SLOVENSKI STANDARD

SIST EN 15014:2008

01-januar-2008

Cevni sistemi iz polimernih materialov - Podzemni in nadzemni sistemi za vodo in druge tekoļ ine pod tlakom - Lastnosti cevi, fitingov in njihovih spojev

Plastics piping systems - Buried and above ground systems for water and other fluids under pressure - Performance characteristics for pipes, fittings and their joints

Kunststoff-Rohrleitungssysteme - Erd- und oberirdisch verlegte Druckrohrleitungssysteme für Wasser und andere Flüssigkeiten - Eigenschaften für die Gebrauchstauglichkeit von Rohren, Formstücken und deren Verbindungen

Systemes de canalisations en plastique - Systemes enterrés et aériens pour eau et autres fluides avec pression - Caractéristiques de performance pour tubes, raccords et leurs assemblages

Ta slovenski standard je istoveten z: **EN 15014:2007**

ICS:

23.040.20	Cevi iz polimernih materialov	Plastics pipes
23.040.45	Fitingi iz polimernih materialov	Plastics fittings
91.140.80	Drenažni sistemi	Drainage systems

SIST EN 15014:2008 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 15014

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ICS 23.040.20; 23.040.45

English Version

Plastics piping systems - Buried and above ground systems for water and other fluids under pressure - Performance characteristics for pipes, fittings and their joints

Systèmes de canalisations en plastique - Systèmes enterrés et aériens pour eau et autres fluides avec pression - Caractéristiques de performance pour tubes, raccords et leurs assemblages

Kunststoff-Rohrleitungssysteme - Erd- und oberirdisch verlegte Druckrohrleitungssysteme für Wasser und andere Flüssigkeiten - Eigenschaften für die Gebrauchstauglichkeit von Rohren, Formstücken und deren Verbindungen

This European Standard was approved by CEN on 23 August 2007.

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.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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Foreword

This document (EN 15014:2007) has been prepared 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 2008, and conflicting national standards shall be withdrawn at the latest by July 2009.

This document has been prepared under the 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 support essential requirements of EU Directives.

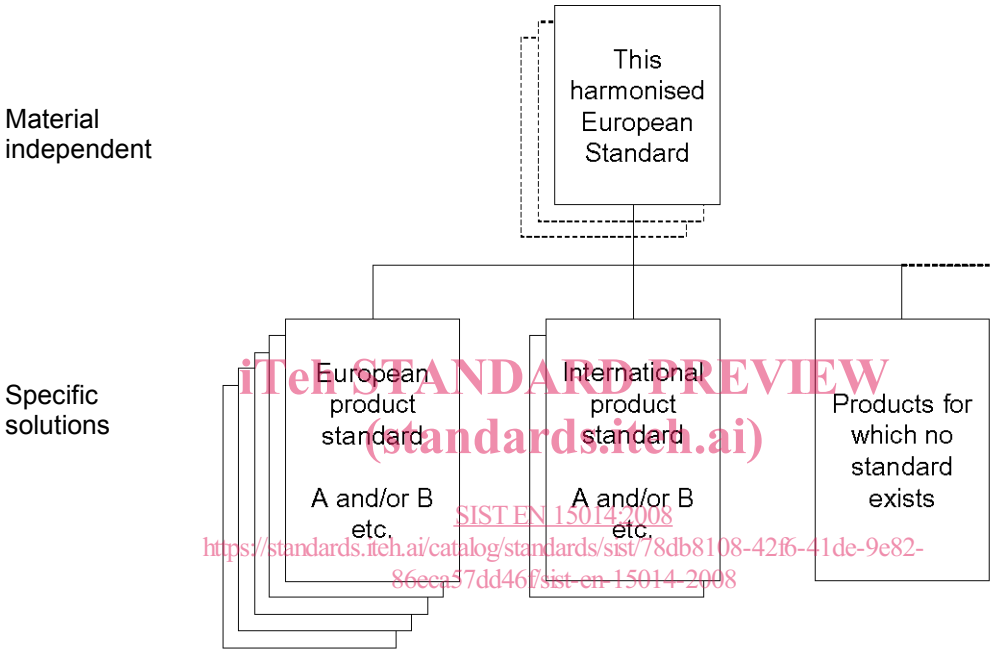
For the relationship with EU Directives, see informative Annex ZA, which is an integral part of this document.

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.

Introduction

This European Standard contains only the performance characteristics needed to meet the essential requirements of EU Directive(s). It does not cover all characteristics of the products. These are specified in the standards listed in Annex A or in other appropriate product specifications.

This harmonised European Standard is part of a family of cluster standards addressing plastics piping systems. The relationship is shown below.



For the harmonisation of pressure plastics piping systems (this European Standard) the following applies:

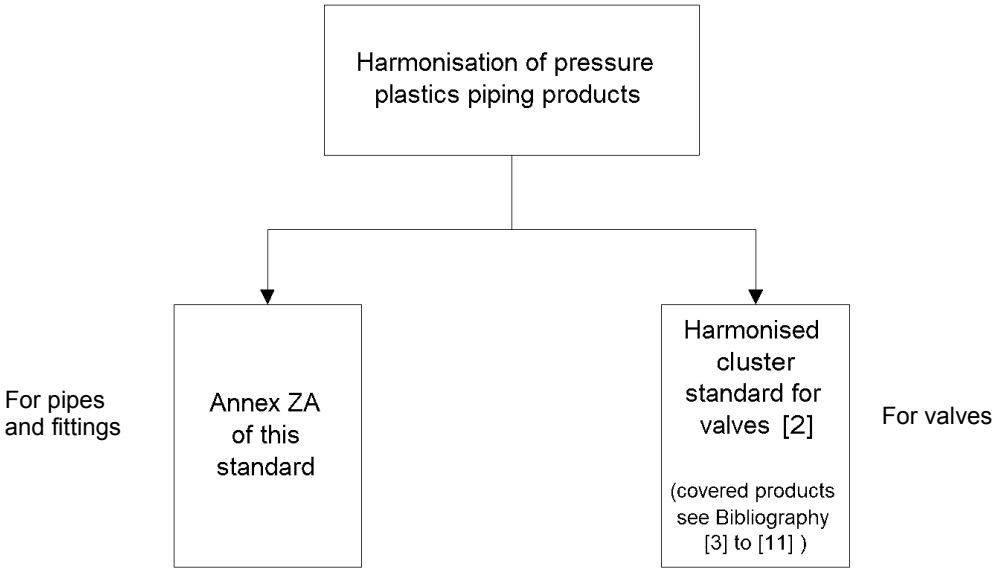


Figure 1

1 Scope

This European Standard specifies performance requirements for plastics pipes, fittings and their joints for buried or above-ground pressure applications for water for general purposes, drainage, sewerage and irrigation, as well as for any other pressure application with other fluids covered by the Construction Products Directive with the exception of drinking water distribution for human consumption. It gives associated test methods for verification and evaluation of conformity with this European Standard.

NOTE Compliance of pipes, fittings and their joints with this document does not confer a presumption of fitness of the product for the transport of water intended for human consumption within the meaning of the Directive 89/106/EEC. However, until the operation of the envisaged European Acceptance Scheme for construction products in contact with water intended for human consumption and the revision of this standard, products conforming to this standard could be used for the transport of water intended for human consumption if they conform to the relevant national, regional or local regulatory provisions or recommendations applicable in the place of use.

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: Vulcanized rubber*

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

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

EN 713, *Plastics piping systems — Mechanical joints between fittings and polyolefin pressure pipes — Test method for leaktightness under internal pressure of assemblies subjected to bending*

EN 715, *Thermoplastics piping systems — End-load bearing joints between small diameter pressure pipes and fittings — Test method for leaktightness under internal water pressure, including end thrust*

EN 911, *Plastics piping systems — Elastomeric sealing ring type joints and mechanical joints for thermoplastics pressure piping — Test method for leaktightness under external hydrostatic pressure*

EN 1394, *Plastics piping systems — Glass-reinforced thermosetting plastics (GRP) pipes — Determination of the apparent initial circumferential tensile strength*

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

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

EN 14364, *Plastics piping systems for drainage and sewerage with or without pressure — Glass-reinforced thermosetting plastics (GRP) based on unsaturated polyester resin (UP) — Specifications for pipes, fittings and joints*

EN 15012:2007, *Plastics piping systems — Soil and waste discharge systems within the building structure — Performance characteristics for pipes, fittings and their joints*

EN 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 1167-1:2006)*

EN 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 1167-2:2006)*

prEN ISO 1167-3:2005, *Thermoplastics pipes, fittings and assemblies for the conveyance of fluids — Determination of the resistance to internal pressure — Part 3: Preparation of components (ISO/DIS 1167-3:2005)*

prEN ISO 1167-4:2006, *Thermoplastics pipes, fittings and assemblies for the conveyance of fluids — Determination of the resistance to internal pressure — Part 4: Preparation of assemblies (ISO/DIS 1167-4:2006)*

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

EN ISO 9001:2000, *Quality management systems — Requirements (ISO 9001:2000)*

EN ISO 9080, *Plastics piping and ducting systems — Determination of the long-term hydrostatic strength of thermoplastics materials in pipe form by extrapolation (ISO 9080:2003)*

EN ISO 12162, *Thermoplastics materials for pipes and fittings for pressure applications — Classification and designation — Overall service (design) coefficient (ISO 12162:1995)*

EN 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 (ISO 13783:1997)*

EN ISO 13846, *Plastics piping systems — End-load-bearing and non-end-load-bearing assemblies and joints for thermoplastics pressure piping — Test method for long-term leaktightness under internal water pressure (ISO 13846:2000)*

ISO 161-1, *Thermoplastics pipes for the conveyance of fluids — Nominal outside diameters and nominal pressures — Part 1: Metric series*

ISO 17456, *Plastics piping systems — Multilayer pipes — Determination of long-term strength*

ISO 21004, *Plastics piping systems — Multilayer pipes and their joints, based on thermoplastics, for water supply*

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 diameter, in millimetres, assigned to a nominal size

3.3
nominal pressure (PN)
numerical designation used for reference purposes related to the mechanical characteristics of the component of a piping system

NOTE For plastic piping systems conveying water it corresponds to the maximum continuous operating pressure in bar, which can be sustained with water at 20 °C for thermoplastics and 35 °C for thermosetting materials, based on the minimum design coefficient.

4 Performance requirements

4.1 Reaction to fire for applications inside building

Where subject to regulatory requirements, the product shall be tested and classified in accordance with 5.1.

4.2 External pressure strength

The external pressure strength of pressure piping systems is deemed to be satisfied by the internal pressure strength as given in 4.3.

4.3 Internal pressure strength

4.3.1 Determination of nominal pressure PN

For thermoplastics materials the internal pressure strength of the pipe and fitting shall be determined in accordance with 5.2.1 and shall be declared by the manufacturer as nominal pressure PN in accordance with ISO 161-1 and including PN 25 where applicable.

The overall service (design) coefficient shall not be less than that specified in EN ISO 12162 for the relevant material.

For thermosetting materials the internal pressure strength of the pipe or fitting shall be tested in accordance with 5.2.2 and shall be declared by the manufacturer as nominal pressure in accordance with EN 1796 or EN 14364.

For multilayer pipes the internal pressure strength shall be tested and declared by the manufacturer in accordance with 5.2.3.

4.3.2 Verification of pressure strength

The verification of the internal pressure strength of pipes and fittings shall be done in accordance with 5.3.

4.4 Dimensional tolerances

The manufacturer shall declare the dimensional tolerances for the jointing of the components, either by means of:

a) reference to a specific European product standard as given in Clause 2 or in Annex A, as applicable, or

b) in the absence of a European Standard, reference to a specific European product specification published by a recognized European organization or,

c) in the absence of a) and b) reference to an International Standard, or

d) in the absence of a), b), and c), by stating the values of his own specification and associated jointing method.

Dimensions shall be measured in accordance with 5.4 and shall be within the declared tolerances.

4.5 Tightness (air and liquid)

For products in accordance with this standard, leaktightness is required. Products covered by one of the standards listed in Annex A and having passed the type testing in accordance with the assessment of conformity part, are deemed to be leaktight (for standards with separate assessment of conformity parts see Annex B).

Sealing rings (and gaskets) shall conform to EN 681-1, EN 681-2 or EN 681-4, as applicable.

Pipe connections shall be tested in accordance with 5.5. No leakage shall occur during the test period.

4.6 Durability

4.6.1 Durability of pipes and fittings

Pipes and fittings meeting the requirements of 4.3.1 are deemed to have a reasonable economic working life.

NOTE The piping components are expected to last at least the lifetime of the network where they are installed.

If the nature of the fluid is different from water or this fluid or water has a higher temperature than 20 °C (35 °C for thermosetting materials), guidance for de-rating the pressure shall be in accordance with the appropriate following standards: EN 1778 [13], EN 1452-2 [12] for PVC-U, ISO 13761[14] for PE, EN 1796 and EN 14364 for thermosetting materials and ISO 17456 or ISO 21004 for multilayer piping systems.

Instead of de-rating the pressure, a shorter lifetime may be declared.

4.6.2 Durability of elastomeric sealing joints

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

4.7 Dangerous substances

Attention is drawn to NOTE 1 and NOTE 2 in ZA.1.

NOTE Mandate M/366 “Development of horizontal standardised assessment methods for harmonised approach relating to dangerous substances under the Construction Products Directive (CPD)“ as issued by the European Commission, will require specifications relating to dangerous substances once applicable to the covered products.

5 Test methods

5.1 Reaction to fire for applications inside building

Classification shall be in accordance with EN 13501-1.

Mounting and fixing of pipes shall conform to Annex A in EN 15012:2007. If no pipes are available, testing of fittings may be done in form of a linear assembly, e.g. couplers.

NOTE In case where e.g. the given dimensions do not exist the choice of dimensions and the mounting and fixing should be agreed between the manufacturer and the notified body.

5.2 Determination of the nominal pressure

5.2.1 Determination of the nominal pressure PN for thermoplastics piping systems

For thermoplastics materials the nominal pressure PN shall be determined as follows:

a) determine the σ_{LPL} value in accordance with EN ISO 9080. Data provided by either the compound manufacturer or the product manufacturer may be taken into account;

b) classify the material (MRS) and calculate the design stress in accordance with EN ISO 12162;

c) calculate the PN for a chosen pipe series (SDR series) in accordance with ISO 161-1.

5.2.2 Determination of the nominal pressure PN for thermosetting piping systems

For thermosetting materials the nominal pressure PN shall be determined in accordance with the procedures given in EN 1796 or EN 14364, as applicable.

5.2.3 Determination of the nominal pressure PN for multilayer piping systems

For multilayer piping systems the nominal pressure PN shall be determined in accordance with ISO 17456.

5.3 Internal pressure strength

5.3.1 Internal pressure strength for thermoplastics products

For checking the internal pressure strength testing shall be done in accordance with the appropriate parts of EN ISO 1167 using circumferential stresses or test pressures as given in the relevant product standards in Annex A.

5.3.2 Internal pressure strength for thermosetting products

For checking the internal pressure strength testing shall be done in accordance with EN 1796 or EN 14364 using the test method given in EN 1394.

5.3.3 Internal pressure strength for multilayer piping systems

For checking the internal pressure strength testing shall be done in accordance with ISO 21004.

5.4 Dimensional tolerances

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

5.5 Tightness

The leaktightness of joints shall be tested in accordance with EN 715 for joints for polyolefin pipes and with EN ISO 13846 and EN ISO 13783 for joints for other thermoplastics pipes as applicable. Joints with mechanical fittings and polyethylene pipes shall be tested according EN 911 and EN 713.

For joints for thermosetting pipes, tests referenced in EN 1796 or EN 14364 shall be applied, depending on the type of joint.

For joints for multilayer pipes, tests referenced in ISO 21004 shall be applied, depending on the type of joint.

NOTE The test parameters are set by the product standards making reference to these test standards.

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

5.6 Durability

Piping components conforming with the requirements of this document and with a declared nominal pressure, which is determined according to 5.2 of this European Standard, shall be deemed to be durable for a reasonable economic working life.

6 Evaluation of conformity

6.1 General

The conformity of pipes and fittings with the requirements of this European Standard and with the declared values (including classes) shall be demonstrated by:

— initial type testing;

— factory production control by the manufacturer, including product assessment.

For the purposes of testing, pipes and fittings 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 the same characteristics for all products within that family.

NOTE 1 A product may be in more than one family for different characteristics.

For type testing the following family groups apply:

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