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Plastics piping systems for non-pressure underground drains and sewers — Unplasticized poly(vinyl chloride) (PVC-U), polypropylene (PP), polypropylene with mineral modifiers (PP-MD) and polyethylene (PE) — Specifications for manholes and inspection chambers in traffic areas and underground installations

Systèmes de canalisations en plastique pour les branchements et les collecteurs d'assainissement enterrés sans pression — Poly(chlorure de vinyle) non plastifié (PVC-U), polypropylène (PP), polypropylène avec modificateurs minéraux (PP-MD) et polyéthylène (PE) — Spécifications relatives aux regards et aux boîtes d'inspection et de branchement dans les zones de circulation et dans les réseaux enterrés

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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This document was prepared by Technical Committee ISO/TC 138, *Plastics pipes, fittings and valves for the transport of fluids*, Subcommittee SC 1, *Plastics pipes and fittings for soil, waste and drainage (including land drainage)*.

This second edition cancels and replaces the first edition (ISO 13272:2011), which has been technically revised. The main changes are as follows:

— Clause 1, the Scope has been extended;

— Clause 3, Drawings for manholes and inspection chambers have been added;

— Clause 4, Material has been completely updated, including the Annex for recyclate;

— Clause 7, Mechanical characteristics text has been improved;

— Annex A has been simplified;

— References to EN 476 have been deleted throughout the document.

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Introduction

The inspection chamber or manhole covered by this document can be manufactured by various methods, e.g. injection moulding, rotational moulding, low-pressure moulding or fabricated from components made in accordance with other International Standards.

The jointing of components can be achieved using:

— elastomeric ring seal joints;

— adhesive joints for PVC-U;

— welded joints for PVC-U, PP and PE;

— extrusion welding;

— mechanical jointing.

Both manholes and inspection chambers covered by this document can be site-assembled from different components but can also be manufactured as a single unit. In either case, the following functional parts can be recognized:

a) base (always present);

   In the case of a one-piece chamber or manhole, the base part ends at a distance of 300 mm measured from the top of the main channel.

b) riser (depth-dependent);

c) telescopic part (design-dependent);

d) cone (dependent on the design of near-surface components and their recommended installation);

e) other near-surface components.

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Plastics piping systems for non-pressure underground drains and sewers — Unplasticized poly(vinyl chloride) (PVC-U), polypropylene (PP), polypropylene with mineral modifiers (PP-MD) and polyethylene (PE) — Specifications for manholes and inspection chambers in traffic areas and underground installations

1 Scope

This document specifies the definitions and requirements for buried circular manholes and inspection chambers installed to a maximum depth of 6 m from ground level to the invert of the main channel and manufactured from unplasticized poly(vinyl chloride) (PVC-U), polypropylene (PP), polypropylene with mineral modifiers (PP-MD) or polyethylene (PE). These products are intended for use in traffic areas and outside the building structure (application area code "U") for wastewater (foul wastewater, domestic wastewater, surface water).

NOTE 1 Products conforming with this document are also suitable in non-traffic areas.

This document is only applicable to those chamber/manhole items where the manufacturer has clearly stated in the documentation how the components must be assembled to create a complete manhole or inspection chamber.

The products covered by this document comprise the following:

— products providing access to the drain or sewer systems by means of inspection and cleaning equipment.

— products designated as manholes providing additionally human access to the drain or sewer systems.

NOTE 2 Manholes and inspection chambers can be subject to national regulations and/or local provisions.

NOTE 3 Products conforming with this document can be installed in underground applications without additional static calculations

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.

ISO 472, *Plastics — Vocabulary*

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

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

ISO 3126, *Plastics piping systems — Plastics components — Determination of dimensions*

ISO 3127, *Thermoplastics pipes — Determination of resistance to external blows — Round-the-clock method*

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ISO 4435, *Plastics piping systems for non-pressure underground drainage and sewerage — Unplasticized poly(vinyl chloride) (PVC-U)*

ISO 8772, *Plastics piping systems for non-pressure underground drainage and sewerage — Polyethylene (PE)*

ISO 8773, *Plastics piping systems for non-pressure underground drainage and sewerage — Polypropylene (PP)*

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

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 13259, *Thermoplastics piping systems for underground non-pressure applications — Test method for leaktightness of elastomeric sealing ring type joints*

ISO 13263, *Thermoplastics piping systems for non-pressure underground drainage and sewerage — Thermoplastics fittings — Test method for impact strength*

ISO 13266:2010, *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, *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*

ISO 21138-1, *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: Material specification and performance criteria for pipes, fittings and systems*

ISO 21138-2, *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: Pipes and fittings with smooth external surface, Type A*

ISO 21138-3, *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: Pipes and fittings with non-smooth external surface, Type B*

EN 681-1, *Elastomeric seals — Material 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 — Material requirements for pipe joint seals used in water and drainage applications — Part 4: Cast polyurethane sealing elements*

EN 13101:2002, *Steps for underground man entry chambers — Requirements, marking, testing and evaluation of conformity*

EN 14396, *Fixed ladders for manholes*

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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3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 472, ISO 4435, ISO 8772, ISO 8773, ISO 21138-1, EN 14758-1 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

— IEC Electropedia: available at https://www.electropedia.org/

3.1.1
inspection chamber
drain or sewer fitting used to connect drain or sewer installations and/or to change the direction of drain or sewer runs, which terminates at ground level with a riser of 200 mm minimum outer diameter and an inner diameter of less than 800 mm

Note 1 to entry: Inspection chambers are subject to national safety regulations and/or local provisions regarding man-entry limitations. The installer should check for compliance prior to installation.

Note 2 to entry: Figure 1 shows typical inspection chambers.

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