

SLOVENSKI STANDARD
oSIST prEN 15012:2011
01-junij-2011

Cevni sistemi iz polimernih materialov - Odvodne cevne komponente brez tlaka v zgradbah - Zahteve in preskusi/metode ocenjevanja za cevi in fittinge

Plastics piping systems - Non pressure soil and waste discharge piping components within the building structure - Requirements and test/assessment methods for pipes and fittings

Kunststoff-Rohrleitungssysteme - Drucklose Rohrleitungssysteme zum Ableiten von Abwasser innerhalb der Gebäudestruktur - Anforderungen und Prüf-/Bewertungsverfahren für Rohre und Formstücke

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Systèmes de canalisations en plastique - Composants de canalisations pour l'évacuation des eaux-vannes et des eaux usées à l'intérieur de la structure des bâtiments - Exigences et méthodes d'essai/d'évaluation pour tubes et raccords

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Plastics piping systems - Non pressure soil and waste discharge piping components within the building structure - Requirements and test/assessment methods for pipes and fittings

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This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 155.

If this draft becomes a European Standard, 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.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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Foreword

This document (prEN 15012:2011) 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 is currently submitted to the CEN Enquiry.

This document has been prepared under Mandate M/131 "Pipes, tanks and ancillaries not in contact with water intended for human consumption" given to CEN by the European Commission and the European Free Trade Association and supports essential requirements of EU Directives.

For the relationship with EU Directives, see informative Annex ZA, which is an integral part of this document.

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 United Kingdom.

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Introduction

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This European Standard specifies only those characteristics of pipes and fittings for soil and waste applications inside buildings or buried in ground within the building structure, that need to be known to determine if the works in which these are to be installed can satisfy the essential requirements of the EU Directive(s). Additional characteristics are specified in the documents listed in Annex A or in other appropriate product specifications..

prEN 15012:2011 (E)**1 Scope**

This European Standard specifies requirements for non-pressure plastics pipes and fittings for soil and waste applications.

It is intended to be used in soil and waste discharge applications:

- inside the building (application area code "B"),
- buried in ground within the building structure (application area code "BD") and with a diameter greater than or equal to 75 mm

It gives the associated test/assessment methods.

This standard does not cover adhesives, joint sealings and gaskets

NOTE For this standard, the term fitting includes the term joint as meant by mandate M131.

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.

EN 681-1, *Elastomeric seals — Materials requirements for pipe joint seals used in water and drainage applications — Part 1: Vulcanised rubber*

EN 681-2, *Elastomeric seals — Materials requirements for pipe joint seals used in water and drainage applications — Part 2: Thermoplastic elastomers*

EN 681-3, *Elastomeric seals — Materials requirements for pipe joint seals used in water and drainage applications — Part 3: Cellular materials of vulcanised rubber*

EN 681-4, *Elastomeric seals — Materials requirements for pipe joint seals used in water and drainage applications — Part 4: Cast polyurethane sealing elements*

EN 727, *Plastics piping and ducting systems — Thermoplastics pipes and fittings — Determination of vicat softening temperature (VST)*

EN 728, *Plastics piping and ducting systems — Polyolefin pipes and fittings — Determination of oxidation induction time*

EN 1053, *Plastics piping systems — Thermoplastics piping systems for non-pressure applications — Test method for watertightness*

EN 1054, *Plastics piping systems — Thermoplastics piping systems for soil and waste discharge — Test method for airtightness of joints*

EN 1055, *Plastics piping systems — Thermoplastics piping systems for soil and waste discharge inside buildings — Test method for resistance to elevated temperature cycling*

EN 1329-1, *Plastics piping systems for soil and waste discharge (low and high temperature) within the building structure — Unplasticized poly(vinyl chloride) (PVC-U) — Part 1: Specifications for pipes, fittings and the system*

EN 1451-1, *Plastics piping systems for soil and waste discharge (low and high temperature) within the building structure — Polypropylene (PP) — Part 1: Specifications for pipes, fittings and the system*

EN 1455-1, *Plastics piping systems for soil and waste discharge (low and high temperature) within the building structure — Acrylonitrile-butadiene-styrene (ABS) — Part 1: Requirements for pipes, fittings and the system*

EN 1519-1, *Plastics piping systems for soil and waste discharge (low and high temperature) within the building structure — Polyethylene (PE) — Part 1: Specifications for pipes, fittings and the system*

EN 1565-1, *Plastics piping systems for soil and waste discharge (low and high temperature) within the building structure — Styrene copolymer blends (SAN+PVC) — Part 1: Specifications for pipes, fittings and the system*

EN 1566-1, *Plastics piping systems for soil and waste discharge (low and high temperature) within the building structure — Chlorinated poly(vinyl chloride) (PVC-C) — Part 1: Specifications for pipes, fittings and the system*

EN 13501-1, *Fire classification of construction products and building elements — Part 1: Classification using test data from reaction to fire tests*

EN 13823, *Reaction to fire tests for building products — Building products excluding floorings exposed to the thermal attack by a single burning item*

EN 16000, *Plastics piping systems — Systems within the building structure — Mounting and fixing of components in the test apparatus to thermal attack by a single burning item*

EN ISO 3126, *Plastics piping systems — Plastics components — Determination of dimensions (ISO 3126:2005)*

EN ISO 9969, *Thermoplastics pipes — Determination of ring stiffness (ISO 9969:2007)*

EN ISO 13967, *Thermoplastics fittings — Determination of ring stiffness (ISO 13967:2009)*

ISO 1133, *Plastics — Determination of the melt mass-flow rate (MFR) and the melt volume-flow rate (MVR) of thermoplastics*

ISO 13966, *Thermoplastics pipes and fittings — Nominal ring stiffnesses*

3 Terms, definitions and symbols

For the purposes of this document, the following terms, definitions and symbols apply.

3.1

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)

NOTE This can apply to either the internal diameter (DN/ID) or external diameter (DN/OD)

3.2

nominal outside diameter

d_n

specified outside diameter, in millimetres, assigned to a nominal size

3.3

nominal ring stiffness

SN

numerical designation of the ring stiffness of a pipe or fitting, which is a convenient round number indicating the minimum required ring stiffness of the pipe or fitting

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NOTE It is designated by the letters "SN" followed by the appropriate number.

3.4**Connection**

assembly of pipe(s) and fitting(s).

4 Requirements**4.1 Reaction to fire**

The contribution to fire development of products falling under the scope of this European standard is verified according to the provisions of clause 5.1..

Test results shall be classified according to EN 13501-1.

4.2 Maximum load for admissible deformation for pipes and fittings for applications buried in ground within the building structure**4.2.1 General**

This clause is only applicable for components intended to be used buried in ground within the building structure and with a nominal outside diameter greater than or equal to 75 mm.

For the intended end use buried in ground within the building structure, the maximum load for admissible deformation shall be addressed as ring stiffness.

Ring stiffness shall be determined either by calculation or as described in 4.2.2 and 4.2.3.

4.2.2 Ring stiffness of pipes

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The ring stiffness of a thermoplastics pipe shall be determined in accordance with 5.2.1 and shall be expressed either as SN 2, SN 4, SN 8 or SN 16 following ISO 13966, as applicable, or as the actual value obtained in the test, expressed in kN/m².

4.2.3 Ring stiffness of fittings

Due to its geometry, the ring stiffness of a fitting is deemed to be at least equal to the ring stiffness of a corresponding pipe made from the same material and having the same wall thickness and design.

For other constructions, the ring stiffness of bends and branches with the largest side branch shall be measured in accordance with 5.2.2. All fittings of the same design family can be classified with the same ring stiffness class.

The ring stiffness of a thermoplastics fitting shall be expressed either as SN 2, SN 4, SN 8 or SN 16 following ISO 13966, as applicable, or as the actual value obtained in the test, expressed in kN/m².

The fitting manufacturer shall declare for which pipe ring stiffness classes the product is suitable.

4.3 Dimensional tolerances

The manufacturer shall declare the relevant dimensional tolerances for the connection of pipes and fittings by means of:

- a) reference to a specific European standard as given Annex A, as applicable

- b) in the absence of a), reference to a specific European product specification
- c) in the absence of a) and b) reference to an International Standard,
- d) in the absence of a), b), and c), by stating the values of his own specification and associated connecting method.

Dimensions shall be measured in accordance with 5.3 and shall be within the declared tolerances.

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prEN 15012:2011 (E)**4.4 Tightness**

For products in accordance with this standard, tightness is required. Pipes and fittings covered by this standard and having passed the type testing in accordance with the evaluation of conformity clause are deemed to be tight.

Connections between pipes and/or fittings shall be tested in accordance with 5.4. No water leakage and no air leakage shall occur during the test period.

4.5 Durability**4.5.1 Durability of tightness related to material**

The durability of tightness related to material from which the pipes and fittings are manufactured, shall be assessed by testing in accordance with 5.5.1.

4.5.2 Durability of tightness after elevated temperature cycling test of pipes and fittings

The tightness after elevated temperature cycling shall be tested in accordance with 5.5.2. The connections between pipes and/or fittings shall not show any leakage before and after the test. The sagging shall not exceed the following values:

— DN ≤ 50: ≤ 3 mm;

— DN > 50: $0,05 \times d_n$ mm.

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4.5.3 Durability of tightness of elastomeric sealing connections between pipes and/or fittings

The tightness of elastomeric sealing connections is deemed to be durable if the sealing element conforms to EN 681-1, EN 681-2, EN 681-3 or EN 681-4, as applicable.

4.6 Release of dangerous substances

Products covered by this standard should not contain or release any of the substances considered dangerous according to existing national provisions.

5 Test methods**5.1 Reaction to fire of pipes and fittings**

The reaction to fire is tested according to the applicable test methods.

When tested in accordance with EN 13823 (SBI test), the mounting and fixing conditions of the samples to be tested shall be in accordance with EN 16000.

5.2 Maximum load for admissible deformation**5.2.1 Ring stiffness of thermoplastics pipes**

For thermoplastics pipes the ring stiffness shall be determined in accordance with EN ISO 9969.

5.2.2 Ring stiffness of thermoplastics fittings

For thermoplastics structured-wall fabricated fittings, the ring stiffness of bends and branches shall be measured in accordance with EN ISO 13967.

5.3 Dimensional tolerances

The dimensions shall be measured in accordance with EN ISO 3126.

5.4 Tightness

Sealing ring connections between pipes and/or fittings shall be tested in accordance with EN 1053 and EN 1054, whereby the sampling procedure is free and the number of test pieces is one (see clause 6.2).

Fused, cemented and adhesive bonded connections are deemed to be tight when assembled in accordance with the manufacturer's instructions. Such instructions shall be made available by the manufacturer.

5.5 Durability

5.5.1 Durability of tightness related to material

Depending on the material from which the products are made, testing shall be done in accordance with following provisions=

- a) PVC based compound/formulation:
 - Vicat softening temperature shall be determined in accordance with EN727, using the conditions as given in EN 1329-1.
- b) PE based compound/formulation:
 - Melt Flow Index shall be determined in accordance with ISO1133 (190°C) using the conditions as given in EN 1519-1 in relevant clause
 - Oxidation Induction Time shall be determined in accordance with EN728 (200°C) using the conditions as given in EN 1519-1 in relevant clause
- c) PP based compound/formulation:
 - Melt Flow Index shall be determined in accordance with ISO1133 (230°C) using the conditions as given in EN 1451-1 in relevant clause.
 - Oxidation Induction Time shall be determined in accordance with EN728 using the conditions as given in EN 1451-1 in relevant clause.
- d) ABS based compound/formulation:
 - Vicat softening temperature shall be determined in accordance with EN727, using the conditions as given in EN 1455-1 in relevant clause.
- e) PVC/SAN based compound/formulation:
 - Vicat softening temperature shall be determined in accordance with EN727, using the conditions as given in EN 1565-1 in relevant clause.
- f) PVC-C based compound/formulation:
 - Vicat softening temperature shall be determined in accordance with EN727, using the conditions as given in EN 1566-1 in relevant clause.

5.5.2 Durability of tightness after elevated temperature cycling test of pipes and fittings

This characteristic shall be tested in accordance with EN 1055.

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6 Evaluation of conformity

6.1 General

The compliance of pipes and fittings to the requirements of this standard and with the declared values (including classes) shall be demonstrated by:

- initial type testing;
- factory production control by the manufacturer, including product assessment.

The manufacturer shall always retain the overall control and shall have the necessary means to take responsibility for the product.

6.2 Initial type testing – Type testing

6.2.1 General

Initial Type Testing and Type Testing shall be performed to demonstrate compliance with this European standard.

All essential characteristics for which the manufacturer declares performances, are subject to Initial Type Testing. In addition, the need to perform Type Tests applies to all other characteristics included in a standard when the manufacturer claims compliance with, unless the standard gives provisions (e.g. use of previously existing data, CWFT and conventionally accepted performance) for declaring performances without performing tests.

For the purposes of testing, the manufacturer's products may be grouped into families, where it is considered that the results for one or more characteristics from any product within the family are representative for that same characteristic for all products within that same family.

NOTE Products may be in different families for different characteristics.

For type testing the following family groups apply:

- a) Size groups for pipes and fittings as given in Table 1.

Table 1 — Size groups

Size group	Range of nominal diameters, d_n
1	$32 < d_n \leq 63$
2	$63 < d_n \leq 180$
3	$d_n > 180$

- b) Product groups for thermoplastics piping components as given in Table 2.

Table 2 — Product groups

Type group	Thermoplastics piping components
1	Pipes
2	Bends