SLOVENSKI STANDARD
oSIST prEN ISO 11300-2:2025

01-marec-2025

Cevni sistemi za obnovo podzemnih odtokov, kanalizacije in vodovodnih omrežij - 2. del: Duromerni kompozitni materiali (ISO/DIS 11300-2:2025)

Piping systems for rehabilitation of underground drains, sewers and water supply networks-Part 2: Thermoset composite materials (ISO/DIS 11300-2:2025)

Rohrleitungssysteme für die Sanierung von unterirdischen Entwässerungs-, Kanalisations- und Wasserversorgungsnetzen - Teil 2: Duroplastische Komposite (ISO/DIS 11300-2:2025)

Systèmes de canalisations pour la réhabilitation des branchements, des collecteurs d'assainissement et des réseaux d'alimentation en eau enterrés - Partie 2: Matériaux composites thermodurcissables (ISO/DIS 11300-2:2025)

Ta slovenski standard je istoveten z: **prEN ISO 11300-2**

ICS:

23.040.05	Cevovodi za zunanje sisteme za odpadno vodo in njihovi deli	Pipeline and its parts for external sewage systems
91.140.80	Drenažni sistemi	Drainage systems
93.025	Zunanji sistemi za prevajanje vode	External water conveyance systems
93.030	Zunanji sistemi za odpadno vodo	External sewage systems

oSIST prEN ISO 11300-2:2025 **en,fr,de**

DRAFT International Standard

ISO/DIS 11300-2

Piping systems for rehabilitation of underground drains, sewers and water supply networks —

Part 2: Thermoset composite materials

ICS: 93.025; 91.140.80; 23.040.05; 93.030

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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 documents 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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 138, *Plastics pipes, fittings and valves for the transport of fluids*, Subcommittee SC 8, *Rehabilitation of pipeline systems*.

For piping systems made from thermoset composite materials, this document cancels and replaces the system standards: ISO 11296-1, -4, ISO 11297-1, -4 and ISO 11298-1, -4.

ISO 11300-1 similarly replaces for piping systems using PE material, the content of the standards:

ISO 11296-1, -2, -3, ISO 11297-1, -2, -3, ISO 11298-1, -2, -3 and ISO 21225-1, -2

ISO 11300-3 similarly replaces for piping systems using PVC-U material, the content of the standards:

ISO 11296-1, -3.

ISO 11300-4 similarly replaces for piping systems using thermoplastic composite materials, the content of the standards: ISO 11296-1, -7, -9.

A list of all parts in the ISO 11300 series can be found on the ISO website.

Once all four parts of ISO 11300 have been published, the above-mentioned replaced standards will be withdrawn.

In merging their respective contents, this document also adds or makes technical changes to the requirements of the last editions of ISO 11296-4, ISO 11297-4 and ISO 11298-4 as follows:

— Additional and amended definitions in Clause 3.

— New material classification of thermoplastics membranes (amended Table 1).

— Extended material classification of resin systems (new Table 2).

— Additional requirements for declaration of short-term mechanical characteristics in Table 5.

— Extended classification of lateral connections (new class D collar added in Table 9 and Figure 6).

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.

Introduction

This document is a part of a System Standard for piping systems of various materials used for the rehabilitation of existing pipelines in a specified application area. System Standards for rehabilitation deal with the following applications:

— ISO 11300: *Piping systems for rehabilitation of underground drains, sewers and water supply networks*; (this standard)

— ISO 11301: *Piping systems for rehabilitation of underground gas supply networks.*

The System Standards ISO 11300 and ISO 11301 are subdivided into parts each covering a specific material or class of material of the piping system.

ISO 11300 is subdivided into four parts:

— *Part 1: Polyethylene (PE) material*;

— *Part 2: Thermoset composite materials* (this document);

— *Part 3: PVC-U material;*

— *Part 4: Thermoplastic composite materials.*

These System Standards cover various techniques for renovation and trenchless replacement. Furthermore, they are distinguished from those for conventionally installed plastics piping systems by the requirement to verify certain characteristics in the "as-installed condition", after site processing. This is in addition to specifying requirements for piping system components "as manufactured".

A consistent structure of clause headings has been adopted for all parts of ISO 11300 and ISO 11301, in order to facilitate direct comparisons across rehabilitation technique families.

Figure 1 shows the clause structure and the relationship between ISO 11300 and ISO 11301.

For complementary information, see ISO 11295. For assessment of conformity to the requirements of this document, see ISO/TS 23818-2.

System Standard ISO 11300 incorporates the relevant content of and replaces the following previous System Standards for the rehabilitation of existing drainage and sewerage and water supply networks:

— The ISO 11296 series: Plastics piping systems for renovation of underground non-pressure drainage and sewerage networks;

— The ISO 11297 series: Plastics piping systems for renovation of underground drainage and sewerage networks under pressure;

— The ISO 11298 series: Plastics piping systems for renovation of underground water supply networks;

— The ISO 21225 series: Plastics piping systems for the trenchless replacement of underground pipeline networks.

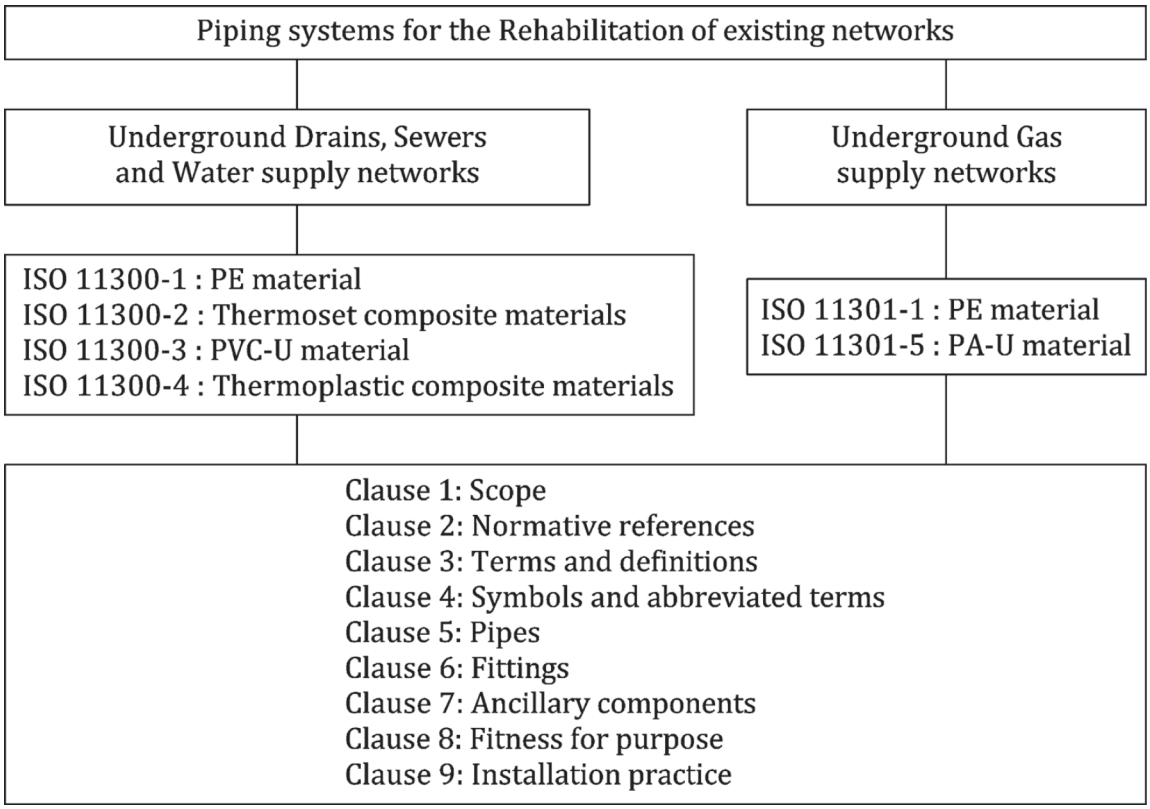

Figure 1 — Format of the rehabilitation system standards

Piping systems for rehabilitation of underground drains, sewers and water supply networks —

Part 2:
Thermoset composite materials

1 Scope

This document specifies requirements and test methods for pipes and fittings which are part of piping systems for the rehabilitation of underground non-pressure and pressure drains and sewers, and of water supply networks which transport water intended for human consumption, including raw water intake pipelines.

It is applicable to the renovation technique family:

— lining with cured-in-place pipes (CIPP).

It applies to the use of thermoset composite materials with various thermosetting resin systems, in combination with compatible fibrous carrier materials, reinforcement, and both permanent and process-related thermoplastics membranes (see 5.1).

It is applicable to pipes and fittings, as manufactured, as well as to the installed system, with service temperatures up to 50 °C for drains and sewers and up to 25 °C for water supply networks.

For pressurised networks, this document applies to independent (fully structural, class A) and interactive (semi structural, class B) pressure pipe liners, as defined in ISO 11295, which do not rely on adhesion to the existing pipeline.

It does not include requirements or test methods for resistance to abrasion, cyclic loading or impact, which are outside the scope of this document.

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 75-2:2013, *Plastics — Determination of temperature of deflection under load — Part 2: Plastics and ebonite*

ISO 178:2019, *Plastics — Determination of flexural properties*

ISO 899-2:2024, *Plastics — Determination of creep behaviour — Part 2: Flexural creep by three-point loading*

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

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

ISO 4633, *Rubber seals — Joint rings for water supply, drainage and sewerage pipelines — Specification for materials*

ISO 7432, *Glass-reinforced thermosetting plastics (GRP) pipes and fittings — Test methods to prove the design of locked socket-and-spigot joints, including double-socket joints, with elastomeric seals*

ISO 7509, *Plastics piping systems — Glass-reinforced thermosetting plastics (GRP) pipes — Determination of time to failure under sustained internal pressure*

ISO 7685:2019, *Glass-reinforced thermosetting plastics (GRP) pipes — Determination of initial ring stiffness*

ISO 8513:2023, *Plastics piping systems — Glass-reinforced thermosetting plastics (GRP) pipes — Test methods for the determination of the initial longitudinal tensile strength*

ISO 8521:2020, *Glass-reinforced thermosetting plastic (GRP) pipes — Test methods for the determination of the initial circumferential tensile wall strength*

ISO 8533, *Glass-reinforced thermosetting plastics (GRP) pipes and fittings — Test methods to prove the design of cemented or wrapped joints*

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

ISO 10468:2023, *Glass-reinforced thermosetting plastics (GRP) pipes — Determination of the ring creep properties under wet or dry conditions*

ISO 10928:2024, *Plastics piping systems — Glass-reinforced thermosetting plastics (GRP) pipes and fittings — Methods for regression analysis and their use*

ISO 10952, *Glass-reinforced thermosetting plastics (GRP) pipes and fittings — Determination of the resistance to chemical attack for the inside of a section in a deflected condition*

ISO/DIS 11295:2024, *Plastics piping systems used for the rehabilitation of pipelines — Classification and overview of strategic, tactical and operational activities*

ISO/DIS 11300-1, *Piping systems for rehabilitation of underground drains, sewers and water supply networks — Part 1: Polyethylene (PE) material*

ISO 13002, *Carbon fibre — Designation system for filament yarns*

ISO 14125:1998, *Fibre-reinforced plastic composites — Determination of flexural properties*

ISO 23856:2021, *Plastics piping systems for pressure and non-pressure water supply, drainage or sewerage — Glass-reinforced thermosetting plastics (GRP) systems based on unsaturated polyester (UP) resin*

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 — Material requirements for pipe joint seals used in water and drainage applications — Part 2: Thermoplastic elastomers*

EN 681-3, *Elastomeric seals — Material 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*

3 Terms and definitions

For the purposes of this document, the following terms and definitions 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 General terms

3.1.1
pipeline system
interconnecting pipe network for the conveyance of fluids

3.1.2
drain
conduit which conveys wastewater, surface water or other unwanted liquids, including its connections to lateral pipes, manhole, gullies and other network components

[SOURCE: ISO 6701-1:2020, 3.3.4.38, modified to include connections as stated]

3.1.3
sewer
pipeline which conveys unwanted liquids, including its connections to lateral pipes, manholes, access chambers and other network components

[SOURCE: ISO 6701-1:2020, 3.3.4.41, modified to include connections as stated]

3.1.4
rehabilitation
measures for restoring or upgrading the performance of existing *pipeline systems* (3.1.1), including *renovation* (3.1.5), *repair* (3.1.6) and *replacement* (3.1.7)

3.1.5
renovation
work incorporating all or part of the original fabric of the pipeline, by means of which its current performance is improved

3.1.6
repair
rectification of local damage

3.1.7
replacement
construction of a new pipeline, on or off the line of an existing pipeline, where the function of the new *pipeline system* (3.1.1) incorporates that of the old

3.1.8
trenchless replacement
replacement (3.1.7) without opening trenches other than small excavations to provide access for the particular technique

3.1.9
maintenance
routine work undertaken to ensure the existing performance of an asset

3.1.10
lining pipe
pipe inserted for *renovation* (3.1.5) purposes

3.1.11
liner
lining pipe (3.1.10) after installation

3.1.12
lining system
lining pipe (3.1.10) and all relevant fittings for insertion into an existing pipeline for the purposes of *renovation* (3.1.5)

3.1.13
characteristic
property, dimension or other feature of a material or component

3.1.14
declared value
limiting value of a *characteristic* (3.1.13) declared in advance by the *lining system* (3.1.12) supplier, which becomes the requirement for the purposes of assessment of conformity

3.1.15
system test pressure
STP
either hydrostatic or air pressure, or both applied to the installed pipeline system in order to ensure its integrity and leaktightness

3.1.16
simulated installation
installation of a *lining system* (3.1.12) into a *simulated host pipeline* (3.1.17), using representative equipment and processes, to provide samples for testing which are representative of an actual installation

3.1.17
simulated host pipeline
section of pipeline, which is not part of an operational network, but which replicates the environment of an operational network

3.1.18
technique family
group of renovation techniques which are considered to have common *characteristics* (3.1.13) for standardization purposes

3.1.19
independent pressure pipe liner
liner capable on its own of resisting without failure all applicable internal loads throughout its design life

3.1.20
interactive pressure pipe liner

liner which relies on the existing pipeline for some measure of radial support in order to resist without failure all applicable internal loads throughout its design life

3.1.21
type testing
testing performed to prove that a material, component, joint or assembly is capable of conforming to the requirements given in the applicable standard

3.1.22
CCTV
system comprised of cameras, recorders, interconnections and displays that are used to inspect pipelines

3.2 Terms related to techniques

The various techniques for rehabilitation of underground drains and sewers and water supply networks, within the scope of pipeline rehabilitation techniques generally, are shown schematically in Figure 2. For definitions of standardized renovation and replacement techniques shown in Figure 2, but outside the scope of this document, see ISO 11295.

3.2.1
lining with cured-in-place pipes
lining with a flexible tube impregnated with a thermosetting resin, which produces a pipe after resin cure