



SLOVENSKI STANDARD
SIST EN 1452-1:2000
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Plastics piping systems for water supply - Unplasticized poly(vinyl chloride) (PVC-U) - Part 1: General

Kunststoff-Rohrleitungssysteme für die Wasserversorgung - Weichmacherfreies Polyvinylchlorid (PVC-U) - Teil 1: Allgemeines

Systemes de canalisations en plastique pour alimentation en eau - Poly(chlorure de vinyle) non plastifié (PVC-U) - Partie 1: Généralités

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 1452-1

June 1999

ICS 23.040.90

English version

Plastics piping systems for water supply - Unplasticized poly(vinyl chloride) (PVC-U) - Part 1: General

Systèmes de canalisations en plastique pour alimentation en eau - Poly(chlorure de vinyle) non plastifié (PVC-U) - Partie 1: Généralités

Kunststoff-Rohrleitungssysteme für die Wasserversorgung - Weichmacherfreies Polyvinylchlorid (PVC-U) - Teil 1: Allgemeines

This European Standard was approved by CEN on 2 July 1998.

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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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

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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 155 "Plastics piping systems and ducting systems", the secretariat of which is held by NNI. It has been prepared with the co-operation of Eureau and in liaison with CEN/TC 164 "Water supply".

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 december 1999, and conflicting national standards shall be withdrawn at the latest by June 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, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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 1452 consists of the following Parts, under the general title *Plastics piping systems for water supply — Unplasticized poly(vinyl chloride) (PVC-U)*

- Part 1: *General (the present standard)*
- Part 2: *Pipes*
- Part 3: *Fittings*
- Part 4: *Valves and ancillary equipment*
- Part 5: *Fitness for purpose of the system*
- Part 6: *Guidance for installation (ENV)*
- Part 7: *Guidance for assessment of conformity (ENV)*

This Part of EN 1452 includes the following annex:

Annex A (informative): Bibliography.

At the date of publication of this standard, System Standards for piping systems of other plastics materials used for the same application are the following:

NOTE The listed System Standards are under preparation.

prEN 1796, *Plastics piping systems for water supply with or without pressure — Glass-reinforced thermosetting plastics (GRP) based on polyester resin (UP)*

prEN 12201, *Plastics piping systems for water supply — Polyethylene (PE)*

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.

In respect of potential adverse effects on the quality of water intended for human consumption, caused by the products covered by EN 1452:

- 1) this System Standard provides no information as to whether the product may be used without restriction in any of the Member States of the EU or EFTA;
- 2) it should be noted that, while awaiting the adoption of verifiable European criteria, existing national regulations concerning the use and/or the characteristics of these products remain in force.

For components, requirements and test methods are specified in Parts 2, 3 and 4 of EN 1452. Characteristics for fitness for purpose (mainly for joints) are covered in Part 5. Guidance for installation is given in ENV 1452-6. ENV 1452-7 covers guidance for the assessment of conformity.

This Part of EN 1452 covers the general aspects of the plastics piping system.

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1 Scope

This Part of EN 1452 specifies the general aspects of unplasticized poly(vinyl chloride) (PVC-U) piping systems in the field of water supply.

In conjunction with Parts 2 to 5 of EN 1452 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 ground;
- b) conveyance of water above ground for both outside and inside buildings;

for the supply of water under pressure at approximately 20 °C (cold water) intended for human consumption and for general purposes;

This standard is also applicable to components for the conveyance of water up to and including 45 °C.

NOTE For temperatures between 25 °C and 45 °C figure A.1 given in annex A of EN 1452-2:1999 applies.

2 Normative references

This Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

ISO 472:1996, *Plastics — Vocabulary*

ISO 1043-1:1997, *Plastics — Symbols and abbreviated terms — Part 1: Basic polymers and their special characteristics*

ISO 4065:1996, *Thermoplastics pipes — Universal wall thickness table*

3 Definitions, symbols and abbreviations

For the purposes of this standard, the following definitions, symbols and abbreviations apply.

3.1 Definitions

In addition to the definitions given below, the definitions given in ISO 472:1996 and ISO 1043-1:1997 apply.

NOTE If not already included in this standard, the designations as required by prEN 805 and prEN 806-1 will be considered in due course.

3.1.1 Geometrical definitions

3.1.1.1 Nominal size

3.1.1.1.1

nominal size DN

A 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).

3.1.1.1.2

nominal size DN/OD

Nominal size, related to the outside diameter.

**3.1.1.1.3
nominal size DN/ID**

Nominal size, related to the inside diameter.

**3.1.1.2
nominal diameter (d_n)**

The specified diameter, in millimetres, assigned to a nominal size.

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

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.

**3.1.1.3
outside diameter (at any point) (d_e)**

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

**3.1.1.4
mean outside diameter (d_{em})**

The 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 to the next greater 0,1 mm.

**3.1.1.5
mean inside diameter of socket (d_{im})**

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

**3.1.1.6
out-of-roundness (ovality)**

The 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.

**3.1.1.7
nominal wall thickness (e_n)**

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

**3.1.1.8
wall thickness (at any point) (e)**

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

**3.1.1.9
mean wall thickness (e_m)**

The 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.

**3.1.1.10
tolerance**

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

**3.1.1.11
pipe series S**

A dimensionless number for pipe designation (see ISO 4065:1996).

NOTE The pipe series S is related to a given pipe geometry as follows:

$$[S] = \frac{d_n - e_n}{2e_n}$$

3.1.1.12 standard dimension ratio (SDR)

A numerical designation of a pipe series which is a convenient round number approximately equal to the dimension ratio of the nominal outside diameter, d_n , and the nominal wall thickness, e_n .

NOTE According to ISO 4065:1996 the standard dimension ratio, SDR, and the pipe series S are related as follows:

$$[SDR] = 2[S] + 1$$

3.1.2 Material definitions

3.1.2.1 virgin material

Material in the form of granules or powder that has not been subjected to use or processing other than that required for its manufacture and to which no reprocessible or recyclable material(s) have been added.

3.1.2.2 own reprocessible material

Material prepared from rejected unused pipes and fittings, including trimmings from the production of pipes and fittings, that will be reprocessed in a manufacturer's plant after having been previously processed by the same manufacturer by a process such as moulding or extrusion and for which the complete formulation is known.

3.1.2.3 external reprocessible material

Material comprising either one of the following forms:

- material from rejected unused pipes or fittings or trimmings therefrom, that will be reprocessed and that were originally processed by another manufacturer;
- material from the production of unused PVC-U products other than pipes and fittings, regardless of where they are manufactured.

3.1.2.4 recyclable material

Material comprising either one of the following forms:

- material from used pipes or fittings which have been cleaned and crushed or ground;
- material from used PVC-U products other than pipes or fittings which have been cleaned and crushed or ground.

3.1.3 Definitions related to material characteristics

3.1.3.1 lower confidence limit (LCL)

A quantity, expressed in megapascals (MPa), which can be considered as a material property, representing the 97,5 % lower confidence limit of the predicted long-term hydrostatic strength for water at 20 °C for 50 years.

3.1.3.2 minimum required strength (MRS)

The value of LCL, rounded to the next lower value of the R10 series when the LCL is below 10 MPa, or to the next lower value of the R20 series when the LCL is 10 MPa or greater.