



**SLOVENSKI STANDARD**  
**oSIST prEN 1555-2:2019**

**01-december-2019**

---

**Cevni sistemi iz polimernih materialov za oskrbo s plinastimi gorivi - Polietilen (PE) - 2. del: Cevi**

Plastics piping systems for the supply of gaseous fuels - Polyethylene (PE) - Part 2: Pipes

Kunststoff-Rohrleitungssysteme für die Gasversorgung - Polyethylen (PE) - Teil 2: Rohre

Systèmes de canalisations en plastique pour la distribution de combustibles gazeux - Polyéthylène (PE) - Partie 2 : Tubes

**Ta slovenski standard je istoveten z: prEN 1555-2**

SIST EN 1555-2:2021

<https://standards.iteh.ai/catalog/standards/sist/327506ae-df73-4dea-83f9-5d8930a64106/sist-en-1555-2-2021>

**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

**oSIST prEN 1555-2:2019**

**en,fr,de**



EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**DRAFT**  
**prEN 1555-2**

October 2019

ICS 23.040.20

Will supersede EN 1555-2:2010

English Version

## Plastics piping systems for the supply of gaseous fuels - Polyethylene (PE) - Part 2: Pipes

Systèmes de canalisations en plastique pour la  
distribution de combustibles gazeux - Polyéthylène  
(PE) - Partie 2 : Tubes

Kunststoff-Rohrleitungssysteme für die Gasversorgung  
- Polyethylen (PE) - Teil 2: Rohre

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.

This draft European Standard was established by CEN 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.

Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

**Warning** : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.



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>4</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, symbols and abbreviations</b> .....	<b>7</b>
<b>4 Material</b> .....	<b>8</b>
<b>4.1 Compound for pipes</b> .....	<b>8</b>
<b>4.2 Compound for identification stripes</b> .....	<b>8</b>
<b>4.3 External reprocessed and recyclable material</b> .....	<b>8</b>
<b>5 General characteristics</b> .....	<b>8</b>
<b>5.1 Appearance</b> .....	<b>8</b>
<b>5.2 Colour</b> .....	<b>8</b>
<b>6 Geometrical characteristics</b> .....	<b>8</b>
<b>6.1 Measurement of dimensions</b> .....	<b>8</b>
<b>6.2 Mean outside diameters, out-of-roundness (ovality) and tolerances</b> .....	<b>9</b>
<b>6.3 Wall thicknesses and related tolerances</b> .....	<b>10</b>
<b>6.3.1 Minimum wall thicknesses</b> .....	<b>10</b>
<b>6.3.2 Tolerance on the wall thicknesses</b> .....	<b>11</b>
<b>6.3.3 Circumferential reversion of pipes with a <math>d_n</math> equal to or greater than 250 mm</b> .....	<b>13</b>
<b>6.3.4 Coiled pipe</b> .....	<b>13</b>
<b>6.3.5 Lengths</b> .....	<b>13</b>
<b>7 Mechanical characteristics</b> .....	<b>13</b>
<b>7.1 Conditioning</b> .....	<b>13</b>
<b>7.2 Requirements</b> .....	<b>13</b>
<b>7.3 Retest in case of failure at 80 °C</b> .....	<b>17</b>
<b>8 Physical characteristics</b> .....	<b>17</b>
<b>8.1 Conditioning</b> .....	<b>17</b>
<b>8.2 Requirements</b> .....	<b>17</b>
<b>9 Performance requirements</b> .....	<b>18</b>
<b>10 Marking</b> .....	<b>18</b>
<b>10.1 General</b> .....	<b>18</b>
<b>10.2 Minimum required marking</b> .....	<b>19</b>
<b>10.3 Additional marking</b> .....	<b>19</b>
<b>Annex A (normative) Pipes with co-extruded layers</b> .....	<b>20</b>
<b>A.1 General</b> .....	<b>20</b>
<b>A.2 Material</b> .....	<b>20</b>
<b>A.3 Geometrical characteristics</b> .....	<b>20</b>
<b>A.4 Mechanical characteristics</b> .....	<b>20</b>
<b>A.5 Physical characteristics</b> .....	<b>20</b>
<b>A.6 Marking</b> .....	<b>20</b>
<b>A.7 Delamination</b> .....	<b>21</b>
<b>A.8 Integrity of the structure</b> .....	<b>21</b>
<b>Annex B (normative) Pipes with peelable layer</b> .....	<b>22</b>
<b>B.1 General</b> .....	<b>22</b>

<b>B.2</b>	<b>Geometrical characteristics</b> .....	<b>22</b>
<b>B.3</b>	<b>Mechanical characteristics</b> .....	<b>22</b>
<b>B.4</b>	<b>Physical characteristics</b> .....	<b>22</b>
<b>B.5</b>	<b>Coating adhesion</b> .....	<b>22</b>
<b>B.6</b>	<b>Marking</b> .....	<b>23</b>
<b>Annex C</b>	<b>(normative) Squeeze-off technique</b> .....	<b>24</b>
<b>C.1</b>	<b>General Squeeze-off technique</b> .....	<b>24</b>
<b>C.2</b>	<b>Test method</b> .....	<b>24</b>
	<b>Bibliography</b> .....	<b>25</b>

**iTeh Standards**  
**(<https://standards.iteh.ai>)**  
**Document Preview**

[SIST EN 1555-2:2021](https://standards.iteh.ai/catalog/standards/sist/327506ac-df73-4dea-83f9-5d8930a64106/sist-en-1555-2-2021)

<https://standards.iteh.ai/catalog/standards/sist/327506ac-df73-4dea-83f9-5d8930a64106/sist-en-1555-2-2021>

**prEN 1555-2:2019 (E)****European foreword**

This document (prEN 1555-2:2019) 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 enquiry.

This document will supersede EN 1555-2:2010.

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

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

NOTE EN 12007-2:2012 [4] 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 pipes, are specified in prEN 1555-1:2019, prEN 1555-3:2019 [1] and prEN 1555-4:2019 [2].

Characteristics for fitness for purpose are covered in prEN 1555-5:2019. CEN/TS 1555-7 [3] gives guidance for assessment of conformity. Recommended practice for installation is given in EN 12007-2:2012 [4] prepared by CEN/TC 234.

This part of EN 1555 covers the characteristics of pipes.

iTeh Standards  
(<https://standards.iteh.ai>)  
Document Preview

[SIST EN 1555-2:2021](https://standards.iteh.ai/catalog/standards/sist/327506ac-df73-4dea-83f9-5d8930a64106/sist-en-1555-2-2021)

<https://standards.iteh.ai/catalog/standards/sist/327506ac-df73-4dea-83f9-5d8930a64106/sist-en-1555-2-2021>

**prEN 1555-2:2019 (E)****1 Scope**

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

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

In conjunction with Parts 1 and 3 to 5 of EN 1555, 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) a maximum operating pressure, MOP, up to and including 10 bar <sup>1</sup>;
- b) an operating temperature of 20 °C as reference temperature.

NOTE 1 For other operating temperatures, derating coefficients can be used, see prEN 1555-5:2019.

EN 1555 covers a range of maximum 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 A, where all layers have the same MRS rating;

A coextruded pipe made of a combination of PE 100 and PE 100-RC layers shall be regarded as PE 100 and marked accordingly.

- 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 B.

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.

SIST EN 1555-2:2021

**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.

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

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

EN 12106, *Plastics piping systems — Polyethylene (PE) pipes — Test method for the resistance to internal pressure after application of squeeze-off*

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)*

---

1 1 bar = 0,1 MPa.



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 1167-2, *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 2505, *Thermoplastics pipes — Longitudinal reversion — Test method and parameters (ISO 2505)*

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

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

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

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

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 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)*

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

EN ISO 13479, *Polyolefin pipes for the conveyance of fluids — Determination of resistance to crack propagation — Test method for slow crack growth on notched pipes (ISO 13479)*

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

ISO 4065, *Thermoplastics pipes — Universal wall thickness table*

ISO 13480, *Polyethylene pipes — Resistance to slow crack growth — Cone test method*

### 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 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

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

#### 3.1

##### **squeeze-off**

gas flow stopped by squeezing the pipe when compressed between two clamps in such a way that the distance between both clamps is less than twice the nominal wall thickness

Note 1 to entry: See Annex C.

**prEN 1555-2:2019 (E)****4 Material****4.1 Compound for pipes**

The pipes shall be made from virgin material or own reprocessed material from the same PE compound or a mixture of both materials. Reprocessed material from coextruded pipes or from pipes reprocessed with the peelable layer attached shall not be used. Own reprocessed material from the base pipe of peelable layer pipes can be used.

The compound(s) from which the pipes are made shall conform to prEN 1555-1:2019.

**4.2 Compound for identification stripes**

For black pipe with yellow or orange identifications stripes (see also 5.2), the compound used for these identification stripes shall be made from the same base polymer (PE) as one of the pipe compounds for which fusion compatibility has been proven, see prEN 1555-1:2019.

**4.3 External reprocessed and recyclable material**

Reprocessed material obtained from external sources and recyclable material shall not be used.

**5 General characteristics****5.1 Appearance**

When viewed without magnification, the internal and external surfaces of pipes shall be smooth and clean and shall have no scoring, cavities and other surface defects to an extent that would prevent conformity to this document.

The ends of the pipe shall be cut cleanly and square to the axis of the pipe.

**5.2 Colour**

Pipes shall be black (PE 80, PE 100 and PE 100-RC), yellow (PE 80) or orange (PE 100 and PE 100-RC). In addition, black PE 80 pipes may be identified by yellow stripes and black PE 100 and PE 100-RC pipes may be identified by yellow or orange stripes, according to national preference.

The outer coextruded layer of coextruded pipes (see Annex A) or the outer peelable layer of peelable layer pipes (see Annex B) shall be either black, yellow or orange. In addition, identification stripes may be used according to national preference.

NOTE National preference for colour can be stated in the national foreword.

**6 Geometrical characteristics****6.1 Measurement of dimensions**

The dimensions of the pipe shall be measured in accordance with EN ISO 3126, and rounded to the next 0,1 mm. In case of dispute, the measurement shall not be made less than 24 h after manufacture after being conditioned for at least 4 h at  $(23 \pm 2)$  °C.

Indirect measurement at the stage of production is allowed at shorter time periods providing evidence is shown of correlation.