SLOVENSKI STANDARD
oSIST prEN 12201-4:2021

01-julij-2021

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

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

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

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

Ta slovenski standard je istoveten z: **prEN 12201-4**

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23.060.01	Ventili na splošno	Valves in general
91.140.60	Sistemi za oskrbo z vodo	Water supply systems
93.030	Zunanji sistemi za odpadno vodo	External sewage systems

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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

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

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European foreword

This document (prEN 12201-4:2021) 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 will supersede EN 12201-4:2012.

In comparison with the previous edition, the following technical modifications have been made:

— The revision of this System Standard has been carried out principally to add the PE 100-RC type materials with enhanced resistance to slow crack growth. prEN 12201-1:2021, Annex A discusses the performance of this type of material and gives additional information for non-conventional installation techniques. The diameter range for valves has been increased to 400 mm. An improved description of the leaktightness test is given. Annex B has been added to describe the leaktightness test after the tensile test, following withdrawal of ISO 10933. In addition test methods have been updated and a new method has been added for PE 100-RC materials.

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).

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 12201 consists of the following parts:

— EN 12201-1, *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, *Plastics piping systems for water supply, and for drainage and sewerage under pressure — Polyethylene (PE) — Part 3: Fittings* (this document);

— EN 12201-4, *Plastics piping systems for water supply, and for drainage and sewerage under pressure — Polyethylene (PE) — Part 4: Valves for water supply systems*;

— 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*;

In addition the following document provides guidance on the assessment of conformity:

— CEN/TS 12201-7, *Plastics piping systems for water supply — Polyethylene (PE) — Part 7: Guidance for the assessment of conformity*.

Introduction

This document, 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 the EN 12201 series:

a) this document 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 should comply, when existing, with national regulations and testing arrangements that ensure fitness for contact with drinking water.

Requirements and test methods for material and components, other than valves, are specified in prEN 12201-1:2021, prEN 12201-2:2021 and prEN 12201-3:2021.

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

This Part of EN 12201 covers the characteristics of valves.

1 Scope

This document specifies the characteristics of valves or valve bodies made from polyethylene (PE) 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.

It is applicable to isolating unidirectional and bi-directional valves with spigot ends or electrofusion sockets intended to be fused with PE pipes or fittings conforming to prEN 12201-2 and prEN 12201-3 respectively.

Valves made from materials other than PE, designed for the supply of water, drainage and sewerage under pressure conforming to the relevant standards can be used in PE piping systems according to EN 12201, provided that they have PE connections for butt fusion or electrofusion ends, including integrated material transition joints, conforming to prEN 12201-3.

NOTE 1 For valves or valve bodies intended for drainage and sewerage under pressure, additional specifications/tests could 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 are possibly not suitable for water supply for human consumption.

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

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 prEN 12201-3:2021).

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[1)];

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 prEN 12201-1:2021, 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 $d_n \leq 400$ mm.

[1)] 1 bar = 0,1 MPa = 10^5 Pa; 1 MPa = 1 N/mm^2.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 736-1:2018, *Valves - Terminology - Part 1: Definition of types of valves*

EN 736-2:2016, *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, *Plastics piping systems - Polyethylene (PE) valves - Test method for resistance to bending between supports*

prEN 12201-1:2021, *Plastics piping systems for water supply, and for drainage and sewerage under pressure - Polyethylene (PE) - Part 1: General*

prEN 12201-2:2021, *Plastics piping systems for water supply, and for drainage and sewerage under pressure - Polyethylene (PE) - Part 2: Pipes*

prEN 12201-3:2021, *Plastics piping systems for water supply, and for drainage and sewerage under pressure - Polyethylene (PE) - Part 3: Fittings*

prEN 12201-5:2021, *Plastics piping systems for water supply, and for drainage and sewerage under pressure — Polyethylene (PE) — Part 5: Fitness for purpose of the system*

EN ISO 1133-1, *Plastics - Determination of the melt mass-flow rate (MFR) and melt volume-flow rate (MVR) of thermoplastics - Part 1: Standard method (ISO 1133-1)*

EN ISO 1167-1:2006, *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 1167-4, *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 3126:2005)*

EN ISO 3127:2017, *Thermoplastics pipes - Determination of resistance to external blows - Round-the-clock method (ISO 3127:1994)*

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

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

3 Terms, definitions, symbols and abbreviations

For the purposes of this document, the terms, definitions, symbols and abbreviations given in prEN 12201-1, EN 736-1:2018, EN 736-2:2016 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1 General

3.1.1
external leaktightness
leaktightness of the body enveloping the space containing the water, with respect to the atmosphere

3.1.2
internal leaktightness
leaktightness between the inlet and the outlet of the valve, with the valve in the closed position

3.1.3
leakage
seepage of water from the valve body, or any component of the valve

3.1.4
valve body
main part of a valve which consists of an operating stop system and contains the obturator, seat(s), stem(s) or shaft(s) and packing seals and provides the terminal ends for connection to the PE pipe/fittings as applicable

3.1.5
operating device
part of a valve for connection with the operating key which allows the opening and closing of the valve

3.2 Terms relating to design

3.2.1
isolating valve
valve intended for use only in the closed or fully open position

[SOURCE: EN 736-1:2018]

3.2.2
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

[SOURCE: EN 736-3:2008]

3.2.3
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

[SOURCE: EN 736-3:2008]

3.2.4
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

[SOURCE: EN 736-3:2008]

4 Material

4.1 Compound for the valve body

The PE compound from which the body of the valve, with spigot end or electrofusion socket is made shall conform to prEN 12201-1:2021.

The PE components of the valve shall only be made from virgin material conforming to prEN 12201-1:2021.

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 applied in cases where suitable European Standard(s) do not exist, fitness for purpose of the components shall 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 environments as the other elements of the piping system, and shall have an expected lifetime under the following conditions at least equal to that of the PE pipes conforming to prEN 12201-2:2021, 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. Reworked materials shall not be used for stress bearing polymeric parts.

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

The valve manufacturer shall ensure that any transition joint between polyethylene and non-polyethylene parts and the valve body shall fulfil the requirements of prEN 12201-3:2021.

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