

Plastics piping systems for soil and waste discharge (low and high temperature) within the building structure - Acrylonitrile-butadiene-styrene (ABS) - Part 1: Specifications for pipes, fittings and the system

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

See Eesti standard EVS-EN 1455-1:2022 sisaldab Euroopa standardi EN 1455-1:2022 ingliskeelset teksti.	This Estonian standard EVS-EN 1455-1:2022 consists of the English text of the European standard EN 1455-1:2022.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation and Accreditation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 14.12.2022.	Date of Availability of the European standard is 14.12.2022.
Standard on kättesaadav Eesti Standardimis-ja Akrediteerimiskeskusest.	The standard is available from the Estonian Centre for Standardisation and Accreditation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile [standardiosakond@evs.ee](mailto:standardiosakond@evs.ee).

ICS 23.040.01, 91.140.80

Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardimis- ja Akrediteerimiskeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardimis-ja Akrediteerimiskeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardimis-ja Akrediteerimiskeskusega: Koduleht [www.evs.ee](http://www.evs.ee); telefon 605 5050; e-post [info@evs.ee](mailto:info@evs.ee)

The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation and Accreditation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation and Accreditation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation and Accreditation:

Homepage [www.evs.ee](http://www.evs.ee); phone +372 605 5050; e-mail [info@evs.ee](mailto:info@evs.ee)

English Version

Plastics piping systems for soil and waste discharge (low  
and high temperature) within the building structure -  
Acrylonitrile-butadiene-styrene (ABS) - Part 1:  
Specifications for pipes, fittings and the system

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 - Acrylonitrile-butadiène-  
styrène (ABS) - Partie 1 : Spécifications pour tubes,  
raccords ainsi que pour le système

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

This European Standard was approved by CEN on 30 October 2022.

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-CENELEC 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-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, Türkiye and United Kingdom.



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

# Contents

Page

European foreword.....	3
1 Scope.....	4
2 Normative references.....	4
3 Terms and definitions .....	6
4 Symbols and abbreviations .....	9
5 Material.....	10
5.1 General.....	10
5.2 Additional material requirements for BD application .....	10
5.3 Fabricated fittings.....	11
5.4 Utilization of non-virgin material .....	11
5.5 Sealing ring retaining means .....	11
6 General characteristics .....	11
6.1 Appearance.....	11
6.2 Colour .....	11
6.3 External above ground application .....	11
6.4 Reaction to fire.....	11
7 Geometrical characteristics .....	11
7.1 General.....	11
7.2 Dimensions of pipes.....	11
7.3 Dimensions of fittings.....	15
7.4 Dimensions of sockets and spigots .....	17
7.5 Types of fittings .....	24
8 Mechanical characteristics .....	28
8.1 General characteristics .....	28
8.2 Additional mechanical requirements.....	30
8.3 Mechanical characteristics of fittings .....	31
9 Physical characteristics .....	32
9.1 Physical characteristics of pipes.....	32
9.2 Physical characteristics of fittings .....	34
10 Performance requirements.....	35
11 Sealing rings.....	35
12 Adhesives .....	36
13 Marking.....	36
13.1 General.....	36
13.2 Minimum required marking of pipes.....	36
13.3 Minimum required marking of fittings .....	37
13.4 Additional marking .....	37
Annex A (informative) Product standards .....	38
Bibliography.....	39

## European foreword

This document (EN 1455-1:2022) 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 June 2023, and conflicting national standards shall be withdrawn at the latest by June 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 1455-1:1999.

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

- updating of normative references;
- editorial improvement and alignment with new recently revised standards, e.g. EN 1329-1 [1], EN 1401-1 [2], EN 1451-1 [3], EN 14541-1 [4];
- addition of subclause 6.3 *External above ground application*;
- addition of subclause 6.4 *Reaction to fire*;
- introduction of a subclause 8.3.2 *Additional requirements of fittings* with Table 18 introducing mechanical strength or flexibility and impact strength;
- deletion of Clause 10 as its content is distributed elsewhere in the document;
- deletion of Annex A *General characteristics of ABS pipes and fittings*;
- addition of a new Annex A *Product standards*.

The EN 1455 / CEN/TS 1455 series, *Plastics piping systems for soil and waste discharge (low and high temperature) within the building structure - Acrylonitrile-butadiene-styrene (ABS)*, consists of the following parts:

- EN 1455-1, *Part 1: Specifications for pipes, fittings and the system* (the present document);
- CEN/TS 1455-2, *Part 2: 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.

## 1 Scope

This document specifies the requirements for solid wall pipes with smooth internal and external surfaces, extruded from the same formulation throughout the wall, fittings and the system of acrylonitrile-butadiene-styrene (ABS) and acrylonitrile-styrene-acrylester (ASA) piping systems intended for soil and waste discharge applications (low and high temperature):

- inside buildings (application area code “B”);
- for both inside buildings and buried in 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 Application “B” covers uses above ground inside buildings, or outside buildings fixed onto the wall.

NOTE 3 Pipes and fittings of the pipe series S 25 are intended to be used for application area “B” only.

NOTE 4 For use buried in ground within the building structure are intended only those components (marked with “BD”) with nominal outside diameters equal to or greater than 75 mm.

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

This document is also applicable to ABS and ASA pipes, 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 that are referred to.

This document covers a range of nominal sizes, a range of pipes and fittings series and gives recommendations concerning colours.

NOTE 6 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.

NOTE 7 Pipes, fittings and other components conforming to any of the plastics product standards listed in Annex A can be used with pipes and fittings conforming to this document, provided they conform to the requirements for joint dimensions given in Clause 7 and to the requirements of Table 21.

## 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 13501-1, *Fire classification of construction products and building elements - Part 1: Classification using data from reaction to fire tests*

- EN 13823, *Reaction to fire tests for building products - Building products excluding floorings exposed to the thermal attack by a single burning item*
- EN 14680, *Adhesives for non-pressure thermoplastics piping systems - Specifications*
- EN 14814, *Adhesives for thermoplastic piping systems for fluids under pressure - Specifications*
- EN 16000, *Plastics piping systems - Systems within the building structure - Mounting and fixing of components in the test apparatus to thermal attack by a single burning item*
- 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 1167-1:2006, *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 1167-2:2006, *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 1167-2:2006)*
- EN ISO 2505:2005, *Thermoplastics pipes - Longitudinal reversion - Test method and parameters (ISO 2505:2005)*
- EN ISO 2507-1, *Thermoplastics pipes and fittings - Vicat softening temperature - Part 1: General test method (ISO 2507-1)*
- EN ISO 2507-3, *Thermoplastics pipes and fittings - Vicat softening temperature - Part 3: Test conditions for acrylonitrile/butadiene/styrene (ABS) and acrylonitrile/styrene/acrylic ester (ASA) pipes and fittings (ISO 2507-3)*
- 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 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 11925-2, *Reaction to fire tests - Ignitability of products subjected to direct impingement of flame - Part 2: Single-flame source test (ISO 11925-2)*
- 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, *Thermoplastics piping systems for non-pressure applications - Test method for resistance to elevated temperature cycling (ISO 13257)*

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 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)*

ISO 7245, *Pipes and fittings of acrylonitrile/butadiene/styrene (ABS) — General specification for moulding and extrusion materials*

ISO 7246, *Pipes and fittings of acrylonitrile/styrene/acrylester (ASA) — General specification for moulding and extrusion materials*

ISO 8361-1, *Thermoplastics pipes and fittings — Water absorption — Part 1: General test method*

ISO 8361-3, *Thermoplastics pipes and fittings — Water absorption — Part 3: Test conditions for acrylonitrile/butadiene/styrene (ABS) pipes and fittings*

### 3 Terms and definitions

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

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

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

#### 3.1

##### **application area code**

code used in the marking of pipes and fittings to indicate the 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

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: Components intended for use for both code B and code D application areas are marked BD.

Note 3 to entry: Other application area codes U and UD not covered by this document are defined elsewhere, e.g. in EN 1401-1 [2].