seals — Requirements for materials for pipe joint seals used in water and drainage applications — Thermoplastic elastomers*

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

ISO 22391-2:2009, *Plastics piping systems for hot and cold water installations — Polyethylene of raised temperature resistance (PE-RT) — Part 2: Pipes*

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*

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 1254-3, *Copper and copper alloys — Plumbing fittings — Part 3: Fittings with compression ends for use with plastics pipes*

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

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

For the purposes of this document, the terms, definitions, symbols and abbreviated terms given in ISO 22391-1 and the following apply.

#### **3.1 General fittings**

##### **3.1.1 fitting**

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

## 3.2 Mechanical fittings

### 3.2.1

#### **compression fitting**

fitting in which the joint is made by the compression of a ring or sleeve on the outside wall of the pipe with or without additional sealing elements and with internal support

### 3.2.2

#### **crimped fitting**

fitting in which the joint is made by crimping of the fitting and/or a ring on the outside wall of the pipe by means of a special tool

### 3.2.3

#### **flanged fitting**

fitting in which the pipe connection consists of two mating flanges which are mechanically pressed together and sealed by the compression of an elastomeric sealing element between them

### 3.2.4

#### **flat seat union fitting**

fitting in which the pipe connection consists primarily of two components, at least one of which normally incorporates a flat sealing surface, which are mechanically pressed together by means of a screwed nut or similar and sealed by the compression of an elastomeric sealing element between them

## 3.3 Fittings for heat fusion

### 3.3.1

#### **socket fusion fitting**

fitting in which the joint with the pipe is made by melting together the outer part of the pipe with the inner part of the fitting by means of heat induced by a heated tool

### 3.3.2

#### **electrofusion fitting**

fitting in which the joint with the pipe is made by melting together the outer part of the pipe and the inner part of the fitting by means of heat induced by current flowing in an appropriate resistor inserted in the fitting body

### 3.3.3

#### **fitting with incorporated inserts**

fitting in which the joint is made by means of connecting threads or other outlets, inserted in the plastics body, combined with fusion ends for socket welding or electrofusion

## 4 Material characteristics

### 4.1 Plastics fitting material

#### 4.1.1 Fitting material identical to PE-RT pipe material

The material from which fittings are made shall be in accordance with the requirements for pipes as specified in ISO 22391-2.

When tested using the test method and the test parameters in accordance with Table 1 or 2, injection moulded tubular test pieces shall withstand the hydrostatic (hoop) stress without bursting or leakage.