SLOVENSKI STANDARD
SIST EN 1519-1:2019

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Nadomešča:
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Cevni sistemi iz polimernih materialov za nizko- in visokotemperaturne odvodne sisteme v stavbah - Polietilen (PE) - 1. del: Specifikacije za cevi, fitinge in sistem

Plastics piping systems for soil and waste discharge (low and high temperature) within the building structure - Polyethylene (PE) - Part 1: Requirements for pipes, fittings and the system

Kunststoff-Rohrleitungssysteme zum Ableiten von Abwasser (niedriger und hoher Temperatur) innerhalb der Gebäudestruktur - Polyethylen (PE) - Teil 1: Anforderungen an Rohre, Formstücke und das Rohrleitungssystem

Systèmes de canalisations en plastique pour l'évacuation des eaux-vannes et des eaux usées (à basse et à haute température) à l'intérieur de la structure des bâtiments - Polyéthylène (PE) - Partie 1 : Exigences pour tubes, raccords et le système

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23.040.01	Deli cevovodov in cevovodi na splošno	Pipeline components and pipelines in general
91.140.80	Drenažni sistemi	Drainage systems

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English Version

Plastics piping systems for soil and waste discharge (low and high temperature) within the building structure - Polyethylene (PE) - Part 1: Requirements for pipes, fittings and the system

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This European Standard was approved by CEN on 26 November 2018.

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

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Contents

Page

European foreword

This document (EN 1519-1:2019) has been prepared by Technical Committee CEN/TC 155 “Plastics piping systems and ducting systems”, the secretariat of which is held by NEN.

This 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of an identical text or by endorsement, at the latest by October 2019, and conflicting national standards shall be withdrawn at the latest by October 2019.

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 1519-1:1999.

EN 1519, *Plastics piping systems for soil and waste discharge (low and high temperature) within the building structure - Polyethylene (PE)* consists of the following parts:

— *Part 1: Specifications for pipes, fittings and the system*

— *Part 2: Guidance for the assessment of conformity (Technical Specification)*

The main changes in comparison with the previous edition are:

— updating in accordance with the new template;

— updating of normative references;

— thermal stability (OIT) requirement is made valid in general;

— utilization of non-virgin PE materials are described in the new Annex A;

— Annex B has been deleted and the relevant text has been moved to the main standard;

— a new Annex B “Product standards” has been added.

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.

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

1 Scope

This document specifies the requirements for solid-wall polyethylene (PE) pipes with smooth internal and external surfaces extruded from the same compound/formulation throughout the wall, fittings and the system for:

— soil and waste discharge applications (low and high temperature) inside buildings (application area code "B");

— soil and waste discharge applications (low and high temperature) for both inside buildings and buried in the ground within the building structure (application area code "BD").

NOTE 1 The intended use is reflected in the marking of products by "B" or "BD".

NOTE 2 For use buried in the ground within the building structure are intended only those components marked with "BD", with a nominal ring stiffness of at least SN4 for dimensions equal to or greater than 75 mm.

This document is also applicable to PE pipes and fittings and the system intended for the following purposes:

— ventilating part of the pipework in association with discharge applications;

— rainwater pipework within the building structure.

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

This document covers a range of nominal sizes, a range of pipes and fittings series and gives recommendations 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, e.g. CEN/TR 13801 [1].

NOTE 4 Pipes, fittings and other components conforming to any of the plastics product standards listed in Annex B can be used with pipes and fittings conforming to this European Standard, if applicable.

It applies to pipes and fittings, marked with "B", which are intended to be used inside buildings and outside buildings fixed onto the wall.

It applies to pipes and fittings, marked with "BD", which are intended to be used for both inside buildings and buried in the ground within the building structure.

This standard is applicable to PE pipes and fittings of the following types:

— plain-ended;

— with integral elastomeric ring seal socket;

— for butt fusion joints;

— for electrofusion joints;

— for mechanical joints

where the fittings can be manufactured by injection-moulding or can be fabricated from pipes and/or mouldings.

NOTE 5 EN 476[2] specifies the general requirements for components used in discharge pipes, drains and sewers for gravity systems. Pipes and fittings conforming to this standard fully meet these requirements.

NOTE 6 For information about the chemical resistance of PE, guidance is given in ISO/TR 10358[3] and for rubber materials in ISO/TR 7620[4].

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 681-1, *Elastomeric seals - Materials requirements for pipe joint seals used in water and drainage applications - Part 1: Vulcanized rubber*

EN 681-2, *Elastomeric Seals - Materials requirements for pipe joint seals used in water and drainage applications - Part 2: Thermoplastic elastomers*

EN 12099, *Plastics piping systems - Polyethylene piping materials and components - Determination of volatile content*

EN ISO 472, *Plastics - Vocabulary (ISO 472)*

EN ISO 580, *Plastics piping and ducting systems - Injection-moulded thermoplastics fittings - Methods for visually assessing the effects of heating (ISO 580)*

EN ISO 1043-1, *Plastics - Symbols and abbreviated terms - Part 1: Basic polymers and their special characteristics (ISO 1043-1)*

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, *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 1183-2, *Plastics - Methods for determining the density of non-cellular plastics - Part 2: Density gradient column method (ISO 1183-2)*

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 3451-1, *Plastics - Determination of ash - Part 1: General methods (ISO 3451-1)*

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

EN ISO 13254, *Thermoplastics piping systems for non-pressure applications - Test method for watertightness (ISO 13254)*

EN ISO 13255, *Thermoplastics piping systems for soil and waste discharge inside buildings - Test method for airtightness of joints (ISO 13255)*

EN ISO 13257:2018, *Thermoplastics piping systems for non-pressure applications - Test method for resistance to elevated temperature cycling (ISO 13257:2018)*

EN ISO 13259, *Thermoplastics piping systems for underground non-pressure applications - Test method for leaktightness of elastomeric sealing ring type joints (ISO 13259)*

EN ISO 13264, *Thermoplastics piping systems for non-pressure underground drainage and sewerage - Thermoplastics fittings - Test method for mechanical strength or flexibility of fabricated fittings (ISO 13264)*

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

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 472, EN ISO 1043-1 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
application area code
code used in the marking of pipes and fittings to indicate the permitted application area(s) for which they are intended as follows:

— B: application area code for components intended for use above ground inside the building, or for components outside buildings fixed onto the wall;

— D: application code for the area under and within 1 m from the building where the pipes and fittings are buried in ground and are connected to the underground drainage and sewerage system;

— BD: application area code for components intended for use for both code B and code D application areas

Note 1 to entry: In D application areas, the existence of external forces from the surroundings in addition to the hot water discharge is usual.

Note 2 to entry: Other application area codes U and UD not covered by this standard are defined elsewhere, e.g. in EN 12666-1 [5].

3.2
nominal size
3.2.1
nominal size
DN
numerical designation of the size of a component, other than a component designated by thread size, which is approximately equal to the manufacturing dimension, in millimetres

3.2.2
nominal size
DN/OD
nominal size, related to the outside diameter

3.3
nominal outside diameter
d_n
specified outside diameter, in millimetres, assigned to a nominal size DN/OD

3.4
outside diameter
d_e
value of the measurement of the outside diameter through its cross section at any point of a pipe or spigot of a fitting, rounded to the next greater 0,1 mm

3.5
mean outside diameter
d_{em}
value of the measurement of the outer circumference of a pipe or spigot of a fitting in any cross section, divided by π (≈ 3,142), rounded to the next greater 0,1

3.6
inside diameter
d_s
value of the measurement of the inside diameter through its cross section at any point of a socket, rounded to the next greater 0,1 mm

3.7
mean inside diameter of a socket
d_{sm}
arithmetical mean of a number of measurements of the inside diameter of a socket in the same cross section

3.8
wall thickness
e
value of measurement of the wall thickness at any point around the circumference of a component

3.9
mean wall thickness
e_m
arithmetical mean of a number of measurements of the wall thickness, regularly spaced around the circumference and in the same cross section of a component, including the measured minimum and the measured maximum values of the wall thickness in that cross section

3.10
pipe series
S
dimensionless number for pipe designation

Note 1 to entry: See ISO 4065.

3.11
standard dimension ratio
SDR
nominal ratio of the outside diameter, d_n, to the minimum wall thickness, e_{min}

3.12
nominal ring stiffness
SN
numerical designation of the ring stiffness of a pipe or fitting which is a convenient round number relative to the determined stiffness

3.13
fabricated fitting
fitting produced from pipe and/or from injection-moulded fittings by thermoforming or welding

3.14
solid wall pipe and fitting
pipe or fitting with smooth internal and external surface with the same compound through the wall

3.15
material definitions
3.15.1
virgin material
material in the form such as granules or powder that has not been subjected to use or processing other than that required for its manufacture and to which no reprocessed or recycled material has been added

Note 1 to entry: It is understood that the addition of additives such as stabilizers and pigments is still resulting into a virgin material.

3.15.2
own reprocessed material
material prepared from rejected unused pipes, gutters or fittings and ancillaries, including trimmings from the production of pipes or fittings, that has been reprocessed in a manufacturer's plant after having been previously processed by the same manufacturer by a process such as moulding or extrusion, and for which the complete formulation is known

3.15.3
external reprocessed material
material prepared from unused thermoplastics products regardless of where those products were manufactured

3.15.4
recycled material
material from used thermoplastic products which have been cleaned and crushed or ground

3.15.5
agreed specification
specification of the relevant material characteristics agreed between the supplier of the non-virgin material and the pipe, fitting and/or ancillary manufacturer

4 Symbols and abbreviations

4.1 Symbols

A	length of engagement
B	length of lead-in
C	depth of sealing zone
e_2	wall thickness of a socket
e_3	wall thickness in the groove area
l	effective length of a pipe
l_1	total depth electro fusion socket
l_2	width of the copper wires
l_3	length of engagement of electro fusion socket
L_1	length of spigot
R	radius of swept fittings
Z_1	design length of a fitting
Z_2	design length of a fitting
Z_3	design length of a fitting
X	stop width
α	nominal angle of a fitting

4.2 Abbreviations

MFR	melt mass-flow rate
OIT	oxidation induction time
PE	Polyethylene

5 Material

5.1 PE compound

The compound for pipes and fittings shall be PE-base material to which are added those additives that are needed to facilitate the manufacture of components conforming to the requirements given in this standard.

5.2 Additional requirement for pipe and fitting material for application area BD

The material of pipes and fittings intended to be used in application area BD shall comply with the additional requirements given in Table 1, when tested in accordance with the methods and the parameters indicated in Table 1.

The pipe and fitting material shall be tested in form of a pipe.