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BSI Standards Publication

Plastics piping systems for non-pressure underground drainage and sewerage - Structured-wall piping systems of unplasticized poly(vinyl chloride) (PVC-U), polypropylene (PP) and polyethylene (PE)

Part 2: Specifications for pipes and fittings with smooth internal and external surface and the system, Type A

bsi.

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National foreword

This British Standard is the UK implementation of EN 13476-2:2018. It supersedes BS EN 13476-2:2007, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee PRI/88/1, Plastics piping for non-pressure applications.

A list of organizations represented on this committee can be obtained on request to its secretary.

The responsible UK committee gives the following advice concerning the scope and contents of EN 13476-2:2018.

- Attention is drawn to the scope of this standard, which, together with BS EN 13476-1:2018 and BS EN 13476-3:2018, is applicable to structured-wall plastic piping systems made of unplasticized poly(vinyl chloride) (PVC-U), polypropylene (PP) or polyethylene (PE) with any additives needed to facilitate the manufacture of components conforming to this standard.

- Multilayer composite pipes with an intermediate layer of metal; reinforced pipes; and pipes made of polymers other than PVC-U, PP or PE are not covered by the scope of this standard. The test methods and performance criteria are not applicable to these types of pipe.

- **Recycled material:** The use of recycled or reprocessed materials is encouraged in the UK. However, their use should be strictly in accordance with this standard.

- **Interchangeability:** This standard does not guarantee interchangeability between manufacturers. It is strongly advised that users specify the bore series of pipes (DN/ID) as specified in BS EN 13476-2:2018 and BS EN 13476-3:2018 to maximize the hydraulic performance of these products.

- **Initial ring stiffness:** The BS EN 13476 series specifies four nominal ring stiffness classes (SN): SN2, SN4, SN8 and SN16.

  — DN ≤500: SN4, SN8 or SN16;

  — DN >500: SN2, SN4, SN8 or SN16.

  From the viewpoint of installation, SN4 and SN8 are the traditionally recommended classes used in the UK for water company adopted sewers and are to be used if the system is to be installed in accordance with BS EN 752:2017 or BS EN 1610:2015 to achieve the intended resistance to long-term deformation. If use of the SN2 class of pipe or fittings is intended, the installation should first be subject to a structural design soil load / traffic load calculation and the installation technique modified to suit the results of that calculation. The appropriate calculation method is given in the National Annex NA to BS EN 1295-1. The short-term *E* modulus for the material should be taken from Table A.1 of BS EN 13476-1:2018. The long-term value of *E* should be taken as the short-term value divided by the creep ratio. The creep ratio is derived from the tests specified in the 'Mechanical characteristics' section of BS EN 13476-2:2018 or BS EN 13476-3:2018 as appropriate.

- **Impact:** Annex G of BS EN 13476-2:2018 and BS EN 13476-3:2018 details an impact resistance test at 23°C. This is the preferred test in the UK. Annex H therefore becomes informative in the UK.

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This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Compliance with a British Standard cannot confer immunity from legal obligations.a

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Amendments/corrigenda issued since publication

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EUROPEAN STANDARD **EN 13476-2**

NORME EUROPÉENNE

EUROPÄISCHE NORM April 2018

ICS 23.040.01; 93.030 Supersedes EN 13476-2:2007

English Version

Plastics piping systems for non-pressure underground drainage and sewerage - Structured-wall piping systems of unplasticized poly(vinyl chloride) (PVC-U), polypropylene (PP) and polyethylene (PE) - Part 2: Specifications for pipes and fittings with smooth internal and external surface and the system, Type A

Systèmes de canalisations en plastique pour les branchements et les collecteurs d'assainissements sans pression enterrés - Systèmes de canalisations à parois structurées en poly(chlorure de vinyle) non plastifié (PVC-U), polypropylène (PP) et polyéthylène (PE) - Partie 2: Spécifications pour les tubes et raccords avec une surface interne et externe lisses et le système, de Type A

Kunststoff-Rohrleitungssysteme für erdverlegte drucklose Abwasserkanäle und -leitungen - Rohrleitungssysteme mit profilierter Wandung aus weichmacherfreiem Polyvinylchlorid (PVC-U), Polypropylen (PP) und Polyethylen (PE) - Teil 2: Anforderungen an Rohre und Formstücke mit glatter Innen- und Außenfläche und an das Rohrleitungssystem, Typ A

This European Standard was approved by CEN on 8 February 2018.

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

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European foreword

This document (EN 13476-2:2018) 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 2018, and conflicting national standards shall be withdrawn at the latest by October 2018.

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

This document supersedes EN 13476-2:2007.

The main changes with respect to the previous edition are listed below:

a) updating of references in Clause 2, Tables 2, 8, 9, 10, 12, 14, 16 and 17;

b) deletion of Note 2 in scope;

c) changed denomination ‘material’ to ‘compound / formulation’ (entire document);

d) clarification requirement ‘sealing rings’ (4.5);

e) correction position e_3 dimension (Figure 3);

f) range nominal sizes extended (Table 5, Table 6);

g) references to socket dimensions added (7.2.4);

h) deletion of Table 7;

i) short sockets added (7.2.4, 11.2.1, 11.2.2)

j) alternative test method for DCM test added in Table 8;

k) changed d_{em} to d_{im} (Table 14);

l) changed $d_{em\,min}$ to $d_{im\,max}$ (Table G.1; Table H.1);

m) impact strength at 0 °C added (Table 14, Table G.1);

n) deletion of long term performance of TPE seals (Table 17);

o) redrafted Annexes A and B, Table B.1, Table B.2, Annex F, Table F.1, Table F.2, Annex J;

p) impact test for large diameter added (Annex K);

q) deleted application of recyclate without agreed specification (Annexes B, D, E, F and J);

r) updated with new CEN template (entire document).

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This standard is a part of a System Standard for plastics piping systems of particular materials for a specified application. There are a number of such System Standards.

System Standards are based on the results of the work being 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.

EN 13476 consists of the following parts under the general title "Plastics piping systems for non-pressure underground drainage and sewerage — Structured-wall piping systems of unplasticized poly(vinyl chloride) (PVC-U), polypropylene (PP) and polyethylene (PE)":

— Part 1: General requirements and performance characteristics;

— *Part 2: Specifications for pipes and fittings with smooth internal and external surface and the system, Type A* (this standard)*;*

— Part 3: Specifications for pipes and fittings with a smooth internal surface and profiled external surface and the system, Type B;

— *Part 4: Assessment of conformity* (CEN/TS). *(*CEN/TS 13476-4:2013*; valid for pipes up to and incl.to DN 1200).*

For guidance for installation, see CEN/TR 1046.

National standards specifically for pipes and fittings for the transport of surface water are not considered to be conflicting with this standard and may thus be allowed to coexist.

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, 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.

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Introduction

This standard provides optional choices for impact resistance (see Annex G, Annex H and Annex K) and ring flexibility, see Annex I.

As appropriate, the individual countries may select between those options in their national forewords.

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1 Scope

This part of EN 13476, together with EN 13476-1, specifies the definitions and requirements for pipes, fittings and the system based on unplasticized poly(vinyl chloride) (PVC-U), polypropylene (PP) and polyethylene (PE) structured-wall piping systems that are intended to be used for non-pressure underground drainage and sewerage systems.

This part is applicable to pipes and fittings with smooth internal and external surfaces, designated as Type A.

It specifies test methods and test parameters as well as requirements.

This part is applicable to:

a) structured-wall pipes and fittings, which are intended to be used buried underground outside the building structure; reflected in the marking of products by “U”;

b) structured-wall pipes and fittings, which are intended to be used buried underground both outside (application area code “U”) and within the building structure (application area code “D”); reflected in the marking of products by “UD”.

This part is applicable to structured-wall pipes and fittings with or without an integral socket with elastomeric ring seal joints as well as welded and fused joints.

This part covers a range of pipe and fitting sizes, materials, pipe constructions, stiffness classes, application classes, and tolerance classes and gives recommendations concerning colours.

NOTE 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.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 476, *General requirements for components used in drains and sewers*

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 681-4, *Elastomeric seals — Materials requirements for pipe joint seals used in water and drainage applications — Part 4: Cast polyurethane sealing elements*

EN 1401-1, *Plastics piping systems for non-pressure underground drainage and sewerage — Unplasticized poly(vinyl chloride) (PVC-U) — Part 1: Specifications for pipes, fittings and the system*

EN 1852-1, *Plastics piping systems for non-pressure underground drainage and sewerage — Polypropylene (PP) — Part 1: Specifications for pipes, fittings and the system*

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