
Podzemni kanalski sistem za zaščito in upravljanje izoliranih električnih ali komunikacijskih kablov - 2. del: Polietilenski (PE), polipropilenski (PP) ali neplastificirani polivinilkloridni (PVC-U) vodovodni sistemi - Zahteve za masivne stenske vodnike, armature in sistem, ki se uporablja v posebnih aplikacijah

Conduit systems buried underground for the protection and management of insulated electrical cables or communication cables - Part 2: Polyethylene (PE), Polypropylene (PP) or Unplasticized poly(vinyl chloride) (PVC-U) conduit systems - Requirements for solid wall conduits, fittings and the system used in special applications

Erdverlegte Elektroinstallationsrohrsysteme für den Schutz und die Führung isolierter elektrischer Kabel oder Fernmeldekabel - Teil 2: Elektroinstallationsrohrsysteme aus Polyethylen (PE), Polypropylen (PP) oder weichmacherfreiem Poly(vinylchlorid) (PVC-U) - Anforderungen an Vollwandrohre, Rohrzubehörteile und spezielle Anwendungen

Systèmes de conduits enterrés dans le sol pour la protection et la gestion des câbles électriques isolés ou des câbles de communication - Partie 2: Systèmes de conduits en polyéthylène (PE), en polypropylène (PP) ou en poly(chlorure de vinyle) non plastifié (PVC-U) - Exigences pour les conduits à paroi pleine, les accessoires et le système utilisé dans les applications spéciales

Ta slovenski standard je istoveten z: EN 50626-2:2023

ICS:

29.120.10	Inštalacijske cevi za električne namene	Conduits for electrical purposes
-----------	---	----------------------------------

SIST EN 50626-2:2023

en

EUROPEAN STANDARD

EN 50626-2

NORME EUROPÉENNE

EUROPÄISCHE NORM

July 2023

ICS 29.120.10

English Version

Conduit systems buried underground for the protection and management of insulated electrical cables or communication cables - Part 2: Polyethylene (PE), Polypropylene (PP) or Unplasticized poly(vinyl chloride) (PVC-U) conduit systems - Requirements for solid wall conduits, fittings and the system used in special applications

Systèmes de conduits enterrés dans le sol pour la protection et la gestion des câbles électriques isolés ou des câbles de communication - Partie 2: Systèmes de conduits en polyéthylène (PE), en polypropylène (PP) ou en poly(chlorure de vinyle) non plastifié (PVC-U) - Exigences pour les conduits à paroi pleine, les accessoires et le système utilisé dans les applications spéciales

Erdverlegte Elektroinstallationsrohrsysteme für den Schutz und die Führung isolierter elektrischer Kabel oder Fernmeldekabel - Teil 2: Elektroinstallationsrohrsysteme aus Polyethylen (PE), Polypropylen (PP) oder weichmacherfreiem Poly(vinylchlorid) (PVC-U) - Anforderungen an Vollwandrohre, Rohrzubehörteile und spezielle Anwendungen

This European Standard was approved by CENELEC on 2023-06-19. CENELEC 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 CENELEC 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 CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.



European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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

Contents	Page
European foreword	3
Introduction	4
1 Scope.....	5
2 Normative references	5
3 Terms and definitions	7
4 Symbols and abbreviations	7
5 Material.....	8
6 General characteristics	12
7 Geometrical characteristics	12
8 Mechanical characteristics of conduits	18
9 Physical characteristics	22
10 Performance requirements	26
11 Sealing rings.....	26
12 Fire hazard	26
13 Electromagnetic compatibility	26
14 Marking and documentation	27
Annex A (normative) Utilization of non-virgin PVC-U material	29
A.1 General	29
A.2 Own reprocessed material from conduits and conduit fittings	29
A.3 External reprocessed and recycled materials with an agreed specification	29
Annex B (normative) Utilization of non-virgin PP material	30
B.1 General	30
B.2 Own reprocessed material from conduits and conduit fittings	30
B.3 External reprocessed and recycled materials with an agreed specification	30
Annex C (normative) Utilization of non-virgin PE material	31
C.1 General	31
C.2 Own reprocessed material from conduits and conduit fittings	31
C.3 External reprocessed and recycled materials with an agreed specification	31
Annex ZZ (informative) Relationship between this European standard and the safety objectives of Directive 2014/35/EU [2014 OJ L96] aimed to be covered	32
Bibliography	33

European foreword

This document (EN 50626-2:2023) has been prepared by CLC/TC 213, "Cable management systems".

The following dates are fixed:

- latest date by which this document has to be (dop) 2024-06-19 implemented at national level by publication of an identical national standard or by endorsement
- latest date by which the national standards (dow) 2026-06-19 conflicting with this document have to be withdrawn

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

This document has been prepared under a Standardization Request given to CENELEC by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s) / Regulation(s).

For relationship with EU Directive(s) / Regulation(s), see informative Annex ZZ, which is an integral part of this document.

Any feedback and questions on this document should be directed to the users' national committee. A complete listing of these bodies can be found on the CENELEC website.

[SIST EN 50626-2:2023](https://standards.iteh.ai/catalog/standards/sist/93916afa-c46a-409d-920f-9cfbfe83566d/sist-en-50626-2-2023)

<https://standards.iteh.ai/catalog/standards/sist/93916afa-c46a-409d-920f-9cfbfe83566d/sist-en-50626-2-2023>

EN 50626-2:2023 (E)**Introduction**

CENELEC TC 213 is responsible for the development of the EN 50626 series, which consists of two separate parts, each covering different products/applications.

This document covers requirements and tests for conduit systems buried underground for the protection and management of insulated conductors and/or power cables or communication cables having a specified performance time and which are leak-tight solid wall conduit systems and manufactured in PE, PP and PVC-U.

EN 50626-1 covers requirements and tests for conduit systems buried underground for the protection and management of insulated conductors and/or power cables or communication cables.

For on-site storage, CEN/TS 1046 can be used as a guidance.

A conduit system buried underground that conforms to this document is deemed to be safe for use.

This is a European Standard for cable management products used for electro-technical purposes. It relates to the Council Directives on the approximation of laws, regulations and administrative provisions of the Member States relating to Low Voltage Directive 2014/35/EU through consideration of the essential requirements of this Directive.

This document is supported by separate standards to which references are made.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 50626-2:2023

<https://standards.iteh.ai/catalog/standards/sist/93916afa-c46a-409d-920f-9cfbfe83566d/sist-en-50626-2-2023>

1 Scope

This document specifies requirements and tests for PE, PP and PVC-U leak-tight solid wall conduit systems with circular cross section, manufactured individually or as part of an assembly having a specified performance time and buried underground to a maximum depth of 6 m for the protection and management of insulated conductors and/or power cables or communication cables.

Applications that require leak-tight solid wall conduit systems are:

- installation of cables in conduits by blowing;
- installation of cables in conduits by floating;
- trenchless installation of conduits.

This document is applicable to conduits with or without integral socket and fittings.

NOTE 1 Conduits in which cables are installed by blowing or floating can also be installed by conventional methods.

NOTE 2 Installation of cables can also be done by pulling and pushing.

NOTE 3 Within a thermoplastic conduit system, fittings made of other materials can be used but they are not specified in this document.

NOTE 4 It is the responsibility of the purchaser or specifier to take into account any relevant national regulations and installation practices or codes when selecting the products to be installed, based on the characteristics specified in this document.

NOTE 5 Microducts are covered by the relevant part of the EN 60794 series.

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 681-1:1996, *Elastomeric seals - Materials requirements for pipe joint seals used in water and drainage applications - Part 1: Vulcanized rubber*

EN 681-2:2000, *Elastomeric Seals - Materials requirements for pipe joint seals used in water and drainage applications - Part 2: Thermoplastic elastomers*

EN 1905:1998, *Plastics piping systems - Unplasticized poly(vinyl chloride) (PVC-U) pipes, fittings and material - Method for assessment of the PVC content based on total chlorine content*

EN 12099:1997, *Plastics piping systems - Polyethylene piping materials and components - Determination of volatile content*

EN 15346:2014, *Plastics - Recycled plastics - Characterization of poly(vinyl chloride) (PVC) recyclates*

EN 50626-1:2023, *Conduit systems buried underground for the protection and management of insulated electrical cables or communication cables - Part 1: General requirements*

EN ISO 472:2013, *Plastics - Vocabulary (ISO 472:2013)*

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 50626-2:2023 (E)

EN ISO 1043-1:2011,¹ *Plastics - Symbols and abbreviated terms - Part 1: Basic polymers and their special characteristics (ISO 1043-1:2001)*

EN ISO 1133-1:2022, *Plastics - Determination of the melt mass-flow rate (MFR) and melt volume-flow rate (MVR) of thermoplastics - Part 1: Standard method (ISO 1133-1:2022)*

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 1183-1:2019, *Plastics - Methods for determining the density of non-cellular plastics - Part 1: Immersion method, liquid pycnometer method and titration method (ISO 1183-1:2019, Corrected version 2019-05)*

EN ISO 1183-2:2019, *Plastics - Methods for determining the density of non-cellular plastics - Part 2: Density gradient column method (ISO 1183-2:2019)*

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

EN ISO 2507-1:2017, *Thermoplastics pipes and fittings - Vicat softening temperature - Part 1: General test method (ISO 2507-1:1995)*

EN ISO 3126:2005, *Plastics piping systems - Plastics components - Determination of dimensions (ISO 3126:2005)*

EN ISO 3451-1:2019, *Plastics - Determination of ash - Part 1: General methods (ISO 3451-1:2019)*

EN ISO 3451-5:2002, *Plastics - Determination of ash - Part 5: Poly(vinyl chloride) (ISO 3451-5:2002)*

EN ISO 6259-1:2015, *Thermoplastics pipes - Determination of tensile properties - Part 1: General test method (ISO 6259-1:2015)*

EN ISO 6259-2:2020, *Thermoplastics pipes - Determination of tensile properties - Part 2: Pipes made of unplasticized poly(vinyl chloride) (PVC-U), oriented unplasticized poly(vinyl chloride) (PVC-O), chlorinated poly(vinyl chloride) (PVC-C) and high-impact poly(vinyl chloride) (PVC-HI) (ISO 6259-2:2020)*

EN ISO 9852:2017, *Unplasticized poly(vinyl chloride) (PVC-U) pipes - Dichloromethane resistance at specified temperature (DCMT) - Test method (ISO 9852:2007)*

EN ISO 9969:2016, *Thermoplastics pipes - Determination of ring stiffness (ISO 9969:2016)*

EN ISO 11173:2017, *Thermoplastics pipes - Determination of resistance to external blows - Staircase method (ISO 11173:1994)*

EN ISO 11357-6:2018, *Plastics - Differential scanning calorimetry (DSC) - Part 6: Determination of oxidation induction time (isothermal OIT) and oxidation induction temperature (dynamic OIT) (ISO 11357-6:2018)*

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)*

ISO 5893:2019, *Rubber and plastics test equipment — Tensile, flexural and compression types (constant rate of traverse) — Specification*

¹ As impacted by EN ISO 1043-1:2011/A1:2016.

ISO 18373-1:2007, *Rigid PVC pipes — Differential scanning calorimetry (DSC) method — Part 1: Measurement of the processing temperature*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 472:2013 and EN ISO 1043-1:2011¹ and the following apply.

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

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

3.1

performance time

predicted service time of the installed conduit

Note 1 to entry: The service time considers continuous external loads and occasional internal loads. Both types of loads are to be considered when the predicted service time is declared.

3.2

solid wall conduit

conduit with smooth external surface and where the internal surface may be smooth or with longitudinal grooves

3.3

non-virgin material

own or external reprocessed material or recycled material

3.4

own reprocessed material

material prepared from rejected unused conduits and conduit fittings, including trimmings from the production, 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

3.5

external reprocessed material

material prepared from unused thermoplastics products regardless of where those products were manufactured

3.6

recycled material

material prepared from used thermoplastic products which have been cleaned and crushed or ground

3.7

agreed specification

specification of the relevant material characteristics agreed between the supplier of the non-virgin material and the conduits and/or conduit fittings manufacturer

4 Symbols and abbreviations

4.1 Symbols

A_{\min}	minimum length of engagement
d_{em}	mean outside diameter
d_n	nominal outside diameter
d_{sm}	mean inside diameter of a socket

EN 50626-2:2023 (E)

e_{\min}	minimum wall thickness
e_2	wall thickness of a socket
e_3	wall thickness in the groove area
$L_{1\min}$	length of spigot

4.2 Abbreviations

DN	nominal size
DN/OD	nominal size, outside diameter related
OIT	oxidation induction time
PE	polyethylene
PP	polypropylene
PVC-U	unplasticized poly(vinyl chloride)
SDR	standard dimension ratio
SN	nominal ring stiffness
TIR	true impact rate

5 Material**5.1 Unplasticized poly(vinyl chloride) (PVC-U)**

The material shall be a mixture of PVC-U to which are added additives, and if applicable non-virgin material, that shall allow the final product to comply with the requirements of this document.

When tested in accordance with the test methods as specified in Table 1 using the indicated parameters, the formulation shall have characteristics conforming to the requirements given in Table 1, for the chosen performance time 25, 50 or 100 years.

NOTE If the 100-year test is passed, the requirements for 25 and 50 year are deemed to be fulfilled. If the 50-year test is passed, the requirements for 25 year is deemed to be fulfilled.

Table 1 — Formulation characteristics of PVC-U conduits

Characteristic	Requirements	Test parameters		Test method
Performance time minimum 25 year				
Resistance to internal pressure	No failure during the test period	End caps	Type A or Type B	EN ISO 1167-1:2006 and EN ISO 1167-2:2006
		Orientation	Free	
		Number of test pieces	3	
		Test temperature	60 °C	
		Circumferential stress	2,0 MPa	
		Conditioning period	Shall conform to EN ISO 1167-1:2006	
		Type of test	Water-in-water	
		Test period	165 h	
Vicat (VST)	≥ 76 °C			EN ISO 2507-1:2017
Performance time minimum 50 year				
Resistance to internal pressure	No failure during the test period	End caps	Type A or Type B	EN ISO 1167-1:2006 and EN ISO 1167-2:2006
		Orientation	Free	
		Number of test pieces	3	
		Test temperature	60 °C	
		Circumferential stress	8,0 MPa	
		Conditioning period	Shall conform to EN ISO 1167-1:2006	
		Type of test	Water-in-water	
		Test period	165 h	
Vicat (VST)	≥ 79 °C			EN ISO 2507-1:2017
Performance time minimum 100 year				
Resistance to internal pressure	No failure during the test period	End caps	Type A or Type B	EN ISO 1167-1:2006 and EN ISO 1167-2:2006
		Orientation	Free	
		Number of test pieces	3	
		Test temperature	60 °C	
		Circumferential stress	10 MPa	
		Conditioning period	Shall conform to EN ISO 1167-1:2006	
		Type of test	Water-in-water	
		Test period	1000 h	
Vicat (VST)	≥ 79 °C			EN ISO 2507-1:2017

5.2 Polypropylene (PP)

The material shall be a mixture of PP to which are added additives, and if applicable non-virgin material, that shall allow the final product to comply with the requirements of this document.

EN 50626-2:2023 (E)

When tested in accordance with the test methods as specified in Table 2 using the indicated parameters, the compound shall have characteristics conforming to the requirements given in Table 2, for the chosen performance time 25, 50 or 100 years.

NOTE If the 100-year test is passed, the requirements for 25 and 50 year are deemed to be fulfilled. If the 50-year test is passed, the requirements for 25 year is deemed to be fulfilled.

Table 2 — Compound characteristics of PP conduits

Characteristic	Requirements	Test parameters		Test method
Performance time minimum 25 year				
Resistance to internal pressure	No failure during the test period	End caps Test temperature Orientation Number of test pieces Circumferential stress Conditioning period Type of test Test period	Type A or Type B 80 °C Free 3 1,0 MPa Shall conform to EN ISO 1167-1:2006 Water-in-water 140 h	EN ISO 1167-1:2006 and EN ISO 1167-2:2006
Melt mass-flow rate	≤ 2,5 g/10 min	Temperature Loading mass	230 °C 2,16 kg	EN ISO 1133-1:2022
Thermal stability, OIT	≥ 8 min	Temperature	200 °C	EN ISO 11357-6:2018
Performance time minimum 50 year				
Resistance to internal pressure	No failure during the test period	End caps Test temperature Orientation Number of test pieces Circumferential stress Conditioning period Type of test Test period	Type A or Type B 80 °C Free 3 3,7 MPa Shall conform to EN ISO 1167-1:2006 Water-in-water 165 h	EN ISO 1167-1:2006 and EN ISO 1167-2:2006
Melt mass-flow	≤ 1,5 g/10 min	Temperature Loading mass	230 °C 2,16 kg	EN ISO 1133-1:2022
Thermal stability, OIT	≥ 8 min	Temperature	200 °C	EN ISO 11357-6:2018
Performance time minimum 100 year				
Resistance to internal pressure	No failure during the test period	End caps Test temperature Orientation Number of test pieces Circumferential stress Conditioning period Type of test Test period	Type A or Type B 95 °C Free 3 2,5 MPa Shall conform to EN ISO 1167-1:2006 Water-in-water 1000 h	EN ISO 1167-1:2006 and EN ISO 1167-2:2006