



SLOVENSKI STANDARD

SIST EN 13566-7:2007

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Cevni sistemi iz polimernih materialov za obnovo podzemnih omrežij za odvodnjavanje in kanalizacijo – 7. del: Oblaganje s spiralnimi cevmi

Plastics piping systems for renovation of underground non-pressure drainage and sewerage networks - Part 7: Lining with spirally-wound pipes

Kunststoff-Rohrleitungssysteme für die Renovierung von erdverlegten drucklosen Entwässerungsnetzen (Freispiegelleitungen) – Teil 7: Wickelrohr-Lining

Systemes de canalisations plastiques pour la rénovation des réseaux d'assainissement enterrés sans pression - Partie 7 : Tubage par enroulement hélicoidal avec espace annulaire

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Plastics piping systems for renovation of underground non-pressure drainage and sewerage networks - Part 7: Lining with spirally-wound pipes

Systèmes de canalisations plastiques pour la rénovation des réseaux d'assainissement enterrés sans pression - Partie 7 : Tubage par enroulement hélicoïdal avec espace annulaire

Kunststoff-Rohrleitungssysteme für die Renovierung von erdverlegten drucklosen Entwässerungsnetzen (Freispiegelleitungen) - Teil 7: Wickelrohr-Lining

This European Standard was approved by CEN on 3 February 2007.

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EN 13566-7:2007 (E)

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EN 13566-7:2007 (E)**Foreword**

This document (EN 13566-7:2007) 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of an identical text or by endorsement, at the latest by September 2007, and conflicting national standards shall be withdrawn at the latest by March 2009.

System standards for renovation dealing with the following applications are either available or in preparation:

- **Plastics piping systems for renovation of underground non-pressure drainage and sewerage networks (this application);**
- Plastics piping systems for renovation of underground water supply networks;
- Plastics piping systems for renovation of underground gas supply networks;
- Plastics piping systems for renovation of underground drainage and sewerage networks under pressure;
- Plastics piping systems for renovation of industrial pipelines.

These system standards are distinguished from systems standards for conventionally installed plastics piping systems by setting requirements for certain characteristics in the as installed condition, after site processing. This is in addition to requirements for characteristics of plastics piping systems as manufactured.

These system standards are complemented by the information contained in ISO Technical Report 11295 [1] and supporting standard EN 13689 [2] listed in the Bibliography.

The system standard EN 13566 comprises six parts, as follows:

- *Part 1: General* <https://standards.iteh.ai/catalog/standards/sist/0ccbce75-b257-4b84-ad88-6aa2d4e3972a/sist-en-13566-7-2007>
- *Part 2: Lining with continuous pipes*
- *Part 3: Lining with close-fit pipes*
- *Part 4: Lining with cured-in-place pipes*
- *Part 5: Lining with discrete pipes (possible future work)*
- *Part 7: Lining with spirally-wound pipes (the present standard)*

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

Figure 1 shows the common part and clause structure and the relationship between this standard and the system standards for other applications.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

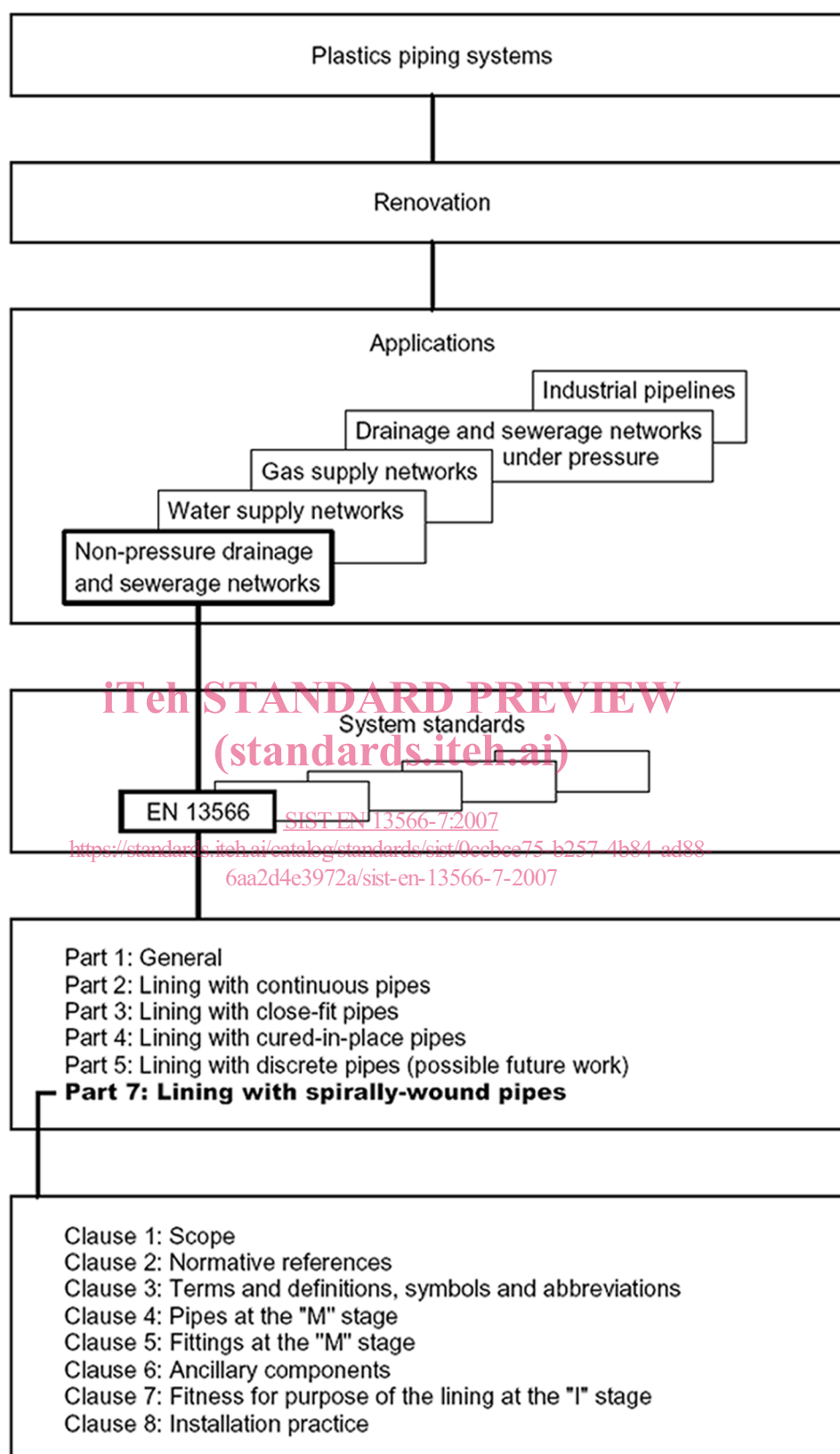


Figure 1 — Format of the renovation system standards

EN 13566-7:2007 (E)**Introduction**

The requirements for any given renovation technique family are covered by *Part 1: General*, used in conjunction with the relevant other part. For example, for the requirements relating to *Lining with spirally-wound pipes* it is necessary to refer to both part 1 and part 7. Complementary information is contained in ISO/TR 11295 [1] and EN 13689 [2], listed in the bibliography.

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1 Scope

This part of EN 13566, read in conjunction with EN 13566-1, specifies requirements and test methods for pipes that are formed on site by spirally winding and jointing a pre-manufactured profiled plastics strip using a dedicated winding machine in front of the open end of an existing pipeline (e.g. in a manhole). The pipes thus formed are simultaneously inserted into the existing pipeline by the winding forces.

It covers spirally-wound pipes of a fixed diameter made of profiled plastics strips of unplasticized poly(vinyl chloride) (PVC-U) with an integral locking mechanism. These spirally-wound pipes are used for renovating non-pressure drainage and sewerage networks and are fixed in place by grouting the annular space.

NOTE The grouting procedure is outside the scope of this standard.

2 Normative references

The following referenced documents are indispensable for the application 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 1979, *Plastics piping and ducting systems — Thermoplastics spirally-formed structured-wall pipes — Determination of the tensile strength of a seam*

EN 13566-1:2002, *Plastics piping systems for renovation of underground non-pressure drainage and sewerage networks — Part 1: General*

EN 13566-4:2002, *Plastic piping systems for renovation of underground non-pressure drainage and sewerage networks — Part 4: Lining with cured-in-place pipes*

EN ISO 179-2, *Plastics — Determination of Charpy impact properties — Part 2: Instrumented impact test (ISO 179-2:1997)*

EN ISO 306, *Plastics - Thermoplastic materials - Determination of Vicat softening temperature (VST) (ISO 306:2004)*

EN ISO 527-1, *Plastics - Determination of tensile properties - Part 1: General principles (ISO 527-1:1993 including Corr 1:1994)*

EN ISO 527-2, *Plastics — Determination of tensile properties — Part 2: Test conditions for moulding and extrusion plastics (ISO 527-2:1993 including Corr 1:1994)*

EN ISO 9967, *Plastics pipes — Determination of creep ratio (ISO 9967:1994)*

EN ISO 9969, *Thermoplastics pipes – Determination of ring stiffness (ISO 9969:1994)*

ISO 37, *Rubber, vulcanized or thermoplastic — Determination of tensile stress-strain properties*

ISO 7619-1, *Rubber, vulcanized or thermoplastic — Determination of indentation hardness — Part 1: Durometer method (Shore hardness)*

EN 13566-7:2007 (E)**3 Terms and definitions, symbols and abbreviations****3.1 Terms and definitions**

For the purposes of this document, the terms and definitions given in EN 13566-1:2002 and the following apply.

3.1.1**spirally-wound pipe**

pipe formed by continuously winding and joining a profiled strip

3.1.2**seam**

joint between adjacent profiled plastics strips formed by an integral locking mechanism and seam sealant

3.1.3**integral locking mechanism**

mechanical interlock achieved by suitable design of the edges of the extruded profile

3.1.4**seam sealant**

thermoplastic or adhesive material added to the integral locking mechanism to make the seam leaktight

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3.2 Symbols and abbreviations

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The symbols and abbreviations given in EN 13566-1:2002 and the following apply.

3.2.1 Symbols

A_w cross sectional area of the strip [mm^2/mm]

d_e external diameter [mm]

e_a neutral axis of the strip [mm]

e_o overall profile height [mm]

$e_{w,\min}$ minimum waterway wall thickness [mm]

e_w waterway wall thickness at any point [mm]

I_w second moment of area of the strip [mm^4/mm]

l_s length of the test piece for short term tensile force resistance test of the locked seam [mm]

S ring stiffness of the pipe [kN/m^2]

w effective width of the strip [mm]

w_s width of the test piece for short term tensile force resistance test of the locked seam [mm]

3.2.2 Abbreviations

EPDM ethylene-propylene-diene monomer

PE-C	chlorinated polyethylene
PVC-U	unplasticized poly(vinyl chloride)
SWO	spirally-wound

4 Pipes at the “M” stage — Requirements for profiled plastics strips

NOTE This clause details the requirements for profiled plastics strips only.

4.1 Materials

The material of the profiled plastics strip shall be unplasticized poly(vinyl chloride) (PVC-U), to which are added those additives needed to facilitate the manufacture and/or installation of pipes conforming to this standard.

Depending on the design of the integral locking mechanism, the seam sealant shall comprise one or more of the following materials:

- elastomers (PE-C, EPDM, silicone);
- adhesives (amorphous poly-alpha-olefins) conforming to DIN 16970:1970 [3];

Only virgin and own reprocessable materials, as defined in EN 13566-1, are permitted for the profiled plastics strips and seam sealant. The material(s) used for the seam sealant shall be declared.

4.2 General characteristics

When viewed without magnification the surfaces of the profiled plastics strips shall be smooth, clean and free from scoring, cavities and other defects that may affect their performance.

4.3 Material characteristics

The material of the profiled plastics strip when extruded to a flat plate of thickness of 3 mm to 6 mm shall conform to the requirements given in Table 1.

Seam sealant materials shall conform to the requirements given in Table 2.

Table 1 — Material characteristics strips of PVC-U for profiled plastics

Characteristics	Requirements	Test parameters		Test method
		Parameter	Value	
E-Modulus (tensile)	≥ 2 000 MPa	Speed of testing Specimen	1 mm/min Type 1 B	EN ISO 527-2
Tensile strength Longitudinal	≥ 35 MPa	Speed of testing Specimen	5 mm/min Type 1 B	EN ISO 527-1
Elongation at break	≥ 40 %			
Charpy impact strength	≥ 10 kJ/m ²	Pendulum Specimen	1 J 1 FC, DV notch	EN ISO 179-2