SLOVENSKI STANDARD
SIST EN 1852-1:2009

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Nadomeġļa:
SIST EN 1852-1:1997/A1:2003
SIST EN 1852-1:1999

Cevni sistemi iz polimernih materialov za odpadno vodo in kanalizacijo, ki delujejo po težnostnem principu in so položeni v zemljo - Polipropilen (PP) - 1. del: Specifikacije za cevi, fitinge in sistem

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

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

Systemes de canalisations en plastique pour les branchements et les collecteurs d'assainissement enterrés sans pression - Polypropylene (PP) - Partie 1 : Spécifications pour tubes, raccords et le systeme

Ta slovenski standard je istoveten z: **EN 1852-1:2009**

ICS:

23.040.01	Deli cevovodov in cevovodi na splošno	Pipeline components and pipelines in general
93.030	Zunanji sistemi za odpadno vodo	External sewage systems

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EUROPEAN STANDARD

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English Version

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

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

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

This European Standard was approved by CEN on 14 February 2009.

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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 Management Centre has the same status as the official versions.

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

Management Centre: Avenue Marnix 17, B-1000 Brussels

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Foreword

This document (EN 1852-1:2009) 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 September 2009, and conflicting national standards shall be withdrawn at the latest by September 2009.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 1852-1:1997.

The 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).

The System Standards 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 1852 consists of the following parts, under the general title *Plastics piping systems for non-pressure underground drainage and sewerage – Polypropylene (PP)*:

— *Part 1: Specifications for pipes, fittings and the system* (the present standard);

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

— *Part 3: Guidance for installation* (CEN Technical Specification).

This part of EN 1852 includes Annex A (normative): Geometrical characteristics of pipes following S-series 11,2, Annex B (informative): General characteristics of PP pipes and fittings and Annex C (informative): Product standards of components that can be connected to components conforming to this standard.

Plastics piping systems made of PP with mineral modifiers (PP-MD) are covered by EN 14758-1 [1].

The main change in the revised document is: EN 1852 gave wall thicknesses for two different E-modulus and S-series, and for E-modulus above 1 700 MPa the designation PP-HM was used. In this revised document the following changes are made:

— new S-series for SN 8 are introduced replacing the previous S-series;

— the previous S-series 11,2 for SN 8 is given in Annex A;

— new ring stiffness class SN 16 is introduced;

— the wall thickness table for fittings is modified;

— designation PP-HM is no longer used;

— impact resistance (staircase method) test temperature changed from 0 °C to −10 °C.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This part of EN 1852 specifies the requirements for solid wall pipes, fittings and the system of polypropylene (PP) piping systems intended for use for:

— 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 (application area code "D") and outside the building structure.

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

This standard covers PP materials without mineral modifiers.

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

This standard covers a range of nominal sizes, and pipe series and gives recommendations concerning colours.

NOTE 1 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 and Part 3 of EN 1852 it is applicable to PP pipes and fittings, their 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 standard is applicable to PP pipes and fittings with or without an integral socket.

NOTE 2 The fittings can be manufactured by injection-moulding or be fabricated from pipes and/or mouldings.

NOTE 3 Requirements and limiting values for application area code "D" are given in Table 4, Table 7 and Table 14.

NOTE 4 Pipes, fittings and other components conforming to any of the plastics product standards listed in Annex C can be connected to pipes and fittings conforming to this standard, when they conform to the requirements for joint dimensions given in Clause 6 and to the requirements of Table 14.

2 Normative references

The following referenced documents are indispensable for the application 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 728, *Plastics piping and ducting systems — Polyolefin pipes and fittings — Determination of oxidation induction time*

EN 744:1995, *Plastics piping and ducting systems — Thermoplastics pipes — Test method for resistance to external blows by the round-the-clock method*

EN 1053, *Plastics piping systems — Thermoplastics piping systems for non-pressure applications — Test method for watertightness*

EN 1055:1996, *Plastics piping systems — Thermoplastics piping systems for soil and waste discharge inside buildings — Test method for resistance to elevated temperature cycling*

EN 1277:2003, *Plastics piping systems — Thermoplastics piping systems for buried non-pressure applications — Test methods for leaktightness of elastomeric sealing ring type joints*

EN 1411:1996, *Plastics piping and ducting systems — Thermoplastics pipes — Determination of resistance to external blows by the staircase method*

EN 12061, *Plastics piping systems — Thermoplastics fittings — Test method for impact resistance*

EN 12256, *Plastics piping systems — Thermoplastics fittings — Test method for mechanical strength or flexibility of fabricated fittings*

EN ISO 472:2001, *Plastics — Vocabulary (ISO 472:1999)*

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 1043-1:2001, *Plastics — Symbols and abbreviated terms — Part 1: Basic polymers and their special characteristics (ISO 1043-1:2001)*

EN ISO 1133, *Plastics — Determination of the melt mass-flow rate (MFR) and the melt volume-flow rate (MVR) of thermoplastics (ISO 1133:2005)*

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 1167-1:2006)*

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 3126:2005)*

EN ISO 9969, *Thermoplastics pipes — Determination of ring stiffness (ISO 9969:2007)*

CEN/TS 14541:2007, *Plastics pipes and fittings for non-pressure applications — Utilisation of non-virgin PVC-U, PP and PE materials*

3 Definitions, symbols and abbreviations

3.1 Definitions

For the purposes of this document, the terms and definitions given in EN ISO 472:2001, EN ISO 1043-1:2001 and the following apply.

3.1.1
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: application area code for the area more than 1 m from the building to which the buried piping system is connected

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

3.1.2 Geometrical definitions

3.1.2.1
nominal size DN/OD
numerical designation of the size of a component, which is a convenient round number approximately equal to the manufacturing dimension of the outside diameter, in millimetres

3.1.2.2
nominal outside diameter
d_n
specified outside diameter, in millimetres, assigned to a nominal size DN/OD

3.1.2.3
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

3.1.2.4
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 π ($\approx$ 3,142), rounded to the next greater 0,1 mm

3.1.2.5
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

3.1.2.6
wall thickness
e
value of the measurement of the wall thickness at any point around the circumference of a component

3.1.2.7
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

3.1.2.8
pipes series S
number for pipe designation (see ISO 4065:1996 [2])

3.1.2.9
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}

3.1.2.10
nominal ring stiffnesss SN
numerical designation of the ring stiffness of a pipe or fitting, which is a convenient round number, relative to the determined stiffness in kilonewtons per square metre (kN/m^2), indicating the minimum ring stiffness of a pipe or fitting

3.1.2.11
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 (see the dimensions Z_1 and Z_2 in e.g. Figure 7 and Figure 11)

3.1.3 Material definitions

3.1.3.1
virgin material
material in a 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 reprocessable or recyclable material has been added

3.1.3.2
own reprocessable material
material prepared from rejected unused pipes or fittings, including trimmings from the production of pipes or fittings, that will be 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

3.1.3.3
external reprocessable material
material comprising either one of the following forms:

a) material from rejected unused pipes or fittings or trimmings there from, that will be reprocessed and that were originally processed by another manufacturer

b) material from the production of unused PP products other than pipes and fittings, regardless of where they are manufactured

3.1.3.4
recyclable material
material comprising either one of the following forms:

a) material from used pipes or fittings which have been cleaned and crushed or ground

b) material from used PP products other than pipes or fittings which have been cleaned and crushed or ground

3.1.4
solid wall pipe
smooth internal and external surface with same compound/formulation throughout the wall

3.2 Symbols

A : length of engagement

C : depth of sealing zone

d_e : outside diameter

d_{em} : mean outside diameter

d_n : nominal outside diameter

d_{sm} : mean inside diameter of a socket

e : wall thickness

e_m : mean wall thickness

e_2 : wall thickness of a socket

e_3 : wall thickness in the groove area

l : effective length of a pipe

L_1 : length of spigot

M : length of spigot of a plug

R : radius of swept fittings

Z : design length of (a part of) a fitting

α : nominal angle of a fitting

3.3 Abbreviations

CT : close tolerance

DN : nominal size

DN/OD : nominal size, outside diameter related

MFR : melt mass-flow rate

OIT : oxidation induction time

PP : polypropylene

S : pipes series

SDR : standard dimension ratio

SN : nominal ring stiffness

TIR : true impact rate

4 Material

4.1 PP compound

The compound for pipes and fittings shall be PP base material without mineral modifiers, to which are added those additives that are needed to facilitate the manufacture of components conforming to the requirements of this standard.

NOTE PP-based materials with mineral modifiers (PP-MD) are covered in EN 14758-1 [1].

4.2 Reprocessable and recyclable material

In addition to virgin material the use of the manufacturer's own reprocessable material obtained during the production and testing of products conforming to this standard is permitted.

External reprocessable and recyclable material of pipes and fittings with agreed specification is permitted according to the rules in CEN/TS 14541 provided it originates from products in accordance with this European Standard and national standards replaced by this European Standard. Such materials can only be used for S 20 and S 16 and S 12,5/SN 8.

4.3 Melt mass-flow rate

Pipes and fittings shall be made from materials with an MFR as follows:

MFR (230/2,16) ≤ 1,5 g/10 min.

The MFR of the base material shall be tested in accordance with EN ISO 1133, using the test parameters: temperature 230 °C and loading mass 2,16 kg.

Materials for pipes and fittings for butt fusion joints shall be designated by the following classes with regard to the MFR:

Class A: MFR ≤ 0,3 g/10 min;

Class B: 0,3 g/10 min < MFR ≤ 0,6 g/10 min;

Class C: 0,6 g/10 min < MFR ≤ 0,9 g/10 min;

Class D: 0,9 g/10 min < MFR ≤ 1,5 g/10 min.

Only pipes and fittings made from materials of the same or an adjacent MFR-class may be fused together.

4.4 Resistance to internal pressure

When tested in accordance with the test method as specified in Table 1, using the indicated parameters, the material shall have characteristics conforming to the requirements given in Table 1.

The material shall be tested in the form of a pipe.