

# SLOVENSKI STANDARD

## SIST EN 14758-1:2023

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Nadomešča:  
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**Cevni sistemi iz polimernih materialov za odvodnjavanje in kanalizacijo, ki delujejo po težnostnem principu - Polipropilen z mineralnimi modifikatorji (PP-MD) - 1. del: Specifikacije za cevi, fitinge in cevni sistem**

Plastics piping systems for non-pressure underground drainage and sewerage - Polypropylene with mineral modifiers (PP-MD) - Part 1: Specifications for pipes, fittings and the system

Kunststoff-Rohrleitungssysteme für erdverlegte drucklose Abwasserkanäle und -leitungen - Polypropylen mit mineralischen Additiven (PP-MD) - Teil 1: Anforderungen an Rohre, Formstücke und das Rohrleitungssystem

Systèmes de canalisations en plastique pour les branchements et les collecteurs d'assainissement enterrés sans pression - Polypropylène avec modificateurs minéraux (PP-MD) - Partie 1 : Spécifications pour les tubes, les raccords et le système

**Ta slovenski standard je istoveten z: EN 14758-1:2023**

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23.040.05	Cevovodi za zunanje sisteme za odpadno vodo in njihovi deli	Pipeline and its parts for external sewage systems
93.030	Zunanji sistemi za odpadno vodo	External sewage systems

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Plastics piping systems for non-pressure underground  
drainage and sewerage - Polypropylene with mineral  
modifiers (PP-MD) - Part 1: Specifications for pipes,  
fittings and the system

Systèmes de canalisations en plastique pour les  
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Polypropylen mit mineralischen Additiven (PP-MD) -  
Teil 1: Anforderungen an Rohre, Formstücke und das  
Rohrleitungssystem

This European Standard was approved by CEN on 3 March 2023.

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COMITÉ EUROPÉEN DE NORMALISATION  
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**EN 14758-1:2023 (E)****European foreword**

This document (EN 14758-1:2023) 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of an identical text or by endorsement, at the latest by October 2023, and conflicting national standards shall be withdrawn at the latest by October 2023.

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 EN 14758-1:2012.

The main changes compared to the previous edition are listed below:

- the Scope has been changed by introducing skin layer;
- updating of the Normative references;
- updating of the Terms and definition with the material definitions in EN 14541-1 and a new definition of the skin;
- the Material clause has been modified by specifying the PP compound used in the skin and defining a minimum content of mineral modifier;
- the maximum thickness of each skin has been introduced;
- the Ring stiffness class SN16 for pipes and fittings has been introduced;
- two alternatives for inside diameter of sockets has been introduced – normal and close tolerance (CT);
- the water tightness test of fabricated fittings has been introduced;
- Annex A Utilization of reworked material and recycle has been modified to be in line with CEN/TS 14541-2;
- a new informative Annex D for testing of PP recyclates with the CRB-method 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.

The EN / CEN/TS 14758 series, *Plastics piping systems for non-pressure underground drainage and sewerage - Polypropylene with mineral modifiers (PP-MD)*, consists of the following parts:

- EN 14758, *Part 1: Specifications for pipes, fittings and the system*;
- CEN/TS 14758, *Part 2: Guidance for the assessment of conformity*.

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, Türkiye and the United Kingdom.

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**EN 14758-1:2023 (E)****1 Scope**

This document specifies the requirements for solid-wall pipes and fittings with or without internal and/or external skin, and the system of piping systems made from mineral modified polypropylene materials (PP-MD) in the field of non-pressure underground drainage and sewerage outside the building structure (application area code "U"), and non-pressure underground drainage and sewerage for both buried in ground within the building structure and outside the building structure (application area code "UD").

This is reflected in the marking of products by "U" and "UD".

NOTE 1 The skins are made of PP compound without mineral modifier.

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

This document covers a range of nominal sizes, a range of pipe stiffness classes and gives recommendations concerning colours.

NOTE 2 It is the responsibility of the purchaser or specifier to make the appropriate selection from these aspects, taking into account their particular requirements and any relevant national regulations and installation practices or codes.

In conjunction with Part 2 of EN 14758 (see European foreword) it is applicable to PP-MD pipes and fittings, their elastomeric sealing ring joints and to joints with components of other plastics and non-plastics materials intended to be used for buried piping systems for non-pressure underground drainage and sewerage.

This document is applicable to PP-MD pipes with or without an integral socket and fittings with an integral socket.

NOTE 3 The fittings can be manufactured by injection-moulding or be fabricated from pipes and/or mouldings.

NOTE 4 Pipes, fittings and other components conforming to any of the plastics product standards listed in Annex C can be used with pipes and fittings conforming to this document, when they conform to the requirements for joint dimensions given in Clause 7 and to the requirements of Table 11.

**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 - Material 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 580:2005, *Plastics piping and ducting systems - Injection-moulded thermoplastics fittings - Methods for visually assessing the effects of heating (ISO 580:2005)*

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 (all parts), *Thermoplastics pipes, fittings and assemblies for the conveyance of fluids - Determination of the resistance to internal pressure (ISO 1167 (all parts))*

EN ISO 1183-1, *Plastics - Methods for determining the density of non-cellular plastics - Part 1: Immersion method, liquid pycnometer method and titration method (ISO 1183-1)*

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 2505:2005, *Thermoplastics pipes - Longitudinal reversion - Test method and parameters (ISO 2505:2005)*

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

EN ISO 3127, *Thermoplastics pipes - Determination of resistance to external blows - Round-the-clock method (ISO 3127)*

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

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

EN ISO 11173, *Thermoplastics pipes - Determination of resistance to external blows - Staircase method (ISO 11173)*

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

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

EN ISO 13259:2020, *Thermoplastics piping systems for underground non-pressure applications — Test method for leaktightness of elastomeric sealing ring type joints (ISO 13259:2020)*

EN ISO 13263, *Thermoplastics piping systems for non-pressure underground drainage and sewerage - Thermoplastics fittings - Test method for impact strength (ISO 13263)*

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)*

EN ISO 13967, *Thermoplastics fittings - Determination of ring stiffness (ISO 13967)*

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

CEN/TS 17627, *Plastics - Recycled plastics - Determination of solid contaminants content*

## EN 14758-1:2023 (E)

### 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 terminology 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/ui>

**3.1**  
**application area code**  
 code used in the marking of pipes and fittings to indicate the application area for which they are intended, as follows:

- U: code for the area more than 1 m from the building to which the buried piping system is connected;
- D: code for the area under and within 1 m from the building where the pipes and the fittings are buried in ground and are connected to the soil and waste discharge system of the building

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

Note 2 to entry: Components intended for use for both code U and code D application areas are marked UD.

Note 3 to entry: Other application area codes B and BD not covered by this document are defined elsewhere, e.g. in EN 1451-1 [1].

**3.2**  
**nominal size**  
**DN**  
 numerical designation of the size of a component, which is a convenient round number approximately equal to the manufacturing dimension, in millimetres

**3.3**  
**nominal size**  
**DN/OD**  
 nominal size, related to the outside diameter

**3.4**  
**nominal outside diameter**  
 $d_n$   
 specified outside diameter, in millimetres, assigned to a nominal size (DN/OD)

**3.5**  
**outside diameter**  
 $d_e$   
 value of the measurement of the outside diameter through its cross section at any point of a pipe or spigot end of a fitting, rounded up to the next greater 0,1 mm

**3.6****mean outside diameter** $d_{em}$ 

value of the measurement of the outer circumference of a pipe or spigot end of a fitting in any cross section, divided by  $\pi$  ( $\approx 3,142$ ), 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 the 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****pipes series****S**

dimensionless number related to the nominal outside diameter  $d_n$  and nominal wall thickness  $e_n$  given by the following formula:

$$S = \frac{SDR - 1}{2}$$

[SOURCE: ISO 4065:2018, 3.6]

**3.11****standard dimension ratio****SDR**

numerical designation of a pipe series, which is a convenient round number approximately equal to the ratio of the nominal outside diameter,  $d_n$ , and 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 in kilo Newtons per square metre ( $\text{kN/m}^2$ ), indicating the minimum ring stiffness of a pipe or fitting

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## 3.13

**design length**

Z

length of a fitting (e.g. the main pipe of a branch) excluding any spigot or socket length. In case of a change in direction (e.g. in case of a bend or the service pipe of a branch), it is the length from one end to the intersection of the straight axis of this end with the straight axis of the other end of the fitting, excluding any spigot or socket length

Note 1 to entry: See the dimensions  $Z_1$  and  $Z_2$  in e.g. Figures 7 and 11.

## 3.14

**virgin material**

plastics material in the form of pellets, granules, powder, floc, etc. that has not been subjected to use or processing other than that required for its initial manufacture

Note 1 to entry: Does not contain any reworked plastics material and/or plastics recyclate.

Note 2 to entry: Sometimes also referred to as “primary material” or “primary plastics feedstock”.

Note 3 to entry: It is understood that the addition of additives such as stabilizers and pigments is still resulting into a virgin (plastics) material.

[SOURCE: ISO 472:2013, 2.1231, modified - Note 1 to entry, Note 2 to entry and Note 3 to entry added]

## 3.15

**mineral modified [polypropylene] material**

PP-MD

[polypropylene] material to which has been added minerals during specific processing operation(s) which during such processing is well distributed in the material

## 3.16

**mean particle size**

D50

diameter which 50 % by mass of the particles of a mineral modifier is smaller than

## 3.17

**particle top cut**

D98

diameter which 98 % by mass of the particles of a mineral modifier is smaller than

## 3.18

**reworked material**

plastics material from rejected unused products or trimmings capable of being reclaimed within the same process that generated it

Note 1 to entry: Reworked material does not change the status of the feedstock.

Note 2 to entry: This definition does not cover the conditions for the use of reworked material, which can be found in the applicable product standard.

Note 3 to entry: Previously referred to as “own reprocessed material”.

**3.19****pre-consumer material**

plastics material diverted from the waste stream during a manufacturing process, excluding reworked (plastics) material

Note 1 to entry: Previously referred to as “post-industrial material”.

Note 2 to entry: Different categories of pre-consumer material may be considered in the applicable product standard.

[SOURCE ISO 14021:2016, 7.8.1.1, modified – ‘plastics’ added, text deleted after ‘rework’ and 2 Notes to entry introduced]

**3.20****post-consumer material**

plastics material generated by households or by commercial, industrial and institutional facilities in their role as end-users of the product which can no longer be used for its intended purpose

Note 1 to entry: This includes returns of material from the distribution chain.

Note 2 to entry: Different categories of post-consumer material may be considered in the applicable product standard.

[SOURCE ISO 14021:2016, 7.8.1.1, modified – ‘plastics’ added, last sentence changed into Note 1 to entry and Note 2 to entry introduced]

**3.21****recyclate**

plastics material resulting from the recycling of pre-consumer and post-consumer plastics products

Note 1 to entry: Also referred to as “secondary raw material” or “recycled plastics” or “regenerate”.

Note 2 to entry: Recycling can be chemical, physical or mechanical.

[SOURCE: ISO 472:2013, 2.1705, modified — Note 1 to entry and Note 2 to entry deleted, new Note 1 to entry and Note 2 to entry introduced and “plastic waste” changed into “pre-consumer and post-consumer plastics products”]

**3.22****agreed specification**

specification of the relevant material characteristics agreed between the supplier of the recyclate and the pipe and/or fitting manufacturer

Note 1 to entry: The agreed specification is often considered in the context of certification by a third party organization.

**3.23****solid wall pipe**

pipe with smooth internal and external surface with same compound/formulation throughout the wall