
Cevni sistemi iz polimernih materialov, ki delujejo po težnostnem principu in so položeni v zemljo, za transport površinske vode - Neplastificiran polivinilklorid (PVC-U), polipropilen (PP) in polietilen (PE) - 2. del: Specifikacija za cestne odtoke

Plastics piping systems for non-pressure underground conveyance of surface water - Unplasticized poly(vinyl chloride) (PVC-U), polypropylene (PP) and polyethylene (PE) - Part 2: Specification for road gullies

Kunststoff-Rohrleitungssysteme für die drucklose unterirdische Ableitung von Niederschlagswasser - Weichmacherfreies Polyvinylchlorid (PVC-U), Polypropylen (PP) und Polyethylen (PE) - Teil 2: Anforderungen an Straßenabläufe

Systèmes de canalisations en plastique pour le transport souterrain sans pression des eaux de surface - Poly(chlorure de vinyle) non plastifié (PVC-U), en polypropylène (PP) et en polyéthylène (PE) - Partie 2 : Spécifications relatives aux bouches d'égout

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European foreword

This document (EN 17670-2:2023) 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of an identical text or by endorsement, at the latest by May 2024, and conflicting national standards shall be withdrawn at the latest by November 2025.

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 is a supplementary standard for System Standards for plastics piping systems of a particular material 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.

Product complying with this document are intended to collect and transfer surface water into a drain or sewer system

EN 17670 consists of the following parts under the general title *Plastics piping systems for non-pressure underground conveyance of surface water — Unplasticized poly(vinyl chloride) (PVC-U), polypropylene (PP) and polyethylene (PE)*

- *Part 1: Specification for manholes and inspection chambers* (under development);
- *Part 2: Specification for road gullies* (this document);
- *Part 3: Assessment of conformity* (CEN/TS to be developed).

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.

Introduction

Road gullies for surface water have been used for many years and due to the increased requirements for surface water drainage, they are becoming more important as part of an integrated surface water management system.

The products covered by this document are intended for use as part of surface water management systems.

Road gullies intended for full encapsulation in concrete are not covered by this document.

Infiltration gullies and gullies with non-tight joints are not covered by this document.

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1 Scope

This document specifies the definitions and requirements for unplasticized poly(vinyl chloride) (PVC-U), polypropylene (PP), polypropylene with mineral modifier (PP-MD) or polyethylene (PE) road gullies intended for use in non-pressure underground drains and sewers for surface water having a maximum depth of 4 m from ground level to the lowest point of the internal surface of the road gully. Road gullies complying with this document are intended to be used in pedestrian or vehicular traffic areas outside the building structure.

NOTE 1 Products complying with this document can also be used in non-traffic areas.

NOTE 2 Road gullies can be subject to national regulation which limit the maximum installation depth and / or local provisions. The installer checks for compliance prior to installation.

Road gullies complying with this document are made from a prescribed set of components that are manufactured from unplasticized poly(vinyl chloride) (PVC-U), polypropylene (PP), polypropylene with mineral modifier (PP-MD) or polyethylene (PE) and assembled together.

Road gullies complying with this document may be equipped with optional devices (e.g. removable sand or silt bucket, leaf separator etc.), however the performance of these optional devices is not covered within the scope of this document.

Road gully components can be manufactured by various methods e.g. extrusion, injection moulding, rotational moulding, low-pressure moulding, blow moulding, thermoforming or fabricated.

NOTE 3 Products complying with this document can be installed in underground applications without additional static calculation.

NOTE 4 The complete road gully assembly can also include non-plastic items (near surface or surface components for example) which are not covered by this document.

NOTE 5 The complete road gully assembly can be supplied with covers, frame covers and gratings complying with the relevant part of EN 124 which are not covered by this document. However, reference is made to this document for geometrical characteristics where applicable.

NOTE 6 Road gullies can be site assembled from different components, but can also be manufactured as a single unit.

This document covers:

- road gullies with or without sand / silt trap;
- road gullies with or without water seal preventing odour release;
- road gullies where the traffic load will or will not be carried by the complete gully (resp. “Direct loaded gullies” or “Indirect loaded gullies”).

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 124 (series), *Gully tops and manhole tops for vehicular and pedestrian areas*

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 681-3, *Elastomeric seals — Materials requirements for pipe joint seals used in water and drainage applications — Part 3: Cellular materials of vulcanized rubber*

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*

EN 12666-1, *Plastics piping systems for non-pressure underground drainage and sewerage — Polyethylene (PE) — Part 1: Specifications for pipes, fittings and the system*

EN 13476-2, *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*

EN 13476-3, *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 3: Specifications for pipes and fittings with smooth internal and profiled external surface and the system, Type B*

EN 13598-1, *Plastics piping systems for non-pressure underground drainage and sewerage — Unplasticized poly(vinyl chloride) (PVC-U), polypropylene (PP) and polyethylene (PE) — Part 1: Specifications for ancillary fittings including shallow chambers*

EN 13598-2:2020, *Plastics piping systems for non-pressure underground drainage and sewerage — Unplasticized poly(vinyl chloride) (PVC-U), polypropylene (PP) and polyethylene (PE) — Part 2: Specifications for manholes and inspection chambers*

EN 14758-1, *Plastics piping systems for non-pressure underground drainage and sewerage — Polypropylene with mineral modifiers (PP-MD) — Part 1: Specifications for pipes, fittings and the system*

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EN ISO 580, *Plastics piping and ducting systems — Injection-moulded thermoplastics fittings — Methods for visually assessing the effects of heating (ISO 580)*

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

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

EN ISO 1158, *Plastics — Vinyl chloride homopolymers and copolymers — Determination of chlorine content (ISO 1158)*

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

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

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

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

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

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

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<https://standards.iteh.ai/> EN ISO 13229, *Thermoplastics piping systems for non-pressure applications — Unplasticized poly(vinyl chloride) (PVC-U) pipes and fittings — Determination of the viscosity number and K-value (ISO 13229)*

EN ISO 13254, *Thermoplastics piping systems for non-pressure applications — Test method for watertightness (ISO 13254)*

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)*

ISO 13266:2022, *Thermoplastics piping systems for non-pressure underground drainage and sewerage — Thermoplastics shafts or risers for inspection chambers and manholes — Determination of resistance against surface and traffic loading*

ISO 13267:2010, *Thermoplastics piping systems for non-pressure underground drainage and sewerage — Thermoplastics inspection chamber and manhole bases — Test methods for buckling resistance*

ISO 13268, *Thermoplastics piping systems for non-pressure underground drainage and sewerage — Thermoplastics shafts or risers for inspection chambers and manholes — Determination of ring stiffness*

3 Terms and definitions

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

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

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

3.1

surface water

water from precipitation, which has not seeped into the ground and is discharged to the drain or sewer system directly from the ground or from exterior building surfaces

[SOURCE: EN 16323:2014, 2.1.1.3, modified – reference to Figure 1 deleted]

3.2

drain

pipeline, usually underground, designed to carry wastewater from a source to a sewer

[SOURCE: EN 16323:2014, 2.2.3.1]

3.3

sewer

pipeline or other construction, usually underground, designed to carry wastewater from more than one source

[SOURCE: EN 16323:2014, 2.2.3.12]

3.4

road gully

assembly to receive surface water from the ground surface through a top or grating for discharge into a drain or sewer system. The road gully access dimension designates the nominal size

Note 1 to entry: Road gullies are not intended for man entry.

Note 2 to entry: Road gullies can be either direct loaded or indirect loaded.

3.5

direct loaded road gully

DRG

road gully where the traffic load is transferred by the body of the gully, to the soil

Note 1 to entry: An example of a DRG is shown in Figure 1.

Note 2 to entry: Typically, DRG's are installed at a maximum depth of 2 m.

EN 17670-2:2023 (E)**3.6****indirect loaded road gully**

IRG

road gully where the traffic load is transferred to the soil by the near surface components

Note 1 to entry: Examples of IRG's are shown in Figures 2, 3, 4, 5 and 6.

3.7**back inlet**

secondary inlet to a road gully allowing connection to another road gully

Note 1 to entry: Figure 6 refers.

3.8**near-surface components**

components intended to spread vehicular loading to the soil and can provide a seating for the gully top

3.9**road gully base**

bottom part of a road gully which allows connection to the drain or sewer system, and can include a sand trap and a water seal

Note 1 to entry: In case of a one-piece DRG or IRG, for testing purposes, the road gully base component ends at a maximum distance of 500 mm measured from the highest point of the water outlet. Above 500 mm the section should be considered as a road gully riser and tested accordingly.

3.10**road gully riser**

vertical conduit between the road gully base and the near ground level or gully top

Note 1 to entry: In case of a one-piece DRG or IRG, for testing purposes the road gully riser component starts at a distance of minimum 500 mm measured from the highest point of the water outlet. Below 500 mm the section should be considered as a road gully base and tested accordingly.

3.11**gully top**

upper part of a road gully consisting of a frame and grating

Note 1 to entry: This component is covered by EN 124-1 and not by this document. Definitions for frame and grating can be found in EN 124-1.

3.12**transition piece**

part of the road gully assembly allowing the connection to the gully top, in case of a change in geometry

Note 1 to entry: An example of a transition piece is shown in Figures 4 and 5.

Note 2 to entry: The transition piece can also be a rubber sleeve.

3.13**telescopic adaptor**

part of the assembly on top of the riser of an IRG that allows adjustment of surface or the near surface components

Note 1 to entry: Telescopic adaptors allows accommodation of settlement during lifetime and eliminate the transmission of vehicular loading.

Note 2 to entry: The telescopic adaptor is often a pipe.

3.14

road gully assembly

component(s) collectively forming a road gully

3.15

sand trap

integral part of a road gully which allows the separation and collection of sediment

Note 1 to entry: May also be referred to as a silt trap.

3.16

sand trap volume

volume of sand that can be trapped by the sand trap in regular use

Note 1 to entry: Sand trap volumes for road gullies with water seal are shown in Figures 1, 3, 5 and 6. Sand trap volume without water seal is shown in Figure 4.

Note 2 to entry: This definition excludes volumes provided by special features such as collection buckets or dirt pans.

3.17

depth of water seal

h

effective height of water in the trap which prevents the passage of foul air

Note 1 to entry: Some national regulation and/or local provision specify minimum depth of water seal.

Note 2 to entry: See Figures 1, 3, 5 and 6.

3.18

maximum height of groundwater above lowest point of the road gully

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height of water column above the lowest point of the internal surface of the road gully, that the road gully can withstand during use

3.19

optional device

detachable feature which does not contribute to the structural performance of the road gully

Note 1 to entry: Examples of optional device may be a silt or sand bucket, filter or leaf separator.

3.20

factory fabricated component

component produced from pipe and/or from injection-moulded fittings by thermoforming, adhesive joint, welding or mechanical jointing

3.21

virgin material

plastics material in the form of pellets, granules, powder, floc, etc. that has not been subjected to use or processing other than that required for its initial manufacture

Note 1 to entry: Does not contain any reworked plastics material and/or plastics recycle.

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Note 2 to entry: Sometimes also referred to as “primary material” or “primary plastics feedstock”.

Note 3 to entry: It is understood that the addition of additives such as stabilizers and pigments is still resulting into a virgin (plastics) material.

[SOURCE: ISO 472:2013, 2.1231, modified - Notes 1 to entry, Note 2 to entry and Note 3 to entry added]

3.22**compound/formulation**

clearly defined homogenous mixture of substances used for the manufacture of the product

Note 1 to entry: In general, the term “compound” is used for polyolefins and the term “formulation” for PVC.

Note 2 to entry: For metals and when dealing with water and food contact regulations the term “composition” is often used instead of compound/formulation.

3.23**reworked material**

plastics material from rejected unused products or trimmings capable of being reclaimed within the same process that generated it

Note 1 to entry: Reworked material does not change the status of the feedstock.

Note 2 to entry: This definition does not cover the conditions for the use of reworked material, which can be found in the applicable product standard.

Note 3 to entry: Previously referred to as “own reprocessed material”.

3.24**pre-consumer material**

plastics material diverted from the waste stream during a manufacturing process, excluding reworked (plastics) material

Note 1 to entry: Previously referred to as “post-industrial material”.

Note 2 to entry: Different categories of pre-consumer material may be considered in the applicable product standard.

[SOURCE: ISO 14021:2016, 7.8.1.1 modified – ‘plastics’ added, text deleted after ‘rework’ and 2 notes to entry introduced]

3.25**post-consumer material**

plastics material generated by households or by commercial, industrial and institutional facilities in their role as end-users of the product which can no longer be used for its intended purpose

Note 1 to entry: This includes returns of material from the distribution chain.

Note 2 to entry: Different categories of post-consumer material may be considered in the applicable product standard.

[SOURCE: ISO 14021:2016, 7.8.1.1 modified – ‘plastics’ added, last sentence changed into Note 1 to entry and Note 2 to entry introduced]