



# SLOVENSKI STANDARD

## SIST EN 12201-4:2012

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Nadomešča:

SIST EN 12201-4:2002

SIST EN 13244-4:2003

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**Cevni sistemi iz polimernih materialov za oskrbo z vodo in za odvodnjavanje in  
kanalizacijo pod tlakom - Polietilen (PE) - 4. del: Ventili**

Plastics piping systems for water supply, and for drainage and sewerage under pressure  
- Polyethylene (PE) - Part 4: Valves

**iTeh STANDARD PREVIEW**

Kunststoff-Rohrleitungssysteme für die Wasserversorgung und für Entwässerungs- und  
Abwasserdruckleitungen - Polyethylen (PE) - Teil 4: Armaturen

[SIST EN 12201-4:2012](http://standards.iTeh.si/catalog/standards/sist/85ea0f5-d767-4d35-9841-c2676c1975e/sist-en-12201-4-2012)

Systèmes de canalisations en plastique pour l'alimentation en eau et pour les  
branchements et les collecteurs d'assainissement avec pression - Polyéthylène (PE) -  
Partie 4: Robinets

**Ta slovenski standard je istoveten z: EN 12201-4:2012**

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93.030	Zunanji sistemi za odpadno vodo	External sewage systems

**SIST EN 12201-4:2012**

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EUROPEAN STANDARD

**EN 12201-4**

NORME EUROPÉENNE

EUROPÄISCHE NORM

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English Version

## Plastics piping systems for water supply, and for drainage and sewerage under pressure - Polyethylene (PE) - Part 4: Valves for water supply systems

Systèmes de canalisations en plastique pour l'alimentation en eau et pour les branchements et les collecteurs d'assainissement avec pression - Polyéthylène (PE) - Partie 4: Robinets pour les systèmes d'alimentation en eau

Kunststoff-Rohrleitungssysteme für die Wasserversorgung und für Entwässerungs- und Abwasserdruckleitungen - Polyethylen (PE) - Teil 4: Armaturen für Wasserversorgungssysteme

This European Standard was approved by CEN on 16 December 2011.

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.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, 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, Turkey and United Kingdom.



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

Management Centre: Avenue Marnix 17, B-1000 Brussels

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## Foreword

This document (EN 12201-4:2012) 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 August 2012, and conflicting national standards shall be withdrawn at the latest by August 2012.

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 12201-4:2001, EN 13244-4:2002.

System Standards are based on the results of the work being 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).

EN 12201 consists of the following Parts, under the general title *Plastics piping systems for water supply and for drainage and sewerage under pressure — Polyethylene (PE)*:

— Part 1: General

— Part 2: Pipes

— Part 3: Fittings

— Part 4: Valves for water supply systems (this standard)

— Part 5: Fitness for purpose of the system

— Part 7: Guidance for the assessment of conformity (CEN/TS)

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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, Croatia, 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, Turkey and the United Kingdom.

## EN 12201-4:2012 (E)

## Introduction

This European Standard, known as the System Standard, specifies the requirements for a piping system and its components when made from polyethylene (PE). The piping system is intended to be used for water supply intended for human consumption, including the conveyance of raw water prior to treatment, drainage and sewerage under pressure, vacuum sewer systems, and water for other purposes.

In respect of potential adverse effects on the quality of water intended for human consumption, caused by the product covered by EN 12201:

- a) this European Standard provides no information as to whether the products may be used without restriction in any of the Member States of the EU or EFTA;
- b) products intended for use in water supply systems must comply, when existing, with national regulations and testing arrangements that ensure fitness for contact with drinking water.

NOTE On April 2006, EC Commission set up a revised mandate (M/136) asking CEN to propose harmonised product standards and support standards for test methods which could be used for assessing the fitness for contact with drinking water. In parallel, EC Commission has launched processes for a regulation of construction products (CPR) to be substituted to CP directive (89/106/EC) and for the revision of drinking water directive (98/83/EC). If relevant, when the outputs of these processes will be known, European Product Standards will be amended by the addition of an Annex Z under Mandate M/136 which will contain formal references to the applicable requirements. Until such amendments, the current national regulations remain applicable.

Requirements and test methods for material and components, other than valves, are specified in EN 12201-1:2011, EN 12201-2 and EN 12201-3:2011.

Characteristics for fitness of purpose are covered in EN 12201-5. CEN/TS 12201-7 [1] gives guidance for the assessment of conformity.

[SIST EN 12201-4:2012](https://standards.iteh.ai/catalog/standards/sist/85aa0f75-d767-4d35-9841-112201-4-2012)  
<https://standards.iteh.ai/catalog/standards/sist/85aa0f75-d767-4d35-9841-112201-4-2012>

This Part of EN 12201 covers the characteristics of valves. [SIST EN 12201-4:2012](https://standards.iteh.ai/catalog/standards/sist/85aa0f75-d767-4d35-9841-112201-4-2012)

## 1 Scope

This Part of EN 12201 specifies the characteristics of valves or valve bodies made from polyethylene (PE 100 and PE 80) for buried and above ground applications, intended for the conveyance of water for human consumption, raw water prior to treatment, drainage and sewerage under pressure, vacuum sewer systems, and water for other purposes.

NOTE 1 For valves or valve bodies intended for drainage and sewerage under pressure, additional specifications/tests may be necessary according to the requirements of the purchaser, especially for the chemical resistance of the components in contact with the fluids and functioning characteristics.

NOTE 2 For PE components intended for the conveyance of water for human consumption and raw water prior to treatment attention is drawn to 5.4. Components manufactured for water for other purposes may not be suitable for water supply for human consumption.

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

NOTE 3 Valves made from material other than polyethylene (PE) designed for the supply of water intended for human consumption to a relevant standard(s) can be used in PE piping systems conforming to EN 12201 when they have relevant PE connection for butt fusion or electrofusion ends (see EN 12201-3:2011).

In conjunction with Parts 1, 2, 3 and 5 of EN 12201 it is applicable to PE valves, their joints and to joints with components of PE and other materials intended to be used under the following conditions:

- a) allowable operating pressure, PFA, up to 25 bar<sup>1)</sup>;
- b) an operating temperature of 20 °C as a reference temperature;
- c) buried in the ground;
- d) sea outfalls;
- e) laid in water;
- f) above ground, including pipes suspended below bridges.

NOTE 4 For applications operating at constant temperature greater than 20 °C and up to 40 °C, see EN 12201-1:2011, Annex A.

EN 12201 covers a range of allowable operating pressures and gives requirements concerning colours and additives.

NOTE 5 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 guidance or regulations and installation practices or codes.

This Part of EN 12201 covers valves for pipes with a nominal outside diameter  $d_n \leq 315$  mm.

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1) 1 bar = 0,1 MPa = 10<sup>5</sup> Pa; 1 MPa = 1 N/mm<sup>2</sup>.

## EN 12201-4:2012 (E)

## 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 736-1:1995, *Valves — Terminology — Part 1: Definition of types of valves*

EN 736-2:1997, *Valves — Terminology — Part 2: Definition of components of valves*

EN 1680, *Plastics piping systems — Valves for polyethylene (PE) piping systems — Test method for leaktightness under and after bending applied to the operating mechanisms*

EN 1705, *Plastics piping systems — Thermoplastics valves — Test method for the integrity of a valve after an external blow*

EN 12100, *Plastic piping systems — Polyethylene (PE) valves — Test method for resistance to bending between supports*

EN 12201-1:2011, *Plastics piping systems for water supply, and for drainage and sewerage under pressure — Polyethylene (PE) — Part 1: General*

EN 12201-2, *Plastics piping systems for water supply, and for drainage and sewerage under pressure — Polyethylene (PE) — Part 2: Pipes*

EN 12201-3:2011, *Plastics piping systems for water supply and for drainage and sewerage under pressure — Polyethylene (PE) — Part 3: Fittings*

EN 12201-5, *Plastics piping systems for water supply, and for drainage and sewerage under pressure — Polyethylene (PE) — Part 5: Fitness for purpose of the system*

EN 28233, *Thermoplastic valves — Torque — Test method (ISO 8233)*

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

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)*

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

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

ISO 10933, *Polyethylene (PE) valves for gas distribution systems*

ISO 11357-6, *Plastics — Differential scanning calorimetry (DSC) — Part 6: Determination of oxidation induction time (isothermal OIT) and oxidation induction temperature (dynamic OIT)*

## 3 Terms and definitions, symbols and abbreviations

For the purposes of this document, the terms and definitions, symbols and abbreviations given in EN 12201-1:2011, EN 736-1:1995, EN 736-2:1997 and the following apply.



**3.1****external leaktightness**

leaktightness of the body enveloping the space containing the water, with respect to the atmosphere

**3.2****internal leaktightness**

leaktightness between the inlet and the outlet of the valve, with the valve in the closed position

**3.3****leaktightness test**

test for both of the following characteristics:

- a) the internal leaktightness of the valve's closing seat when closed and pressurised from either side;
- b) the external leaktightness of the valve when half open

**3.4****initiating torque**

torque required to initiate movement of the obturator

**3.5****running torque**

torque required to achieve full opening or closing of the valve at maximum allowable operating pressure

**3.6****leakage**

seepage of water from the valve body, or any component of the valve

**3.7****valve body**

main part of a valve which contains the obturating device (closing element, the seat, the packing seals and the operating stop), as applicable and provides the terminal ends for connection to the PE pipe/fittings

**3.8****operating device**

part of a valve for connection with the operating key which allows the opening and closing of the valve

**3.9 Terms relating to design****3.9.1****full bore valve**

valve with a flow section equal to or greater than 80 % of the section corresponding to the nominal inside diameter of the body end port

[EN 736-3:2008[6]]

**3.9.2****clearway valve**

valve designed to have an unobstructed flow way, which allows for the passage of a theoretical sphere with a diameter that is not less than the nominal inside diameter of the body end port

[EN 736-3:2008[6]]

**3.9.3****reduced bore valve**

valve with a flow section equal to or greater than 36 % of the section corresponding to the nominal inside diameter of the body end port and which does not correspond to the full bore valve

[EN 736-3:2008[6]]

## EN 12201-4:2012 (E)

**4 Material****4.1 Compound**

The compound from which the body of the valve, with spigot end or electrofusion socket is made, shall be PE 80 and PE 100 only, and shall conform to EN 12201-1:2011. The PE components of the valve shall only be made from virgin material conforming to EN 12201-1:2011.

**4.2 Material for non-polyethylene parts****4.2.1 General**

All components shall conform to the relevant European Standard(s). Alternative standards may be utilised in cases where suitable European Standard(s) do not exist provided a fitness for purpose of the components can be demonstrated.

The materials and the constituent elements used in making the valves (including elastomers, greases and any metal parts as may be used) shall be as resistant to the external and internal environment as the other elements of the piping system. They also shall have a life expectancy under the following conditions at least equal to that of the PE pipes conforming to EN 12201 2:2011 with which they are intended to be used:

- a) during storage;
- b) under the effect of the water conveyed therein;
- c) with respect to the service environment and operating conditions.

The requirements for the level of material performance for non-polyethylene parts shall be at least as stringent as that of the PE compound for the piping system.

Other materials used in valves in contact with the PE pipe shall not adversely affect the pipe performance or initiate stress cracking.

NOTE Metal valve bodies for PE piping systems up to 25 bars should conform to the relevant standard of CEN/TC 69 "Industrial valves".

**4.2.2 Metal parts**

All metal parts susceptible to corrosion shall be adequately protected, providing this is necessary for the durability and function of the system.

When dissimilar metallic materials are used which may be in contact with moisture, steps shall be taken to avoid the possibility of galvanic corrosion.

**4.2.3 Elastomers**

Elastomeric seals shall conform to EN 681-1.

**4.2.4 Other materials**

Greases or lubricants shall not exude on to fusion areas and shall not affect the long-term performance of the PE valve or valve body nor have any adverse effect on the quality of the water.

Other materials conforming to 4.2.1 may be used provided that it is proven that the valves conform to this European Standard.

#### 4.2.5 Assembly

Valves shall be assembled according to manufacturer's procedures and any component used in the assembly shall not prevent conformity of the valve to this European Standard.

### 5 General characteristics

#### 5.1 Appearance of the valve

When viewed without magnification, the internal and external surfaces of valves shall be smooth, clean and free from scoring, cavities and other surface defects to an extent that would prevent conformity to this European Standard.

No component of the valve shall show any signs of damage, scratches, pitting, bubbles, blisters, inclusions or cracks to an extent that would prevent conformity of the valve to this European Standard.

#### 5.2 Colour

The PE body shall be black or blue.

Blue valve bodies are not permitted for applications other than the conveyance of water for human consumption.

NOTE For above ground installations, all blue components should be protected from direct UV light.

#### 5.3 Design

##### 5.3.1 General

SIST EN 12201-4:2012

<https://standards.iteh.ai/catalog/standards/sist/85aa0f75-d767-4d35-9841-217e107b1a5e/en-12201-4:2012>

The design of the valve shall be such that, when assembling the valve onto the pipe or other components, the electrical coils and/or seals or any ancillary parts are not displaced.

PE valves bodies and their PE spigot end or electrofusion socket shall have a pressure rating of at least that of the pipe to which they are assembled. PE spigot ends or electrofusion sockets shall have sufficient fusion compatibility (see EN 12201-5) to the pipe to which it is fused to meet the requirements of this European Standard.

##### 5.3.2 Valve body

The valve body of the valve shall be such that it cannot be dismantled.

##### 5.3.3 Operating device

The operating device shall be integral with or connected to the stem in such a way that disconnection is impossible without special equipment.

The valve shall close by turning the operating device clockwise. For a quarter-turn valve, the position of the obturator shall be clearly indicated on the top side of the operating device.

Stops shall be provided at the fully open and closed positions.