

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

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 1852-1:2009 sisaldb Euroopa standardi EN 1852-1:2009 ingliskeelset teksti.	This Estonian standard EVS-EN 1852-1:2009 consists of the English text of the European standard EN 1852-1:2009.
Standard on kinnitatud Eesti Standardikeskuse 30.04.2009 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.	This standard is ratified with the order of Estonian Centre for Standardisation dated 30.04.2009 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.
Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kätesaadavaks tegemise kuupäev on 18.03.2009.	Date of Availability of the European standard text 18.03.2009.
Standard on kätesaadav Eesti standardiorganisatsionist.	The standard is available from Estonian standardisation organisation.

ICS 23.040.01, 93.030

Võtmesõnad: drainage, non-pressure, pipe fittings, pipes, piping systems, plastics, polypropylene, pp, sewerage, specifications, system, thermoplastics

Standardite reproduutseerimis- ja levitamisõigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonilisse süsteemi või edastamine ükskõik millises vormis või millisel teel on keelatud ilma Eesti Standardikeskuse poolt antud kirjaliku loata.

Kui Teil on küsimusi standardite autorikaitse kohta, palun võtke ühendust Eesti Standardikeskusega:
Aru 10 Tallinn 10317 Eesti; www.evs.ee; Telefon: 605 5050; E-post: info@evs.ee

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 1852-1

March 2009

ICS 23.040.01; 93.030

Supersedes EN 1852-1:1997

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.

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 Management Centre or to any CEN member.

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.

CEN members are the national standards bodies of 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 United Kingdom.



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

Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

	Page
Foreword	4
1 Scope	5
2 Normative references	5
3 Definitions, symbols and abbreviations	6
3.1 Definitions	6
3.2 Symbols	8
3.3 Abbreviations	9
4 Material	9
4.1 PP compound	9
4.2 Reprocessable and recyclable material	10
4.3 Melt mass-flow rate	10
4.4 Resistance to internal pressure	10
4.5 Thermal stability (OIT)	11
4.6 Sealing ring retaining means	11
5 General characteristics	11
5.1 Appearance	11
5.2 Colour	11
6 Geometrical characteristics	12
6.1 General	12
6.2 Dimensions of pipes	12
6.2.1 Outside diameters	12
6.2.2 Outside diameters with close tolerances (CT)	12
6.2.3 Length of pipes	13
6.2.4 Chamfering	14
6.2.5 Wall thicknesses	14
6.3 Dimensions of fittings	15
6.3.1 Outside diameters	15
6.3.2 Design lengths	15
6.3.3 Wall thicknesses	16
6.4 Dimensions of sockets and spigots	17
6.4.1 Diameters and lengths of elastomeric ring seal sockets and spigots	17
6.4.2 Wall thicknesses of sockets	19
6.5 Types of fittings	20
7 Mechanical characteristics	23
7.1 Mechanical characteristics of pipes	23
7.1.1 General requirements	23
7.1.2 Additional mechanical requirements	23
7.2 Mechanical characteristics of fittings	24
8 Physical characteristics	24
8.1 Physical characteristics of pipes	24
8.2 Physical characteristics of fittings	25
9 Performance requirements	25
10 Sealing rings	26

11	Marking	26
11.1	General	26
11.2	Minimum required marking of pipes	27
11.3	Minimum required marking of fittings.....	27
11.4	Additional marking	28
Annex A (normative) Geometrical characteristics of pipes following S-series 11,2	29	
A.1	General	29
A.2	Wall thickness of pipes	29
A.3	Wall thickness of sockets.....	30
Annex B (informative) General characteristics of PP pipes and fittings.....	31	
B.1	General	31
B.2	Material characteristics	31
B.3	Ring stiffness	31
B.4	Creep ratio	31
B.5	Chemical resistance	32
B.6	Abrasion resistance	32
B.7	Hydraulic roughness	32
B.8	Diametric deflection	32
Annex C (informative) Product standards of components that can be connected to components conforming to this standard.....	33	
Bibliography.....	34	

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*