SLOVENSKI STANDARD
SIST EN 1555-4:2021

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Nadomešča:
SIST EN 1555-4:2011

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

Ta slovenski standard je istoveten z: **EN 1555-4:2021**

ICS:

83.140.30	Polimerne cevi in fitingi za snovi, ki niso tekočine	Plastics pipes and fittings for non fluid use
91.140.40	Sistemi za oskrbo s plinom	Gas supply systems

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EUROPEAN STANDARD

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English Version

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 European Standard was approved by CEN on 7 June 2021.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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Contents

Page

European foreword

This document (EN 1555-4:2021) has been prepared by Technical Committee CEN/TC 155 “Plastics piping systems and ducting systems”, the secretariat of which is held by NEN.

This 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of an identical text or by endorsement, at the latest by January 2022, and conflicting national standards shall be withdrawn at the latest by January 2022.

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 1555-4:2011.

In comparison with the previous version, the following technical modifications have been introduced:

— PE 100-RC type materials with enhanced resistance to slow crack growth have been added.

— Annex A in EN 1555-1:2021 now 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 the withdrawal of ISO 10933.

— Test methods have been updated.

— A new method has been added for PE 100-RC materials.

This document 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 [1] 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).

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, Turkey and the United Kingdom.

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 EN 1555-1:2021, EN 1555-2:2021 and EN 1555-3:2021.

Characteristics for fitness for purpose are covered in EN 1555-5:2021. CEN/TS 1555-7 [2] gives guidance for assessment of conformity. Recommended practice for installation is given in EN 12007-2:2012 [1] prepared by CEN/TC 234.

This part of EN 1555 covers the characteristics of valves.

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 isolating unidirectional and bi-directional valves with spigot ends or electrofusion sockets intended to be fused with PE pipes or fittings conforming to EN 1555-2:2021 and EN 1555-3:2021 respectively.

Valves made from materials other than PE, designed for the supply of gaseous fuels conforming to the relevant standards can be used in PE piping systems according to EN 1555 (all parts), provided that they have PE connections for butt fusion or electrofusion ends, including integrated material transition joints, conforming to EN 1555-3:2021.

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] at a reference temperature of 20 °C for design purposes;

NOTE 1 For the purpose of this document and the references to EN ISO 8233[2], MOP is considered to be nominal pressure.

b) an operating temperature between −20 °C to 40 °C.

NOTE 2 For operating temperatures between 20 °C and 40 °C, derating coefficients are defined in EN 1555-5.

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

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 regulations and installation practices or codes.

This document covers valve bodies designed for connection with pipes with a nominal outside diameter $d_n \leq 400$ 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*

EN 736-3:2008, *Valves - Terminology - Part 3: Definition of terms*

EN 1555-1:2021, *Plastics piping systems for the supply of gaseous fuels - Polyethylene (PE) - Part 1: General*

EN 1555-2:2021, *Plastics piping systems for the supply of gaseous fuels - Polyethylene (PE) - Part 2: Pipes*

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

EN 1555-3:2021, *Plastics piping systems for the supply of gaseous fuels - Polyethylene (PE) - Part 3: Fittings*

EN 1555-5:2021, *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 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 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 8233[2], *Thermoplastic valves - Torque - Test method (ISO/FDIS 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)*

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

[2] Under preparation. Stage at the time of publication: FprEN ISO 8233:2021.

3 Terms and definitions

For the purposes of this document, the terms and definitions, symbols and abbreviations given in EN 1555-1:2021, 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:

- IEC Electropedia: available at https://www.electropedia.org/
- ISO Online browsing platform: available at https://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

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