

SVENSK STANDARD

SS-EN 1453-1:2017

Fastställt/Approved: 2017-01-23
Publicerad/Published: 2017-01-26
Utgåva/Edition: 2
Språk/Language: engelska/English
ICS: 23.040.01; 23.040.05; 23.040.20; 91.140.80

Plaströrssystem – Plaströr med strukturvägg för avlopp (låg och hög temperatur) inomhus – PVC-U – Del 1: Specifikationer för rörledningar och systemet

**Plastics piping systems with structured-wall pipes for soil and waste discharge (low and high temperature) inside buildings –
Unplasticized poly(vinyl chloride) (PVC-U) –
Part 1: Specifications for pipes and the system**

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Denna standard ersätter SS-EN 1453-1, utgåva 1.

The European Standard EN 1453-1:2017 has the status of a Swedish Standard. This document contains the official English version of EN 1453-1:2017.

This standard supersedes the Swedish Standard SS-EN 1453-1, edition 1.

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EUROPEAN STANDARD

EN 1453-1

NORME EUROPÉENNE

EUROPÄISCHE NORM

January 2017

ICS 23.040.01; 23.040.05; 91.140.80

Supersedes EN 1453-1:2000

English Version

Plastics piping systems with structured-wall pipes for soil
and waste discharge (low and high temperature) inside
buildings - Unplasticized poly(vinyl chloride) (PVC-U) -
Part 1: Specifications for pipes and the system

Systèmes de canalisations en plastique avec des tubes à
paroi structurée pour l'évacuation des eaux-vannes et
des eaux usées (à basse et à haute température) à
l'intérieur des bâtiments - Poly(chlorure de vinyle) non
plastifié (PVC-U) - Partie 1 : Spécifications pour tubes
et le système

Kunststoff-Rohrleitungssysteme mit Rohren mit
profilierter Wandung zum Ableiten von Abwasser
(niedriger und hoher Temperatur) innerhalb von
Gebäuden - Weichmacherfreies Polyvinylchlorid (PVC-
U) - Teil 1: Anforderungen an Rohre und das
Rohrleitungssystem

This European Standard was approved by CEN on 29 October 2016.

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-CENELEC 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-CENELEC Management Centre has the same status as the official versions.

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

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European foreword

This document (EN 1453-1:2017) has been prepared by Technical Committee CEN/TC 155 “Plastics piping systems and ducting systems”, the secretariat of which is held by NEN.

This document supersedes EN 1453-1:2000.

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 July 2017, and conflicting national standards shall be withdrawn at the latest by July 2017.

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

This standard is a part of a System Standard for plastics piping systems of a particular material for a specified application. There are a number of such System Standards.

System Standards are based on the results of the work undertaken in ISO/TC 138 “Plastics pipes, fittings and valves for the transport of fluids”, which is a Technical Committee of the International Organization for Standardization (ISO).

They are supported by separate standards on test methods to which references are made throughout the System Standard.

The System Standards are consistent with general standards on functional requirements and on recommended practice for installation.

EN 1453 consists of the following parts, under the general title *Plastics piping systems with structured-wall pipes for soil and waste discharge (low and high temperature) inside building — Unplasticized poly(vinyl chloride) (PVC-U)*¹:

- *Part 1: Requirements for pipes and the system* (the present standard)
- *Part 2: Guidance for the assessment of conformity* (under preparation)

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

1) EN 1453 does not cover a recommended practice for installation. A recommended practice for installation is covered by the following European Technical Report: CEN/TR 13801, *Plastics piping systems for soil and waste discharge (low and high temperature) within the building structure — Thermoplastics — Recommended practice for installation*.

SS-EN 1453-1:2017 (E)

1 Scope

This part of EN 1453 specifies the requirements for structured-wall unplasticized poly(vinyl chloride) (PVC-U) pipes and the system intended to be used for soil and waste discharge applications (low and high temperature) inside buildings (application area code “B”)

NOTE 1 The intended use is reflected in the marking of products by “B”.

This part of EN 1453 is also applicable to structured-wall unplasticized poly(vinyl chloride) (PVC-U) pipes, and the system intended for the following purposes:

- ventilating part of the pipework in association with discharge applications;
- rainwater pipework inside building.

It also specifies the test parameters for the test methods referred to in this standard.

NOTE 2 Single layer foamed PVC-U pipes and spirally-formed PVC-U pipes are not covered by this standard.

This standard covers a range of nominal sizes and gives recommendations concerning colours.

NOTE 3 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.

For external above ground application additional requirements depending on the climatic conditions should be agreed between the manufacturer and the user.

NOTE 4 Pipes conforming to this standard are normally associated with fittings conforming to EN 1329-1 [1]. Pipes, fittings and components conforming to any of the product standards listed in Annex C can also be used with pipes conforming to this standard, provided they conform to the requirements for joint dimensions given in Clause 6 and to the requirements in Table 11.

NOTE 5 Joints and adhesives are considered to be part of the system as covered in the scope.

NOTE 6 Products conforming to this standard may be submitted to national requirements on fire regulation.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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 1905, *Plastics piping systems - Unplasticized poly(vinyl chloride) (PVC-U) pipes, fittings and material - Method for assessment of the PVC content based on total chlorine content*

EN 10204:2004, *Metallic products - Types of inspection documents*

EN 14680, *Adhesives for non-pressure thermoplastics piping systems - Specifications*

EN 15346:2014, *Plastics - Recycled plastics - Characterization of poly(vinyl chloride) (PVC) recyclates*

EN ISO 306, *Plastics - Thermoplastic materials - Determination of Vicat softening temperature (VST) (ISO 306:2013)*

EN ISO 472, *Plastics - Vocabulary (ISO 472)*

EN ISO 1043-1, *Plastics - Symbols and abbreviated terms - Part 1: Basic polymers and their special characteristics (ISO 1043-1)*

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

EN ISO 2505, *Thermoplastics pipes - Longitudinal reversion - Test method and parameters (ISO 2505)*

EN ISO 3126, *Plastics piping systems - Plastics components - Determination of dimensions (ISO 3126)*

EN ISO 3451-5, *Plastics - Determination of ash - Part 5: Poly(vinyl chloride) (ISO 3451-5)*

EN ISO 6259-1, *Thermoplastics pipes - Determination of tensile properties - Part 1: General test method (ISO 6259-1)*

EN ISO 13229, *Thermoplastics piping systems for non-pressure applications - Unplasticized poly(vinyl chloride) (PVC-U) pipes and fittings - Determination of the viscosity number and K-value (ISO 13229)*

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

ISO 3127, *Thermoplastics pipes — Determination of resistance to external blows — Round-the-clock method*

ISO 6259-2, *Thermoplastics pipes — Determination of tensile properties — Part 2: Pipes made of unplasticized poly(vinyl chloride) (PVC-U), chlorinated poly(vinyl chloride) (PVC-C) and high-impact poly(vinyl chloride) (PVC-HI)*

ISO 9852, *Unplasticized poly(vinyl chloride) (PVC-U) pipes — Dichloromethane resistance at specified temperature (DCMT) — Test method*

ISO 11173:1994, *Thermoplastics pipes — Determination of resistance to external blows — Staircase method*

ISO 13254, *Thermoplastics piping systems for non-pressure applications — Test method for watertightness*

ISO 13255, *Thermoplastics piping systems for soil and waste discharge inside buildings — Test method for airtightness of joints*

ISO 13257:2010, *Thermoplastics piping systems for non-pressure applications — Test method for resistance to elevated temperature cycling*

ISO 18373-1, *Rigid PVC pipes — Differential scanning calorimetry (DSC) method — Part 1: Measurement of the processing temperature*

3 Terms and definitions, symbols and abbreviations

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 472 and EN ISO 1043-1 and the following apply.

3.1.1

application area code

code used in the marking of pipes and fittings to indicate the application area(s) for which they are intended, as follows:

B: application area code for components intended for use above ground inside the building

Note 1 to entry: Other application area codes D, BD, U and UD not covered by this standard are defined elsewhere, e.g. in EN 1329-1 [1] and EN 1401-1 [2].

3.1.2

structured-wall pipe

pipe with smooth internal and smooth external surfaces, with two solid PVC layers, or in which the inner and outer solid PVC layers are connected by foamed or non-foamed PVC intermediate layers

Note 1 to entry: Pipe in which the inner and outer solid PVC layers are connected by foamed PVC intermediate layers is also called foam core pipe.

3.1.3

solid layer

layer made of non-foamed PVC

3.1.4

foamed PVC

poly(vinyl chloride) which contains numerous small gas cells distributed throughout the mass

Note 1 to entry: Foam layers have a density less than 1,37 g/cm³ when measured according to EN ISO 1183-1.

3.1.5

nominal size

DN

numerical designation of the size of a component, other than a component designated by thread size, which is approximately equal to the manufacturing dimension, in millimetres

3.1.6

nominal size

DN/OD

nominal size, related to the outside diameter

3.1.7

nominal outside diameter

d_n

specified outside diameter, in millimetres, assigned to a nominal size DN/OD

3.1.8

outside diameter

d_e

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

3.1.9

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 π ($\approx 3,142$), rounded up to the next greater 0,1 mm

3.1.10

inside diameter of a socket

d_s

value of measurement of the inside diameter through its cross-section at any point of a socket, rounded up to the next greater 0,1 mm

3.1.11

mean inside diameter of a socket

d_{sm}

arithmetical mean of a number of measurements of the inside diameter of a socket in the same cross-section

3.1.12

out-of-roundness

ovality

difference between the measured maximum and the measured minimum outside diameter in the same cross-section of a component

3.1.13

wall thickness

e

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

3.1.14

mean wall thickness

e_m

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

3.1.15

wall thickness of inside layer

e_4

thickness at any point of the inside layer

3.1.16

Wall thickness of outside layer

e_5

thickness at any point of the outside layer