



BSI Standards Publication

Plastics piping systems for water supply, and for drains and sewers under pressure — Polyethylene (PE)

Part 2: Pipes

National foreword

This British Standard is the UK implementation of EN 12201-2:2024. It supersedes BS EN 12201-2:2011+A1:2013, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee PRI/88/2, Plastics piping for pressure applications.

A list of organizations represented on this committee can be obtained on request to its committee manager.

The UK committee gives the following advice concerning the selection and installation of piping systems and components conforming to the requirements of this standard.

- 1) There are no Harmonized European Standards under the EU Construction Products Regulations or UK designated standards. It is currently not possible to apply CE marking or UKCA marking to pipes and fittings to the requirements of this standard. For further details, see: www.bpfpipesgroup.com/technical-information/position-statements.
- 2) Where pipes and fittings conforming to the requirements of this standard are intended to be used by a water undertaker to convey drinking water, guidance on the approval of products relating to use in England and Wales, Scotland and Northern Ireland can be found as below.
 - a) England and Wales: www.dwi.gov.uk.
 - b) Scotland: www.dwqr.scot.
 - c) Northern Ireland: www.daera-ni-gov.uk.
- 3) For colour, attention is drawn to Subclause 6.2. In the UK, pipes for water for human consumption are coloured blue for identification when buried, as documented in the Civil Engineering Specification for the Water Industry (CESWI). Pipes installed above ground for water for human consumption are coloured black to provide resistance to the effects of ultraviolet light.
- 4) For minimum wall thickness, the standard specifies 2,0 mm, 2,3 mm or 3,0 mm (Table 2, footnote c). UK established practice is to use a minimum of 2,3 mm for practical reasons when jointing.
- 5) The requirements for rapid crack propagation (RCP) are specified in BS EN 12201-1:2024, Table 2. The pipe compound is to be tested in pipe form in accordance with BS ISO 13477:2008. The critical pressure p_c is equal to or greater than the allowable operating pressure (PFA), i.e. 8,0 MPa for SDR 11 PE 80 and 10,0 MPa for SDR 11 PE 100.
- 6) The requirements for slow crack growth (SCG) are specified in Table 3. The pipe compound is to be tested in pipe form in accordance with BS EN ISO 13479:2022 with a minimum test period of 500 h. In the UK, the established practice is a minimum test period of 1000 h.
- 7) Equipment and procedures for fusion jointing of polyethylene pipes conforming to the requirements of BS EN 12201-2:2024 and fittings conforming to the requirements of BS EN 12201-3:2024 are specified in Water Industry Specification (WIS) 4-32-03, *Specification for the fusion jointing of polyethylene pressure pipeline systems using PE80*.

and PE100 materials, accessible from: <https://standards-board.water.org.uk/wis-ign>.

- 8) Where squeeze off is recommended by pipe manufacturers as a technique to temporarily stop the flow of fluid, it is important that pipe meets all the hydrostatic strength requirements of this standard after being subjected to squeeze off. The manufacturer is encouraged to make any specific guidance, including the range of pipe sizes and standard dimension ratios (SDRs), as well as any need to remove the peelable layer prior to squeeze off, available.

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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 10 December 2023.

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European foreword

This document (EN 12201-2:2024) 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 July 2024, and conflicting national standards shall be withdrawn at the latest by July 2024.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 12201-2:2011+A1:2013.

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 drains and sewers under pressure — Polyethylene (PE) — Part 1: General*;
- EN 12201-2, *Plastics piping systems for water supply, and for drains and sewers under pressure — Polyethylene (PE) — Part 2: Pipes* (this document);
- EN 12201-3, *Plastics piping systems for water supply, and for drains and sewers under pressure — Polyethylene (PE) — Part 3: Fittings*;
- EN 12201-4, *Plastics piping systems for water supply, and for drains and sewers under pressure — Polyethylene (PE) — Part 4: Valves for water supply systems*;
- EN 12201-5, *Plastics piping systems for water supply, and for drains and sewers 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, and for drainage and sewerage under pressure — Polyethylene (PE) — Part 7: Guidance for the assessment of conformity*.

The revision of this System Standard has been carried out to add the PE 100-RC type materials with enhanced resistance to slow crack growth. EN 12201-1:2024, Annex C, discusses the performance of this type of material and gives additional information for non-conventional installation techniques. The size range has been increased to 3 000 mm diameter, test methods have been updated, and new test methods have been added for PE 100-RC materials.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

Introduction

This document specifies the requirements for a piping system and its components 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, drains and sewers 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:

- this document provides no information as to whether the product may be used without restriction in any of the Member States of the EU or EFTA.

NOTE Attention is drawn to the presence of national regulations and testing arrangements in relation to products intended for use in water supply to ensure fitness for contact with drinking water.

Requirements and test methods for material and components, other than pipes, are specified in EN 12201-1, EN 12201-3 [1] and EN 12201-4 [2].

Characteristics for fitness of purpose of the system are covered in EN 12201-5. 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 document specifies the characteristics of pipes made from polyethylene (PE) for buried and above ground applications, intended for the conveyance of water for human consumption, raw water prior to treatment, drains and sewers under pressure, vacuum sewer systems, and water for other purposes, with the exception of industrial application.

NOTE 1 For PE components intended for the conveyance of water for human consumption and raw water prior to treatment, attention is drawn to 6.3 of this document. Components manufactured for water for general purposes, drains and sewers, and vacuum sewer systems are possibly not suitable for water supply for human consumption.

NOTE 2 Industrial application is covered by EN ISO 15494 [4].

The intended uses include sea outfalls, laid in water and pipes suspended below bridges.

For use in contaminated soils special consideration is taken for pipes intended for the transport of water intended for human consumption or raw water prior to treatment.

NOTE 3 Pipes constructions including barrier layers are not covered by this document. ISO 21004 provides an alternative solution for use in contaminated soils [10].

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

In conjunction with EN 12201-1, EN 12201-3, EN 12201-4 and EN 12201-5, this document is applicable to PE pipes, fitting and valves, their joints and 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.

NOTE 4 For applications operating at constant temperatures greater than 20 °C and up to and including 50 °C, see EN 12201-1:2024, Annex A.

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

This document is applicable to three types of pipes:

- 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 PE layers have the same MRS rating;
- PE pipes (outside diameter d_n) with a peelable and contiguous thermoplastics additional layer on the outside of the pipe ("coated pipe") as specified in Annex C.

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.

NOTE 6 Assessment of the resistance to slow crack growth of the PE pipe compound used for the manufacture of products conforming to this document is required in accordance with EN 12201-1:2024, Table 2.

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