



# SLOVENSKI STANDARD SIST EN 1555-5:2021

01-september-2021

Nadomešča:  
SIST EN 1555-5:2010

---

## Cevni sistemi iz polimernih materialov za oskrbo s plinastimi gorivi - Polietilen (PE) - 5. del: Ustreznost sistema namenu

Plastics piping systems for the supply of gaseous fuels - Polyethylene (PE) - Part 5: Fitness for purpose of the system

Kunststoff-Rohrleitungssysteme für die Gasversorgung - Polyethylen (PE) - Teil 5: Gebrauchstauglichkeit des Systems

Systèmes de canalisations en plastique pour la distribution de combustibles gazeux - Polyéthylène (PE) - Partie 5 : Aptitude à l'emploi du système

<https://standards.iteh.ai/catalog/standards/sist/2021-01-01/def-4758-adbb-939cc8ff5689/sist-en-1555-5-2021>

Ta slovenski standard je istoveten z: EN 1555-5:2021

---

### ICS:

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

SIST EN 1555-5:2021

en,fr,de

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[SIST EN 1555-5:2021](#)

<https://standards.iteh.ai/catalog/standards/sist/261c17d7-cdef-4758-adbb-939cc8ff5689/sist-en-1555-5-2021>

EUROPEAN STANDARD

EN 1555-5

NORME EUROPÉENNE

EUROPÄISCHE NORM

July 2021

ICS 23.040.01

Supersedes EN 1555-5:2010

English Version

## Plastics piping systems for the supply of gaseous fuels - Polyethylene (PE) - Part 5: Fitness for purpose of the system

Systèmes de canalisations en plastique pour la  
distribution de combustibles gazeux - Polyéthylène  
(PE) - Partie 5 : Aptitude à l'emploi du système

Kunststoff-Rohrleitungssysteme für die Gasversorgung  
- Polyethylen (PE) - Teil 5: Gebrauchstauglichkeit des  
Systems

This European Standard was approved by CEN on 7 June 2021.

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.

**iTeh STANDARD PREVIEW**

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, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

<b>Contents</b>	<b>Page</b>
<b>European foreword</b> .....	<b>3</b>
<b>Introduction</b> .....	<b>5</b>
<b>1 Scope</b> .....	<b>6</b>
<b>2 Normative references</b> .....	<b>6</b>
<b>3 Terms and definitions</b> .....	<b>7</b>
<b>4 Symbols and abbreviations</b> .....	<b>7</b>
<b>5 Fitness for purpose</b> .....	<b>7</b>
<b>5.1 Method of preparation of assemblies for testing</b> .....	<b>7</b>
<b>5.1.1 General</b> .....	<b>7</b>
<b>5.1.2 Butt fusion joints</b> .....	<b>8</b>
<b>5.1.3 Electrofusion jointing</b> .....	<b>8</b>
<b>5.1.4 Mechanical joints</b> .....	<b>8</b>
<b>5.2 Requirements for fitness for purpose</b> .....	<b>8</b>
<b>5.2.1 General</b> .....	<b>8</b>
<b>5.2.2 Fitness for purpose of butt fusion joints</b> .....	<b>9</b>
<b>5.2.3 Fitness for purpose for electrofusion joints</b> .....	<b>10</b>
<b>5.2.4 Fitness for purpose for mechanical joints</b> .....	<b>11</b>
<b>5.3 Conditioning</b> .....	<b>11</b>
<b>5.4 Requirements</b> .....	<b>11</b>
<b>5.5 Testing of pipe with coextruded layers</b> .....	<b>13</b>
<b>6 Design coefficient</b> .....	<b>13</b>
<b>Annex A (informative) Derating coefficients for operating temperatures</b> .....	<b>14</b>
<b>Annex B (normative) Rapid crack propagation (RCP) resistance of pipe at temperature less than 0 °C</b> .....	<b>15</b>
<b>Bibliography</b> .....	<b>16</b>

## European foreword

This document (EN 1555-5:2021) 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 1555-5:2010.

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.
- Test methods have been updated.

System Standards are supported by separate standards on test methods to which references are made throughout the System Standard. [standards.iteh.ai](https://standards.iteh.ai/)

The System Standards are consistent with general standards on functional requirements and on recommended practice for installation. [SIST EN 1555-5:2021](https://standards.iteh.ai/catalog/standards/sist/261c17d7-cdef-4758-adbb-939cc8ff5689/sist-en-1555-5-2021)

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*;
- EN 1555-5, *Plastics piping systems for the supply of gaseous fuels — Polyethylene (PE) — Part 5: Fitness for purpose of the system (this standard)*;
- CEN/TS 1555-7, *Plastics piping systems for the supply of gaseous fuels — Polyethylene (PE) — Part 7: Guidance for 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.

**EN 1555-5:2021 (E)**

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.

**iTeh STANDARD PREVIEW  
(standards.iteh.ai)**

[SIST EN 1555-5:2021](https://standards.iteh.ai/catalog/standards/sist/261c17d7-cdef-4758-adbb-939cc8ff5689/sist-en-1555-5-2021)

<https://standards.iteh.ai/catalog/standards/sist/261c17d7-cdef-4758-adbb-939cc8ff5689/sist-en-1555-5-2021>

## Introduction

This document specifies the requirements of 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 are specified in EN 1555-1:2021, EN 1555-2:2021, EN 1555-3:2021 and EN 1555-4:2021.

CEN/TS 1555-7 [2] gives guidance for assessment of conformity. Recommended practice for installation is given in EN 12007-2 [1] prepared by CEN/TC 234.

This part of EN 1555 covers the characteristics of fitness for purpose of the system.

## iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST EN 1555-5:2021](https://standards.iteh.ai/catalog/standards/sist/261c17d7-cdef-4758-adbb-939cc8ff5689/sist-en-1555-5-2021)

<https://standards.iteh.ai/catalog/standards/sist/261c17d7-cdef-4758-adbb-939cc8ff5689/sist-en-1555-5-2021>

**EN 1555-5:2021 (E)****1 Scope**

This document specifies the requirements of fitness for purpose of the polyethylene (PE) piping system in the field of the supply of gaseous fuels.

It specifies the requirements for electrofusion, butt fusion and mechanical joints.

It 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.

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

NOTE 1 This document is intended only to be used by the product manufacturer to assess the performance of components according to EN 1555-2, EN 1555-3:2021, and EN 1555-4:2021 when joined together under normal and extreme conditions in accordance with this document. It is not intended for on-site testing of pipe systems.

In conjunction with Parts 1 to 4 of EN 1555, 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) a maximum operating pressure, MOP, up to and including 10 bar<sup>1</sup> at a reference temperature of 20 °C for design purposes;
- b) an operating temperature between – 20 °C and 40 °C.

NOTE 2 For other operating temperatures between 20 °C and 40 °C, derating coefficients are defined in Annex A.

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

**STANDARD PREVIEW**  
(standards.iteh.ai)

**2 Normative references**

SIST EN 1555-5:2021

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 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*

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

EN 1555-4:2021, *Plastics piping systems for the supply of gaseous fuels - Polyethylene (PE) - Part 4: Valves*

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 1167-2, *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)*

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 13477, *Thermoplastics pipes for the conveyance of fluids - Determination of resistance to rapid crack propagation (RCP) - Small-scale steady-state test (S4 test) (ISO 13477)*

<sup>1</sup> 1 bar = 0,1 MPa = 10<sup>5</sup> Pa; 1 MPa = 1 N/mm<sup>2</sup>.



EN ISO 13478, *Thermoplastics pipes for the conveyance of fluids - Determination of resistance to rapid crack propagation (RCP) - Full-scale test (FST) (ISO 13478)*

ISO 11413:2019, *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 17885, *Plastics piping systems - Mechanical fittings for pressure piping systems - Specifications*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions, symbols and abbreviations given in EN 1555-1:2021 and EN 1555-3:2021, and the following definition 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>

### 4 Symbols and abbreviations

For the purpose of this document the symbols and abbreviations given in EN 1555-1:2021 apply.

### 5 Fitness for purpose

#### 5.1 Method of preparation of assemblies for testing

##### 5.1.1 General

The joints shall be made by using pipes conforming to EN 1555-2, fittings conforming to EN 1555-3:2021 or valves conforming to EN 1555-4:2021.

Test pieces for pressure test 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.

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

**EN 1555-5:2021 (E)****5.1.2 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. The conditions for the preparation of the joints are given in 5.2.2.1 for the assessment of fitness for purpose under normal conditions and in 5.2.2.2 for the assessment of fitness for purpose under extreme conditions.

**5.1.3 Electrofusion jointing**

PE pipes, fittings and valves intended to be used for jointing by electrofusion shall be prepared and assembled in accordance with ISO 11413. The conditions for the preparation of the joints are given in 5.2.3.1 for the assessment of fitness for purpose under normal conditions and in 5.2.3.2 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 pneumatically 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 are expected to take national safety regulations into consideration when being prepared.

For electrofusion coupler test joints on selected diameters out of the product range shall be prepared with a gap of  $0,05d_n$  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  $1,5^\circ$ .

**5.1.4 Mechanical joints**

For mechanical joints the assembly of the PE pipe and the fitting shall be prepared in accordance with ISO 17885.

**5.2 Requirements for fitness for purpose****5.2.1 General**

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

- (A) electrofusion socket fittings;
- (B) electrofusion saddle fitting;
- (C) spigot end fitting;
- (D) pipes.