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

**Part 3:
Fittings**

*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



PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

This document is a preview generated by EVS



COPYRIGHT PROTECTED DOCUMENT

© ISO 2009

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

Foreword	iv
Introduction.....	v
1 Scope.....	1
2 Normative references	1
3 Terms, definitions, symbols and abbreviated terms	2
3.1 General fittings	2
3.2 Mechanical fittings	3
3.3 Fittings for heat fusion.....	3
4 Material characteristics.....	3
4.1 Plastics fitting material.....	3
4.2 Metallic fitting material.....	5
4.3 Influence on water intended for human consumption	5
5 General characteristics.....	5
5.1 Appearance	5
5.2 Opacity.....	6
6 Geometrical characteristics	6
6.1 General	6
6.2 Dimensions of sockets for socket fusion and electrofusion fittings.....	6
6.3 Dimensions of metallic fittings	9
7 Mechanical characteristics of plastics fittings.....	10
7.1 General	10
7.2 Fitting material identical to PE-RT compound	10
7.3 Fitting made from PE-RT but not identical to PE-RT compound.....	10
7.4 Fittings made from plastics other than PE-RT	10
8 Physical and chemical characteristics of plastics components	12
8.1 Melt mass flow rate	12
9 Sealing elements	12
10 System performance requirements	12
11 Marking.....	12
11.1 General requirements	12
11.2 Minimum required marking	12
Bibliography.....	14

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 22391-3 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*.

This second edition cancels and replaces the first edition (ISO 22391-3:2007), which is extended from only dealing with PE-RT material (referred to as Type I) to cover PE-RT materials Type I and Type II.

ISO 22391 consists of the following parts¹⁾, under the general title *Plastics piping systems for hot and cold water installations — Polyethylene of raised temperature resistance (PE-RT)*:

- Part 1: General
- Part 2: Pipes
- Part 3: Fittings
- Part 5: Fitness for purpose of the system

1) This System Standard does not incorporate a Part 4: Ancillary equipment or a Part 6: Guidance for installation. For ancillary equipment, separate standards can apply. Guidance for installation of plastics piping systems made from different materials, intended to be used for hot and cold water installations, is covered by ENV 12108.

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)*

This document is a preview generated by EVS

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