

**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**

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN ISO 1452-3 V2:2010 sisaldab Euroopa standardi EN ISO 1452-3:2010 ingliskeelset teksti.

Standard on kinnitatud Eesti Standardikeskuse 30.11.2010 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.

Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 06.10.2010.

Standard on kättesaadav Eesti standardiorganisatsioonist.

This Estonian standard EVS-EN ISO 1452-3 V2:2010 consists of the English text of the European standard EN ISO 1452-3:2010.

This standard is ratified with the order of Estonian Centre for Standardisation dated 30.11.2010 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.

Date of Availability of the European standard text 06.10.2010.

The standard is available from Estonian standardisation organisation.

ICS 23.040.20, 23.040.45, 91.140.60, 93.025

### Standardite reprodutseerimis- ja levitamiseõigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonilisse süsteemi või edastamine ükskõik millises vormis või millisel teel on keelatud ilma Eesti Standardikeskuse poolt antud kirjaliku loata.

Kui Teil on küsimusi standardite autorikaitse kohta, palun võtke ühendust Eesti Standardikeskusega:  
Aru 10 Tallinn 10317 Eesti; [www.evs.ee](http://www.evs.ee); Telefon: 605 5050; E-post: [info@evs.ee](mailto:info@evs.ee)

### Right to reproduce and distribute belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without permission in writing from Estonian Centre for Standardisation.

If you have any questions about standards copyright, please contact Estonian Centre for Standardisation:  
Aru str 10 Tallinn 10317 Estonia; [www.evs.ee](http://www.evs.ee); Phone: 605 5050; E-mail: [info@evs.ee](mailto:info@evs.ee)

EUROPEAN STANDARD

**EN ISO 1452-3**

NORME EUROPÉENNE

EUROPÄISCHE NORM

October 2010

ICS 93.025; 91.140.60; 23.040.20; 23.040.45

Supersedes EN ISO 1452-3:2009

English Version

**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 (ISO  
1452-3:2009, corrected version 2010-03-01)**

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 (ISO 1452-3:2009, version corrigée 2010-03-01)

Kunststoff-Rohrleitungssysteme für die Wasserversorgung und für erdverlegte und nicht erdverlegte Entwässerungs- und Abwasserdruckleitungen - Weichmacherfreies Polyvinylchlorid (PVC-U) - Teil 3: Formstücke (ISO 1452-3:2009, korrigierte Fassung 2010-03-01)

This European Standard was approved by CEN on 23 September 2010.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

**Management Centre: Avenue Marnix 17, B-1000 Brussels**

## Foreword

The text of ISO 1452-3:2009, corrected version 2010-03-01 has been prepared by Technical Committee ISO/TC 138 "Plastics pipes, fittings and valves for the transport of fluids" of the International Organization for Standardization (ISO) and has been taken over as EN ISO 1452-3:2010 by 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 April 2011, and conflicting national standards shall be withdrawn at the latest by April 2011.

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.

This document supersedes EN ISO 1452-3:2009.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

### Endorsement notice

The text of ISO 1452-3:2009, corrected version 2010-03-01 has been approved by CEN as a EN ISO 1452-3:2010 without any modification.

# Contents

Page

Foreword .....	iv
Introduction .....	v
<b>1 Scope .....</b>	<b>1</b>
<b>2 Normative references .....</b>	<b>2</b>
<b>3 Terms, definitions, symbols and abbreviated terms .....</b>	<b>3</b>
3.1 Terms and definitions .....	3
3.2 Symbols .....	3
<b>4 Material .....</b>	<b>3</b>
4.1 Fitting material .....	3
4.2 Density .....	3
4.3 MRS-value .....	4
<b>5 General characteristics .....</b>	<b>4</b>
5.1 Appearance .....	4
5.2 Colour .....	4
5.3 Opacity of fittings intended for the above-ground conveyance of water .....	4
<b>6 Geometrical characteristics .....</b>	<b>4</b>
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
<b>7 Classification and operating conditions .....</b>	<b>29</b>
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
<b>8 Mechanical characteristics .....</b>	<b>30</b>
8.1 Resistance to internal pressure of fittings or parts of fittings .....	30
8.2 Crushing test .....	31
<b>9 Physical characteristics .....</b>	<b>31</b>
<b>10 Sealing rings .....</b>	<b>32</b>
<b>11 Adhesives .....</b>	<b>32</b>
<b>12 Performance requirements .....</b>	<b>32</b>
<b>13 Marking .....</b>	<b>32</b>
13.1 General .....	32
13.2 Minimum required marking .....	32
13.3 Additional marking .....	33
<b>Annex A (normative) Imperial (inch)-sized fittings .....</b>	<b>34</b>
<b>Bibliography .....</b>	<b>37</b>

## 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<sup>[1]</sup>.

Guidance for the assessment of conformity is provided in ENV 1452-7<sup>[2]</sup>.

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.

# 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*