



SLOVENSKI STANDARD

oSIST prEN 1555-4:2019

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Cevni sistemi iz polimernih materialov za oskrbo s plinastimi gorivi - Polietilen (PE) - 4. del: Ventili

Plastics piping systems for the supply of gaseous fuels - Polyethylene (PE) - Part 4: Valves

Kunststoff-Rohrleitungssysteme für die Gasversorgung - Polyethylen (PE) - Teil 4: Armaturen

Systèmes de canalisations en plastique pour la distribution de combustibles gazeux - Polyéthylène (PE) - Partie 4 : Robinets

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Plastics piping systems for the supply of gaseous fuels - Polyethylene (PE) - Part 4: Valves

Systèmes de canalisations en plastique pour la
distribution de combustibles gazeux - Polyéthylène
(PE) - Partie 4 : Robinets

Kunststoff-Rohrleitungssysteme für die Gasversorgung
- Polyethylen (PE) - Teil 4: Armaturen

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

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prEN 1555-4:2019 (E)**European foreword**

This document (prEN 1555-4:2019) 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 is currently submitted to the CEN Enquiry.

This document will supersede EN 1555-4:2011.

It has been prepared in liaison with Technical Committee CEN/TC 234 “Gas infrastructure”.

System Standards are based on the results of the work 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 1555 consists of the following parts:

- EN 1555-1, *Plastics piping systems for the supply of gaseous fuels – Polyethylene (PE) – Part 1: General*;
- EN 1555-2, *Plastics piping systems for the supply of gaseous fuels – Polyethylene (PE) – Part 2: Pipes*;
- EN 1555-3, *Plastics piping systems for the supply of gaseous fuels – Polyethylene (PE) – Part 3: Fittings*;
- EN 1555-4, *Plastics piping systems for the supply of gaseous fuels – Polyethylene (PE) – Part 4: Valves (this standard)*;
- EN 1555-5, *Plastics piping systems for the supply of gaseous fuels – Polyethylene (PE) – Part 5: Fitness for purpose of the system*;
- CEN/TS 1555-7, *Plastics piping systems for the supply of gaseous fuels – Polyethylene (PE) – Part 7: Guidance for the assessment of conformity*.

NOTE EN 12007-2:2012 [3] prepared by CEN/TC 234 “Gas infrastructure” deals with the recommended practice for installation of plastics pipes system in accordance with EN 1555 (all parts).

Introduction

This document, specifies the requirements for a piping system and its components made from polyethylene (PE) and which is intended to be used for the supply of gaseous fuels.

Requirements and test methods for material and components, other than valves, are specified in prEN 1555-1:2019, prEN 1555-2:2019 and prEN 1555-3:2019.

Characteristics for fitness for purpose are covered in prEN 1555-5:2019. CEN/TS 1555-7:2019 [2] gives guidance for assessment of conformity. Recommended practice for installation is given in EN 12007-2:2012 [3] prepared by CEN/TC 234.

This part of EN 1555 covers the characteristics of valves.

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prEN 1555-4:2019 (E)**1 Scope**

This document specifies the characteristics of valves made from polyethylene (PE) for piping systems in the field of the supply of gaseous fuels.

It is applicable to unidirectional and bi-directional valves with spigot end or electrofusion socket intended to be fused with PE pipes or fittings conforming to EN 1555-2 and EN 1555-3 respectively.

The PE spigot or electrofusion ends for valves made of material other than polyethylene is intended to be in accordance with EN 1555-3.

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

In conjunction with Parts 1, 2, 3 and 5 of EN 1555, 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) a maximum operating pressure, MOP, up to and including 10 bar ^{1 2};

For the purpose of this document and the references to EN 28233, MOP is considered to be nominal pressure.

- b) an operating temperature of 20 °C as reference temperature;

NOTE 1 For other operating temperatures, derating coefficients can be used, see EN 1555-5.

- c) an operating temperature between -20 °C and +40 °C.

EN 1555 (all parts) covers a range of maximum operating pressures and gives requirements concerning colours and additives.

NOTE 2 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 regulations and installation practices or codes.

This document covers valve bodies designed for connection with pipes with a nominal outside diameter $dn \leq 400$ mm.

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 682, *Elastomeric Seals — Materials requirements for seals used in pipes and fittings carrying gas and hydrocarbon fluids*

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*

prEN 1555-1:2019, *Plastics piping systems for the supply of gaseous fuels — Polyethylene (PE) — Part 1: General*

prEN 1555-2:2019, *Plastics piping systems for the supply of gaseous fuels — Polyethylene (PE) — Part 2: Pipes*

prEN 1555-3:2019, *Plastics piping systems for the supply of gaseous fuels — Polyethylene (PE) — Part 3: Fittings*

¹ 1 bar = 0,1 MPa.

prEN 1555-5:2019, *Plastics piping systems for the supply of gaseous fuels — Polyethylene (PE) — Part 5: Fitness for purpose of the system*

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 1704, *Plastics piping systems — Thermoplastics valves — Test method for the integrity of a valve after temperature cycling under bending*

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*

EN 12119, *Plastics piping systems — Polyethylene (PE) valves — Test method for resistance to thermal cycling*

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

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

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

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

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)*

EN ISO 17778, *Plastics piping systems — Fittings, valves and ancillaries — Determination of gaseous flow rate/pressure drop relationships (ISO 17778)*

3 Terms and definitions, symbols and abbreviations

For the purposes of this document, the terms and definitions, symbols and abbreviations given in prEN 1555-1:2019, EN 736-1:2018, EN 736-2:2016 and the following apply.

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1 General

3.1.1

external leaktightness

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

prEN 1555-4:2019 (E)**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**leaktightness test**

test for both of the following characteristics:

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

3.1.4**initiating torque**

torque required to initiate movement of the obturator

3.1.5**running torque**

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

3.1.6**leakage**

emission of gas from a valve body, or any component of a valve

3.1.7**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

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3.1.8**operating device**

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

3.2 Terms relating to design**3.2.1****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

[SOURCE: EN 736-3:2008]

3.2.2**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

[SOURCE: EN 736-3:2008]

3.2.3**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

[SOURCE: EN 736-3:2008]

4 Material

4.1 PE compound

The PE compound from which the valve body with spigot or electrofusion socket is made shall conform to prEN 1555-1:2019. The PE components of the valve shall be made only from virgin material conforming to prEN 1555-1:2019.

4.2 Material for non-polyethylene parts

4.2.1 General

The materials and the constituent elements used in making the valve (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 a life expectancy at least equal to that of the PE pipes conforming to prEN 1555-2:2019, with which they are intended to be used, under the following conditions:

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

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

Reprocessed 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 pipe performance or initiate stress cracking.

4.2.2 Metal parts

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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 682.

Other sealing materials are permitted if proven suitable for gas service.

4.2.4 Greases and lubricants

Greases or lubricants shall not affect the long term performance of the PE valve or valve body and shall not exude onto fusion areas.

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 or other surface defects to an extent that would prevent conformity to this document.

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 valves to this document.