

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

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NATIONAL FOREWORD

See Eesti standard EVS-EN 12201-2:2011+A1:2013 sisaldab Euroopa standardi EN 12201-2:2011+A1:2013 ingliskeelset teksti.	This Estonian standard EVS-EN 12201-2:2011+A1:2013 consists of the English text of the European standard EN 12201-2:2011+A1:2013.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
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English Version

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

Systèmes de canalisations en plastique pour l'alimentation en eau et pour les branchements et les collecteurs d'assainissement avec pression - Polyéthylène (PE) - Partie 2 : Tubes

Kunststoff-Rohrleitungssysteme für die Wasserversorgung und für Entwässerungs- und Abwasserdruckleitungen - Polyethylen (PE) - Teil 2: Rohre

This European Standard was approved by CEN on 8 July 2011 and includes Amendment 1 approved by CEN on 12 August 2013.

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

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Foreword

This document (EN 12201-2:2011+A1:2013) 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of an identical text or by endorsement, at the latest by March 2014, and conflicting national standards shall be withdrawn at the latest by March 2014.

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 includes Amendment 1 approved by CEN on 12 August 2013.

This document supersedes A1 EN 12201-2:2011 A1.

The start and finish of text introduced or altered by amendment is indicated in the text by tags A1 A1.

A1 This document includes Amendment A1 to EN 12201-2:2011 that comprises technical changes to:

- Subclause 6.3, Wall thicknesses and their tolerances;
- Subclause 8.2, Requirements, Table 5, Physical Requirements, physical longitudinal reversion test. A1

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

In this revision, the scope of this standard includes two additional types of pipe;-

- PE pipes with co-extruded layers on either or both the outside and/or inside of the pipe as specified in Annex B, where all layers have the same MRS rating;
- PE pipes with a peelable, contiguous thermoplastics additional layer on the outside of the pipe ('coated pipe') as specified in Annex C.

In this revision, pipe diameters specified have been increased to 2 500 mm. Test methods have been updated as appropriate and in accordance with other parts of this standard.

According to the CEN/CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, 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.

Introduction

The System Standard, of which this is Part 2, 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 (all parts):

- a) this standard provides no information as to whether the product 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 material and components, other than pipes, are specified in EN 12201-1:2011, EN 12201-3:2011 [1] and prEN 12201-4:2011 [2].

Characteristics for fitness of purpose are covered in EN 12201-5:2011 and CEN/TS 12201-7 [3] gives guidance for the assessment of conformity.

This Part of EN 12201 covers the characteristics of pipes.

1 Scope

This part of EN 12201 specifies the characteristics of pipes made from polyethylene (PE 100, PE 80 and PE 40) 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 PE components intended for the conveyance of water for human consumption and raw water prior to treatment attention is drawn to 5.3 of this European Standard. Components manufactured for water for general purposes, drainage and sewerage 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 Part 1 and Parts 3 to 5 of EN 12201, it is applicable to PE pipes, 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 2 For applications operating at constant temperatures greater than 20 °C and up to 40 °C, see Annex A of EN 12201-1:2011.

NOTE 3 Pipes constructions including barrier layers are not covered by this document.

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

It covers three types of pipe:

- PE pipes (outside diameter d_n) including any identification stripes;
- PE pipes with co-extruded layers on either or both the outside and/or inside of the pipe (total outside diameter d_n) as specified in Annex B, where all layers have the same MRS rating;
- PE pipes (outside diameter d_n) with a peelable, contiguous thermoplastics additional layer on the outside of the pipe ('coated pipe') as specified in Annex C.

NOTE 4 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.

NOTE 5 Assessment of the resistance to slow crack growth of the PE pipe compound used for the manufacture of products to this document is required in accordance with Table 2 of EN 12201-1:2011.

1) 1 bar = 0,1 MPa = 10⁵ Pa; 1 MPa = 1 N/mm².

2 Normative references

^[A1] The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies. ^[A1]

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

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*

CEN/TR 15438, *Plastics piping systems – Guidance for coding of products and their intended uses*

EN ISO 1133, *Plastics — Determination of the melt mass-flow rate (MFR) and the melt volume-flow rate (MVR) of thermoplastics (ISO 1133:2005)*

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 2505, *Thermoplastics pipes – Longitudinal reversion – Test method and parameters (ISO 2505:2005)*

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

EN ISO 6259-1, *Thermoplastics pipes — Determination of tensile properties — Part 1: General test method (ISO 6259-1:1997)*

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

EN ISO 13968, *Plastics piping and ducting systems — Thermoplastics pipes — Determination of ring flexibility (ISO 13968:2008)*

ISO 4433-1:1997, *Thermoplastics pipes — Resistance to liquid chemicals — Classification — Part 1: Immersion test method*

ISO 4433-2:1997, *Thermoplastics pipes — Resistance to liquid chemicals — Classification — Part 2: Polyolefin pipes*

ISO 6259-3:1997, *Thermoplastics pipes — Determination of tensile properties — Part 3: Polyolefin pipes*

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 apply.