



SLOVENSKI STANDARD

SIST EN 12201-5:2011

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Nadomešča:

SIST EN 12201-5:2003

SIST EN 13244-5:2003

Cevni sistemi iz polimernih materialov za oskrbo z vodo in za odvodnjavanje in kanalizacijo pod tlakom - Polietilen (PE) - 5. del: Ustrežanje zahtevam za uporabnost sistema

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

Kunststoff-Rohrleitungssysteme für die Wasserversorgung und für Entwässerungs- und Abwasserdruckleitungen - Polyethylen (PE) - Teil 5: Gebrauchstauglichkeit des Systems

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Systèmes de canalisations en plastique pour l'alimentation en eau et pour branchements et les collecteurs d'assainissement avec pression - Polyéthylène (PE) - Partie 5 : Aptitude à l'emploi du système

Ta slovenski standard je istoveten z: EN 12201-5:2011

ICS:

23.040.20	Cevi iz polimernih materialov	Plastics pipes
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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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 12201-5

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English Version

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

Systèmes de canalisations en plastique pour l'alimentation
en eau et pour branchements et les collecteurs
d'assainissement avec pression - Polyéthylène (PE) -
Partie 5 : Aptitude à l'emploi du système

Kunststoff-Rohrleitungssysteme für die Wasserversorgung
und für Entwässerungs- und Abwasserdruckleitungen -
Polyethylen (PE) - Teil 5: Gebrauchstauglichkeit des
Systems

This European Standard was approved by CEN on 8 July 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 and United Kingdom.



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Foreword

This document (EN 12201-5:2011) has been prepared by Technical Committee CEN/TC 155 "Plastics piping systems and ducting systems", the secretariat of which is held by NEN.

This 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 March 2012, and conflicting national standards shall be withdrawn at the latest by March 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 12201-5:2003, EN 13244-5:2002.

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).

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.

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

In this revision, technical changes to this document primarily reflect technical changes made to other parts of EN 12201 and updates of test methods.

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 and the United Kingdom.

EN 12201-5:2011 (E)**Introduction**

The System Standard, of which this is Part 5, specifies the requirements for a piping system and its components when made from polyethylene (PE).

It 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 (all parts):

- a) this 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/EEC) 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 M136 which will contain formal references to the applicable requirements. Until such amendments, the current national regulations remain applicable.

Requirements and test methods for components of the piping system are specified in EN 12201-1, EN 12201-2, EN 12201-3 and prEN 12201-4:2011. CEN/TS 12201-7 [1] gives guidance for the assessment of conformity.

This Part of EN 12201 covers the characteristics of the fitness for purpose of the system.

1 Scope

This Part of EN 12201 specifies the characteristics of the fitness for purpose of the assembled piping systems intended for the conveyance of water intended for human consumption, raw water prior to treatment, drainage and sewerage under pressure, vacuum sewer systems, and water for other purposes.

It also specifies the method of preparation of test piece joints, and the tests to be carried out on these joints for assessing the fitness for purpose of the system under normal and extreme conditions.

NOTE 1 For PE components intended for the conveyance of water for human consumption and raw water prior to treatment attention is drawn to the introduction of this part of EN 12201. 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 standard.

In conjunction with Parts 1 to 4 of EN 12201 it is applicable to PE pipes, fittings, valves, their joints and to joints with components of 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 2 For applications operating at constant temperatures greater than 20 °C up to 40 °C, see Annex A of EN 12201-1:2011.

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

NOTE 3 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.

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 712, *Thermoplastics piping systems — End-load-bearing mechanical joints between pressure pipes and fittings — Test method for resistance to pull-out under constant longitudinal force*

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*

1) 1 bar = 10⁵ N/m².

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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 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*

prEN 12201-4:2011, *Plastics piping systems for water supply, and for drainage and sewerage under pressure — Polyethylene (PE) — Part 4: Valves for water supply systems*

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)*

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 1167-4:2007)*

ISO 11413:2008, *Plastics pipes and fittings — Preparation of test piece assemblies between a polyethylene (PE) pipe and an electrofusion fitting*

ISO 11414:2009, *Plastics pipes and fittings — Preparation of polyethylene (PE) pipe/pipe or pipe/fitting test piece assemblies by butt fusion*

ISO 13953, *Polyethylene (PE) pipes and fittings — Determination of the tensile strength and failure mode of test pieces from a butt-fused joint*

ISO 13954, *Plastics pipes and fittings — Peel decohesion test for polyethylene (PE) electrofusion assemblies of nominal outside diameter greater than or equal to 90 mm*

ISO 13955, *Plastics pipes and fittings — Crushing decohesion test for polyethylene (PE) electrofusion assemblies*

ISO 13956, *Plastics pipes and fittings — Decohesion test of polyethylene (PE) saddle fusion joints — Evaluation of ductility of fusion joint interface by tear test*

ISO 14236:2000, *Plastics pipes and fittings — Mechanical-joint compression fittings for use with polyethylene pressure pipes in water supply systems*

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 apply.

4 Fitness for purpose of the system

4.1 Method of preparation of assemblies for testing

4.1.1 General

The joints shall be made by using pipes conforming to EN 12201-2, fittings conforming to EN 12201-3 or valves conforming to prEN 12201-4:2011.

Test pieces for pressure tests shall be closed with pressure-tight, end-load-bearing end caps, plugs or flanges which shall be provided with connections for the entry of water and release of air.

Butt fusion and electrofusion joints are applicable for components in PE 100 and PE 80 materials. Pipes in PE 40 materials are joined using mechanical fittings only.

The peelable layer of peelable layer pipe shall be removed in the area of the joint prior to jointing.

4.1.2 Butt fusion joints

PE pipes, spigot end fittings and valves intended to be used for jointing by butt fusion shall be prepared and assembled in accordance with ISO 11414:2009. The conditions for the preparation of the joints are given in 4.2.2.1 for the assessment of fitness for purpose under normal conditions and in 4.2.2.2 for the assessment of fitness for purpose under extreme conditions.

4.1.3 Electrofusion joints

PE pipes, fittings and valves intended to be used for jointing by electrofusion shall be prepared and assembled in accordance with ISO 11413:2008. The conditions for the preparation of the joints are given in 4.2.3.1 for the assessment of fitness for purpose under normal conditions and in 4.2.3.2 for the assessment of fitness for purpose under extreme conditions.

For joints with electrofusion saddle fittings, the electrofusion saddle fitting shall be fused to the pipe, while it is pressurized to the allowable maximum operating pressure. The pipe shall be cut immediately after the manufacturer prescribed cooling time has elapsed.

NOTE These joints with electrofusion saddle fitting should be prepared taking into consideration national safety regulations.

For straight equal electrofusion socket fittings (couplers) test joints on selected diameters out of the product range shall be prepared with a gap of $0,05d$ between the pipe end and the maximum theoretical depth of penetration of the fitting, where for diameters greater than 225 mm, the adjoining pipes shall be arranged to provide the maximum angular deflection possible for the fitting, limited to $1,5^\circ$.

4.1.4 Mechanical joints

For mechanical joints the assembly of the PE pipe and the fitting shall be prepared in accordance with ISO 14236:2000, as applicable.

4.2 Requirements for fitness for purpose

4.2.1 General

When tested in accordance with the test methods as specified in Table 5 using the indicated parameters, fittings shall have mechanical characteristics conforming to the requirements given in Table 5, as applicable to the following types of joints:

- (A) electrofusion socket joints;
- (B) electrofusion saddle joints;
- (C) spigot end joints.