

SLOVENSKI STANDARD oSIST prEN ISO 11298-4:2019

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Cevni sistemi iz polimernih materialov za obnovo podzemnih omrežij za oskrbo z vodo - 4. del: Oblaganje s cevmi, utrjenimi na mestu vgradnje (ISO/DIS 11298-4:2019)

Plastics piping systems for renovation of underground water supply networks - Part 4: Lining with cured-in-place pipes (ISO/DIS 11298-4:2019)

Kunststoff-Rohrleitungssysteme für die Renovierung von erdverlegten Wasserversorgungsnetzen - Teil 4: Vor Ort härtendes Schlauchlining (ISO/DIS 11298-4:2019) (standards.iteh.ai)

Systèmes de canalisation en plastique pour la rénovation des réseaux enterrés d'alimentation en eau - Partie 4. Tubage continu par tubes polymérisés sur place (ISO/DIS 11298-4:2019)

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23.040.03 Cevovodi za zunanje sisteme Pipeline and its parts for

transporta vode in njihovi deli external water conveyance

systems

93.025 Zunanji sistemi za prevajanje External water conveyance

vode systems

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Plastics piping systems for renovation of underground water supply networks —

Part 4:

Lining with cured-in-place pipes

Systèmes de canalisation en plastique pour la rénovation des réseaux enterrés d'alimentation en eau — Partie 4: Tubage continu par tubes polymérisés sur place

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Contents				
Fore	eword		v	
Intr	oductio	on	vi	
1	Scon	oe	1	
2	-	native references		
3	Terms and definitions			
3	3.1	General terms		
	3.2	Techniques		
	3.3	Characteristics		
	3.4	Materials	5	
	3.5	Product stages		
	3.6	Service conditions	5	
4	Sym	bols and abbreviated terms	5	
	4.1	Symbols		
	4.2	Abbreviated terms	7	
5	Pipes at the "M" stage			
	$5.\bar{1}$	Materials		
	5.2	General characteristics		
	5.3	Material characteristics		
	5.4	Geometric characteristics	9	
	5.5 5.6	Mechanical characteristics	9 0	
	5.7	Physical characteristics ndards iteh ai Jointing	9 9	
	5.8	Marking	9	
		Marking <u>OSIST prEN ISO 11298-4:2019</u>	10	
6	FILLI	ngs at the "M" stage itch: a/catalog/standards/sist/15021bf6-a566-4a70-a06c-	10	
7		llary components ^{04b66759773d/osist-pren-iso-11298-4-2019}		
8		ess for purpose of the installed lining system at the "I" stage	10	
	8.1	Materials		
	8.2	General characteristics		
	8.3 8.4	Material characteristics Geometric characteristics		
	0.4	8.4.1 General		
		8.4.2 CIPP wall structure		
		8.4.3 Wall thickness		
	8.5	Mechanical characteristics	11	
		8.5.1 Reference conditions for testing		
	0.6	8.5.2 Test requirements		
	8.6	Physical characteristics		
	8.7	Additional characteristics		
	8.8	Sampling		
0				
9	9.1	allation practice Preparatory work		
	9.1	Storage, handling and transport of pipe components		
	9.3	Equipment		
	9.4	Installation		
		9.4.1 Environmental precautions		
		9.4.2 Installation procedures	17	
		9.4.3 Simulated installations		
	9.5	Process-related inspection and testing		
	9.6 9.7	Lining terminationReconnections to existing pipeline system		
	2.7	reconnections to existing piperine system	10	

oSIST prEN ISO 11298-4:2019

ISO/DIS 11298-4:2019(E)

	9.8	Final inspection and testing	18
	9.9	Documentation	18
Annex	A (info	rmative) CIPP components and their functions	19
Annex	B (nor	mative) Cured-in-place pipes — Determination of short-term flexural properties	20
Annex		mative) Cured-in-place pipes —Determinationof long-term flexural modulus dry or wet conditions	29
Annex		mative) Cured-in-place pipes — Determination of long-term flexural strength dry or wet conditions	34
Riblio	granhv		37

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Foreword

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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).

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For an explanation of 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 www.iso.org/iso/foreword.html. (Standards.iteh.ai)

This document was prepared by Technical Committee ISO/TC 138, Plastics pipes, fittings and valves for the transport of fluids, Subcommittee SC 08, Renabilitation of pipeline systems.

A list of all parts in the ISO 11298 series can be found on the ISO website.

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 plastics piping systems of various materials used for renovation of existing pipelines in a specified application area. System standards for renovation dealing with the following applications are either available or in preparation:

- ISO 11296, Plastics piping systems for renovation of underground non-pressure drainage and sewerage networks:
- ISO 11297, Plastics piping systems for renovation of underground drainage and sewerage networks under pressure:
- ISO 11298, Plastics piping systems for renovation of underground water supply networks (this document):
- ISO 11299, Plastics piping systems for renovation of underground gas supply networks.

These system standards are distinguished from those for conventionally installed plastics piping systems because they set requirements for certain characteristics in the "as-installed" condition, after site processing. This is in addition to specifying requirements for plastics piping system components "as manufactured".

Each of the system standards comprises a

Part 1: General

Teh STANDARD PREVIEW and all applicable renovation technique family-related parts, which for water supply networks include or potentially include the following:

Part 2: Lining with continuous pipes;

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- Part 3: Lining with close fit pipes and sitch air catalog/standards/sist/15021bf6-a566-4a70-a06e-04b66759773d/osist-pren-iso-11298-4-2019
- *Part 4: Lining with cured-in-place pipes (this document);*
- *Part 5: Lining with discrete pipes:*
- Part 6: Lining with adhesive-backed hoses;
- Part 10: Lining with sprayed polymeric materials;
- Part 11: Lining with inserted hoses.

The requirements for any given renovation technique family are given in Part 1 applied in conjunction with the other relevant part. For example, both ISO 11298-1 and this document together specify the requirements relating to lining with cured-in-place pipes. For complementary information, see ISO 11295. Not all technique families are applicable to every area of application and this is reflected in the part numbers included in each System Standard.

A consistent structure of clause headings has been adopted for all parts to facilitate direct comparisons across renovation technique families.

Figure 1 shows the common structure and the relationship between ISO 11298 and the system standards for other application areas.

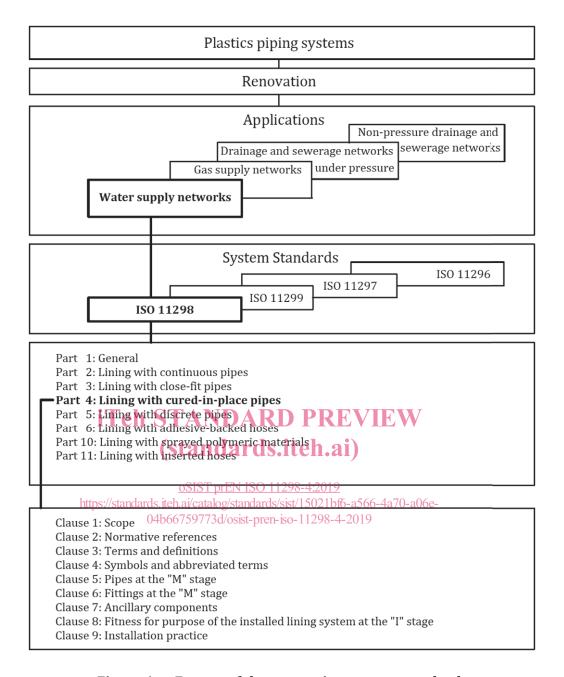


Figure 1 — Format of the renovation system standards

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Plastics piping systems for renovation of underground water supply networks —

Part 4:

Lining with cured-in-place pipes

1 Scope

This document, in conjunction with ISO 11298-1, specifies requirements and test methods for cured-in-place pipes and fittings used for the renovation of water supply networks which transport water intended for human consumption, including raw water intake pipelines.

It 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 applies to the use of various thermosetting resin systems, in combination with compatible fibrous carrier materials, reinforcement, and other process-related plastics components (see <u>5.1</u>).

It does not include requirements or test methods for resistance to cyclic loading or the pressure rating of CIPP liners where passing through bends, which are outside the scope of this document.

It is applicable to cured-in-place pipe lining systems intended to be used at a service temperature of up to 25 °C. (Standards.iten.al)

NOTE For applications operating at service temperatures greater than 25 °C guidance on re-rating factors can be supplied by the system supplier a/catalog/standards/sist/15021bf6-a566-4a70-a06e-

04b66759773d/osist-pren-iso-11298-4-2019

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, Plastics — Determination of temperature of deflection under load — Part 2: Plastics and ebonite

ISO 178:2010+A1:2013, Plastics — Determination of flexural properties

ISO 899-2:2003, Plastics — Determination of creep behaviour — Part 2: Flexural creep by three-point loading

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

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 7684, Plastics piping systems — Glass-reinforced thermosetting plastics (GRP) pipes — Determination of the creep factor under dry conditions

ISO 7685, Plastics piping systems — Glass-reinforced thermosetting plastics (GRP) pipes — Determination of initial specific ring stiffness

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

ISO 8521:2009, Plastics piping systems — Glass-reinforced thermosetting plastics (GRP) pipes — Test methods for the determination of the apparent initial circumferential tensile strength

ISO 8533, Plastics piping systems for pressure and non-pressure drainage and sewerage — Glass-reinforced thermosetting plastics (GRP) systems based on unsaturated polyester (UP) resin — Test methods to prove the design of cemented or wrapped joints

ISO 10639:2017, Plastics piping systems for pressure and non-pressure water supply — Glass-reinforced thermosetting plastics (GRP) systems based on unsaturated polyester (UP) resin

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

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

ISO 10952, Plastics piping systems — 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 11295:2017, Classification and information on design and applications of plastics piping systems used for renovation and replacement

ISO 11298-1:2018, Plastics piping systems for renovation of underground water supply networks — Part 1: General

ISO 13002, Carbon fibre — Designation system for filament yarns

ISO 14125:1998+A1:2011, Fibre-reinforced plastic composites — Determination of flexural properties (standards.iteh.ai)

3 Terms and definitions

oSIST prEN ISO 11298-4:2019

For the purposes of this document, the teins and definitions given in ISO 11298 1 and the following apply. 04b66759773d/osist-pren-iso-11298-4-2019

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

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

3.1 General terms

3.1.1

carrier material

porous component of the lining tube, which carries the liquid resin system during insertion into the pipe being renovated and forms part of the installed lining system once the resin has been cured

3.1.2

CIPP product

cured-in-place pipe product

cured-in-place pipe of a particular design, produced from a lining tube of specified materials, with a wall structure which is uniquely defined for each diameter/wall thickness combination, and which is impregnated with a specific resin system and installed by a specific process

3.1.3

CIPP unit

specific cured-in-place pipe produced from a continuous lining tube, which has been impregnated in one process and installed as a single length

3.1.4

close fit

situation of the outside of the installed liner relative to the inside of the existing pipeline, which can either be an interference fit or include a small annular gap resulting from shrinkage and tolerances only

3.1.5

composite

combination of cured resin system, carrier material and/or reinforcement, excluding any internal or external membranes

3.1.6

curing

process of resin polymerization, which may be initiated or accelerated by the use of heat or exposure to light

3.1.7

design thickness

required wall thickness of the composite, excluding any abrasion layer, as determined by structural design

3.1.8

first break

elastic limit or first major discontinuity of the stress-strain curve associated with local failure of the resin matrix or reinforcing fibres

3.1.9

lining tube

lining tube

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flexible tube, consisting of carrier material, resin system and any membranes and/or reinforcement, as combined prior to insertion in the pipe to be lined, iteh. ai)

3.1.10

oSIST prEN ISO 11298-4:2019 nominal CIPP wall thickness

one of a range of discrete lining tube wall thicknesses dictated by the sum of the thicknesses of the individual layers of materials used for tube construction at the "M" stage

3.1.11

permanent membrane

internal or external membrane designed to retain its integrity through the processes of lining tube insertion and resin system cure, and to provide functions for the operational life of the CIPP liner

3.1.12

preliner

permanent or semi-permanent external membrane which is installed separately, before insertion of the resin-impregnated lining tube

3.1.13

reinforcement

fibres incorporated in the liner, which enhance the dimensional stability of the liner and/or the structural properties of the cured composite

Note 1 to entry: The reinforcement can be incorporated in the carrier material, constitute the carrier material, or can be a separate layer.

3.1.14

resin system

thermosetting resin including the curing agent(s) and any fillers or other additives, in specified proportions

3.1.15

semi-permanent membrane

internal or external membrane designed to retain its integrity through the processes of lining tube insertion and resin system cure, but not relied on to retain its integrity at the "I" stage