

First edition
2009-12-01

Corrected version
2010-03-01

**Plastics piping systems for water supply
and for buried and above-ground
drainage and sewerage under pressure —
Unplasticized poly(vinyl chloride)
(PVC-U) —**

**Part 3:
Fittings**

*Systèmes de canalisations en plastique pour l'alimentation en eau, pour
branchements et collecteurs d'assainissement enterrés et aériens avec
pression — Poly(chlorure de vinyle) non plastifié (PVC-U) —*

Partie 3: Raccords



Reference number
ISO 1452-3:2009(E)

© ISO 2009

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.....	2
3 Terms, definitions, symbols and abbreviated terms	3
3.1 Terms and definitions	3
3.2 Symbols.....	3
4 Material	3
4.1 Fitting material.....	3
4.2 Density.....	3
4.3 MRS-value	4
5 General characteristics.....	4
5.1 Appearance	4
5.2 Colour	4
5.3 Opacity of fittings intended for the above-ground conveyance of water.....	4
6 Geometrical characteristics	4
6.1 Measurement of dimensions	4
6.2 Nominal diameters	4
6.3 Fittings for solvent cementing	4
6.4 Adapter fittings	12
6.5 Tapping saddles	14
6.6 Flange adapters and flanges	17
6.7 Elastomeric ring seal fittings	20
6.8 End-load-bearing double-sockets with elastomeric seals	29
7 Classification and operating conditions	29
7.1 Classification	29
7.2 Selection of nominal pressure and pipe series S for water up to and including 25 °C	29
7.3 Determination of the allowable operating pressure for water up to 45 °C	30
8 Mechanical characteristics.....	30
8.1 Resistance to internal pressure of fittings or parts of fittings	30
8.2 Crushing test	31
9 Physical characteristics.....	31
10 Sealing rings	32
11 Adhesives.....	32
12 Performance requirements.....	32
13 Marking.....	32
13.1 General	32
13.2 Minimum required marking	32
13.3 Additional marking	33
Annex A (normative) Imperial(inch)-sized fittings.....	34
Bibliography.....	37

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 1452-3 was prepared by the European Committee for Standardization (CEN) Technical Committee CEN/TC 155, *Plastics piping systems and ducting systems*, in collaboration with ISO 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 accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This first edition cancels and replaces ISO 4422-3:1996, ISO 264:1976, ISO 264:1976/Add.1:1982, ISO 2045:1988, ISO 2048:1990, ISO 3460:1975, ISO 4484:1977 and ISO 6455:1983, which have been technically revised.

ISO 1452 consists of the following parts, under the general title *Plastics piping systems for water supply and for buried and above-ground drainage and sewerage under pressure — Unplasticized poly(vinyl chloride) (PVC-U)*:

- *Part 1: General*
- *Part 2: Pipes*
- *Part 3: Fittings*
- *Part 4: Valves*
- *Part 5: Fitness for purpose of the system*

Guidance for the assessment of conformity is to form the subject of a part 7.

This corrected version of ISO 1452-3:2009 incorporates the correction of Figure 8 c).

Introduction

The System Standard, of which this is Part 3, specifies the requirements for a piping system and its components made from unplasticized poly(vinyl chloride) (PVC-U). The piping system is intended to be used for water supply and for buried and above-ground drainage and sewerage under pressure.

In respect of potential adverse effects on the quality of water intended for human consumption, caused by the products covered by this part of ISO 1452, the following are relevant.

- a) This part of ISO 1452 provides no information as to whether the products may be used without restriction.
- b) Existing national regulations concerning the use and/or the characteristics of these products remain in force.

Requirements and test methods for material and components, other than fittings, are specified in ISO 1452-1, ISO 1452-2 and ISO 1452-4. Characteristics for fitness for purpose (mainly for joints) are established in ISO 1452-5.

This part of ISO 1452 specifies the characteristics of fittings.

Guidance for installation is given in ISO/TR 4191^[1].

Guidance for the assessment of conformity is provided in ENV 1452-7^[2].

For the convenience of users of this part of ISO 1452, marking on fittings and flanges according to withdrawn International Standards (e.g. ISO 4422-3:1996) may be considered valid for a period, e.g. up to three years from the date of publication of this part of ISO 1452.

This document is a preview generated by EVS

Plastics piping systems for water supply and for buried and above-ground drainage and sewerage under pressure — Unplasticized poly(vinyl chloride) (PVC-U) —

Part 3: Fittings

1 Scope

This part of ISO 1452 specifies the characteristics of fittings made from unplasticized poly(vinyl chloride) (PVC-U) for piping systems intended for water supply and for buried and above-ground drainage and sewerage under pressure.

It also specifies the test parameters for the test methods referred to in this part of ISO 1452.

In conjunction with ISO 1452-1, ISO 1452-2 and ISO 1452-5, it is applicable to PVC-U fittings and to joints with components of PVC-U, other plastics and non-plastics materials intended to be used for the following:

- a) water mains and services buried in the ground;
- b) conveyance of water above ground for both outside and inside buildings;
- c) buried and above-ground drainage and sewerage under pressure.

It is applicable to fittings in piping systems intended for the supply of water under pressure up to and including 25 °C (cold water), intended for human consumption and for general purposes as well as for waste water under pressure.

This part of ISO 1452 is also applicable to components for the conveyance of water and waste water up to and including 45 °C. For temperatures between 25 °C and 45 °C, Figure A.1 of ISO 1452-2:2009 applies.

NOTE 1 The producer and the end-user can come to agreement on the possibilities of use for temperatures above 45 °C on a case-by-case basis.

Depending on the jointing method, this part of ISO 1452 is applicable to the following types of fittings:

- fittings for solvent cementing;
- elastomeric ring seal fittings.

PVC-U fittings can be manufactured by injection-moulding and/or be fabricated from pipe.

This part of ISO 1452 is also applicable to PVC-U flange adapters and to the corresponding flanges made from various materials.

This part of ISO 1452 covers a range of fitting sizes and pressure classes and gives requirements concerning colours.

NOTE 2 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 7-1:1994, *Pipe threads where pressure-tight joints are made on the threads — Part 1: Dimensions, tolerances and designation*

ISO 580, *Plastics piping and ducting systems — Injection-moulded thermoplastics fittings — Methods for visually assessing the effects of heating*

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 1167-3, *Thermoplastics pipes, fittings and assemblies for the conveyance of fluids — Determination of the resistance to internal pressure — Part 3: Preparation of components*

ISO 1183-1:2004, *Plastics — Methods for determining the density of non-cellular plastics — Part 1: Immersion method, liquid pycnometer method and titration method*

ISO 1452-1:2009, *Plastics piping systems for water supply and for buried and above-ground drainage and sewerage under pressure — Unplasticized poly(vinyl chloride) (PVC-U) — Part 1: General*

ISO 1452-2:2009, *Plastics piping systems for water supply and for buried and above-ground drainage and sewerage under pressure — Unplasticized poly(vinyl chloride) (PVC-U) — Part 2: Pipes*

ISO 1452-5, *Plastics piping systems for water supply and for buried and above-ground drainage and sewerage under pressure — Unplasticized poly(vinyl chloride) (PVC-U) — Part 5: Fitness for purpose of the system*

ISO 2507-1:1995, *Thermoplastics pipes and fittings — Vicat softening temperature — Part 1: General test method*

ISO 2507-2:1995, *Thermoplastics pipes and fittings — Vicat softening temperature — Part 2: Test conditions for unplasticized poly(vinyl chloride) (PVC-U) or chlorinated poly(vinyl chloride) (PVC-C) pipes and fittings and for high impact resistance poly(vinyl chloride) (PVC-HI) pipes*

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

ISO 7686, *Plastics pipes and fittings — Determination of opacity*

ISO 13783, *Plastics piping systems — Unplasticized poly(vinyl chloride) (PVC-U) end-load-bearing double-socket joints — Test method for leaktightness and strength while subjected to bending and internal pressure*

EN 802, *Plastics piping and ducting systems — Injection-moulded thermoplastics fittings for pressure piping systems — Test method for maximum deformation by crushing*