

# SVENSK STANDARD

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### **Plaströrssystem – Plaströr för vattendistribution under tryck i mark och ovan jord för avlopp – (PVC-U) – Del 1: Allmänt (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 1452-1:2009)**

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Denna standard ersätter SS-EN 1452-1, utgåva 1 och SS-EN 1456-1.

The European Standard EN ISO 1452-1:2009 has the status of a Swedish Standard. This document contains the official English version of EN ISO 1452-1:2009.

This standard supersedes the Swedish Standard SS-EN 1452-1, edition 1 and SS-EN 1456-1.

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EUROPEAN STANDARD

**EN ISO 1452-1**

NORME EUROPÉENNE

EUROPÄISCHE NORM

December 2009

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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 1: General (ISO  
1452-1:2009)**

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 1: Généralités (ISO 1452-1:2009)

Kunststoff-Rohrleitungssysteme für die Wasserversorgung und für erdverlegte und nicht erdverlegte Entwässerungs- und Abwasserdruckleitungen - Weichmacherfreies Polyvinylchlorid (PVC-U) - Teil 1: Allgemeines (ISO 1452-1:2009)

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

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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.

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## Foreword

This document (EN ISO 1452-1:2009) has been prepared by Technical Committee CEN/TC 155 "Plastics piping systems and ducting systems", the secretariat of which is held by NEN, in collaboration with Technical Committee ISO/TC 138 "Plastics pipes, fittings and valves for the transport of fluids".

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.

This document supersedes EN 1452-1:1999, EN 1456-1:2001.

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, 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.

## Introduction

The System Standard, of which this is Part 1, 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 or not the products can 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 components are specified in ISO 1452-2, ISO 1452-3 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 general aspects of PVC-U.

Guidance for installation is given in ISO/TR 4191<sup>[1]</sup>.

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



# 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

### 1 Scope

This part of ISO 1452 specifies the general aspects of unplasticized poly(vinyl chloride) (PVC-U) solid-wall piping systems intended for water supply and for buried and above-ground drainage and sewerage under pressure.

In conjunction with ISO 1452-2, ISO 1452-3, ISO 1452-4 and ISO 1452-5, it is applicable to PVC-U pipes, fittings, valves and ancillary equipment, their joints and to joints with components of 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 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 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.

### 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 472:1999, *Plastics — Vocabulary*

ISO 1043-1:2005, *Plastics — Symbols and abbreviated terms — Part 1: Basic polymers and their special characteristics*

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 6401:2008, *Plastics — Poly(vinyl chloride) — Determination of residual vinyl chloride monomer — Gas-chromatographic method*

ISO 9080, *Plastics piping and ducting systems — Determination of the long-term hydrostatic strength of thermoplastics materials in pipe form by extrapolation*

ISO 12162, *Thermoplastics materials for pipes and fittings for pressure applications — Classification, design coefficient and designation*

### 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.

NOTE If not included in this part of ISO 1452, see the designations given in EN 805<sup>[3]</sup> and EN 806-1<sup>[4]</sup>.

##### 3.1.1 Wall construction definition

###### 3.1.1.1 solid-wall

having smooth internal and external surface and the same homogeneous compound/formulation throughout the wall

NOTE This term can be applied to pipes, fittings and valves.

##### 3.1.2 Geometrical definitions

###### 3.1.2.1 nominal size DN

numerical designation of the size of a component, other than a component designated by thread size, which is a convenient round number approximately equal to the manufacturing dimension in millimetres (mm)

###### 3.1.2.2 nominal size DN/OD

nominal size, related to the outside diameter

###### 3.1.2.3 nominal size DN/ID

nominal size, related to the inside diameter

###### 3.1.2.4 nominal diameter

$d_n$   
specified diameter assigned to a nominal size

NOTE 1 According to ISO 1452, the nominal (outside) diameter of a thermoplastics pipe or a spigot, is equal to its minimum mean outside diameter,  $d_{em,min}$ .

NOTE 2 The nominal (inside) diameter of the socket of a fitting, pipe, valve or of ancillary equipment is equal to the nominal (outside) diameter of the connecting pipe for which they are designed.

NOTE 3 The nominal diameter is expressed in millimetres.

**3.1.2.5****outside diameter at any point** $d_e$ 

value of the measurement of the outside diameter through its cross-section at any point of a pipe or spigot, rounded up to the nearest 0,1 mm

**3.1.2.6****mean outside diameter** $d_{em}$ 

value of the measurement 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

**3.1.2.7****mean inside diameter of socket** $d_{im}$ 

arithmetical mean of two measured inside diameters perpendicular to each other at the midpoint of the socket length

**3.1.2.8****out-of-roundness**

ovality

difference between the measured maximum and the measured minimum outside diameter in the same cross-section of a pipe or spigot, or the difference between the measured maximum and the measured minimum inside diameter in the same cross-section of a socket

**3.1.2.9****nominal wall thickness** $e_n$ 

numerical designation of the wall thickness of a component which is identical to the minimum permissible wall thickness at any point

NOTE The wall thickness is expressed in millimetres.

**3.1.2.10****wall thickness at any point** $e$ 

value of the measurement of the wall thickness at any point around the circumference of a component

**3.1.2.11****mean wall thickness** $e_m$ 

arithmetical mean of a number of measurements of the wall thickness, regularly spaced around the circumference and in the same cross-section of a component, including the measured minimum and the measured maximum values of the wall thickness in that cross-section

**3.1.2.12****tolerance**

permitted variation of the specified value of a quantity, expressed as the difference between the permitted maximum and the permitted minimum value

**3.1.2.13****pipe series****S**

dimensionless number for pipe designation