SLOVENSKI STANDARD
SIST EN 15383:2013

01-april-2013

Cevni sistemi iz polimernih materialov za odpadno vodo - S steklenimi vlakni ojačeni duromerni materiali (GRP), ki temeljijo na nenasičeni poliestrski smoli (UP) - Vstopni in revizijski jaški

Plastics piping systems for drainage and sewerage - Glass-reinforced thermosetting plastics (GRP) based on polyester resin (UP) - Manholes and inspection chambers

Kunststoff Rohrleitungssysteme für Abwasserleitungen und -kanäle - Glasfaserverstärkte duroplastische Kunststoffe (GFK) auf der Basis von Polyesterharz (UP) - Einsteig- und Kontrollschächte

Systèmes de canalisations en plastique pour les branchements et collecteurs d'assainissement - Plastiques thermodurcissables renforcés de verre (PRV) à base de résine de polyester (UP) - Regards et boîtes de branchement et d'inspection

Ta slovenski standard je istoveten z: **EN 15383:2012**

ICS:

23.040.20	Cevi iz polimernih materialov	Plastics pipes
83.120	Ojačani polimeri	Reinforced plastics
93.030	Zunanji sistemi za odpadno vodo	External sewage systems

SIST EN 15383:2013 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 15383

December 2012

ICS 93.030

English Version

Plastics piping systems for drainage and sewerage - Glass-reinforced thermosetting plastics (GRP) based on polyester resin (UP) - Manholes and inspection chambers

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: Avenue Marnix 17, B-1000 Brussels

Ref. No. EN 15383:2012: E

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Foreword

This document (EN 15383:2012) 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of an identical text or by endorsement, at the latest by June 2013, and conflicting national standards shall be withdrawn at the latest by June 2013.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This European Standard is a System Standard for manholes and inspection chambers made for plastics piping systems using glass-reinforced thermosetting plastics (GRP) based on unsaturated polyester resin (UP), for drainage and sewerage.

For manholes and inspection chambers, which have conformed to the relevant national standard before the date of availability (2012-12-05), as shown by the manufacturer or by a certification body, the national standard may continue to be applied until the (2014-12-19).

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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This European Standard applies to

a) manholes, when made from glass-reinforced thermosetting plastics (GRP) based on polyester resin (UP);

b) inspection chambers, when made from glass-reinforced thermosetting plastics (GRP) based on polyester resin (UP) which are intended to be used with inverts which are at a depth not exceeding 2 m.

These products are intended to be used within a drain or sewer system operating without pressure or occasionally at a head of pressure up to 1 bar.

It applies to products, and their joints, intended for use in buried installations and to be installed by open-trench techniques.

The units have a circular shape with nominal sizes not exceeding the maximum nominal size specified in EN 14364.

The intended use of these products is to provide access to, buried drain or sewer systems for the conveyance of waste water at temperatures up to 50 °C, without pressure or occasionally at a head of pressure up to 1 bar, outside buildings and installed in areas subjected to vehicle and/or pedestrian traffic.

It specifies definitions including symbols, requirements and characteristics of manholes, inspection chambers, joints, materials, test methods and marking.

NOTE It is the responsibility of the purchaser or specifier to make the appropriate selections, taking into account their particular requirements and any relevant national regulations and installation practices or codes.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 124, *Gully tops and manhole tops for vehicular and pedestrian areas — Design requirements, type testing, marking, quality control*

EN 476, *General requirements for components used in drains and sewers*

EN 681-1, *Elastomeric seals — Materials requirements for pipe joint seals used in water and drainage applications — Part 1: Vulcanized rubber*

EN 1119, *Plastics piping systems — Joints for glass-reinforced thermosetting plastics (GRP) pipes and fittings — Test methods for leaktightness and resistance to damage of non-thrust resistant flexible joints with elastomeric sealing elements*

EN 1917, *Concrete manholes and inspection chambers, unreinforced, steel fibre and reinforced*

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

EN 14364:2006+A1:2008, *Plastics piping systems for drainage and sewerage with or without pressure — Glass-reinforced thermosetting plastics (GRP) based on unsaturated polyester resin (UP) — Specifications for pipes, fittings and joints*

EN 14396, *Fixed ladders for manholes*

CEN/TS 14632, *Plastics piping systems for drainage, sewerage and water supply, pressure and non-pressure — Glass-reinforced thermosetting plastics (GRP) based on unsaturated polyester resin (UP) — Guidance for the assessment of conformity*

EN ISO 604:2003, *Plastics — Determination of compressive properties (ISO 604:2002)*

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

ISO 2602, *Statistical interpretation of test results — Estimation of the mean — Confidence interval*

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*

3 Terms, definitions and symbols

For the purposes of this document, the following terms, definitions and symbols and those in EN 14364:2006+A1:2008 apply.

3.1
adjusting unit
component of a manhole used above the cover slab to adjust the height of the structure and accommodate a cover and frame (see Figure 2)

3.2
base unit
vertical component with integral base, with or without benching (see Figure 2), incorporating appropriate flexible joints to provide watertight connections to pipelines with or without integral connecting pipe(s) or adaptors

3.3
chamber unit
vertical component of uniform cross-section (see Figure 2)

Note 1 to entry: It is classified by its nominal size and its internal height. Chamber units may incorporate flexible joints providing watertight connections to a pipeline.

3.4
connecting pipe
short pipe having plain, socket or spigot ends which provides a connection between a pipeline and a manhole

3.5
cover slab
horizontal unit, forming the roof of a chamber or shaft, which incorporates an opening for access and above which adjusting unit(s) and/or a cover and frame are intended to fit (see Figure 2)

Note 1 to entry: Normally a cover slab is made of reinforced precast concrete.

3.6
external diameter
d_e
mean external diameter of the shaft or chamber unit at any cross section except the joint

Note 1 to entry: External diameter is expressed in millimetres (mm).

3.7
inspection chamber
drainage or sewerage fitting used to connect drainage or sewerage installations and/or to change the direction of drainage or sewerage runs, which terminates at ground level with a riser shaft having an internal diameter not less than 200 mm and not more than 800 mm diameter (see Figure 2)

Note 1 to entry: The termination at ground level permits the introduction of cleaning, inspection and test equipment and the removal of debris but does not provide access for personnel.

3.8
internal diameter
d_i
external diameter of a unit minus twice its wall thickness

Note 1 to entry: Internal diameter is calculated using Formula (1) and expressed in millimetres:

$$d_i = d_e - 2e \quad (1)$$

where

d_e is the external diameter of the unit, expressed in millimetres (mm);

e is the wall thickness of the unit, expressed in millimetres (mm).

3.9
manhole

chamber, with a removable cover, constructed on a drain or sewer to permit entry by personnel (having an internal diameter not less than 800 mm) (see Figure 2)

Note 1 to entry: The termination at ground level permits the introduction of cleaning, inspection and test equipment and the removal of debris as well as providing access for personnel.

Note 2 to entry: Manhole components are subject to national safety regulations and/or local provisions regarding man-entry limitations. The installer should check for compliance prior to installation.

3.10
normal service conditions
conveyance of wastewater, in the temperature range from 2 °C to 50 °C, without pressure

3.11
reducing slab
horizontal transition unit, normally made of reinforced precast concrete, forming the roof of a chamber, which incorporates an opening for access from the shaft to the chamber and above which shaft units are intended to fit (see Figure 2)

3.12
shaft unit
vertical component of uniform cross-section (see Figure 2)

Note 1 to entry: When incorporated in a manhole together with chamber units shaft units have a smaller nominal size than the chamber units.

Note 2 to entry: Shaft units are classified by their nominal size and internal height (see Figure 2).

3.13
flexible joint
joint which allows relative movement between the components being joined

EXAMPLE Socket-and-spigot joint with an elastomeric sealing element (including double socket designs).

3.14
rigid joint
joint which does not allow relative movement between the components being joined

EXAMPLE Wrapped or cemented joint.

3.15
minimum specific initial longitudinal compressive stress at break
$\sigma_{b,s,min}$
manufacturers declared minimum value for the specific initial longitudinal compressive stress at break of the unit

Note 1 to entry: Minimum specific initial longitudinal compressive stress at break is expressed in megapascals (MPa).

3.16
initial longitudinal compressive stress at break (determined using prism test pieces)
$\sigma_{s,b,u}$
compressive stress at break of the test piece during a short-term compression test

Note 1 to entry: Initial longitudinal compressive stress at break (determined using prism test pieces) is expressed in megapascals (MPa).

3.17
ultimate longitudinal load
F_{ult}
calculated value of the concentric longitudinal load that the manhole or inspection chamber ring withstands just before break

Note 1 to entry: Ultimate longitudinal load is expressed in kilonewtons (kN).

3.18
longitudinal compressive (material) safety coefficient
ν

safety factor applied to the ultimate longitudinal load to determine the theoretical design load $F_{d,calc}$ (see 3.20).

3.19
design load
F_d
manufacturer's declared value of the longitudinal compressive load that a manhole or inspection chamber ring can withstand during operation, taking into account the material safety coefficient, ν (see 3.18)

Note 1 to entry: Design load is expressed in kilonewtons (kN) and is calculated using the following formula:

$$F_d = F_{ult} \times \nu$$

3.20
theoretical design load
$F_{d,\ calc}$
calculated value of the maximum concentric longitudinal compressive load that a manhole or inspection chamber ring can be expected to withstand during operation, taking into account the material safety coefficient, ν (see 3.18)

Note 1 to entry: Theoretical design load is expressed in kilonewtons (kN).

3.21
permissible eccentric force on the manhole or inspection chamber unit
$F_{perm,p}$
calculated value of the permissible eccentric longitudinal load that the manhole or inspection chamber ring can withstand in operation, taking into account the material safety coefficient, v (see 3.18)

Note 1 to entry: Permissible eccentric force on the manhole or inspection chamber unit is expressed in kilonewtons (kN).

3.22
minimum cross-sectional area at the spigot
A_s
minimum pipe cross section of the spigot (see Figure 1) in square millimetre (mm^2)

Note 1 to entry: Minimum cross-sectional area at the spigot is expressed in square millimetres (mm^2).

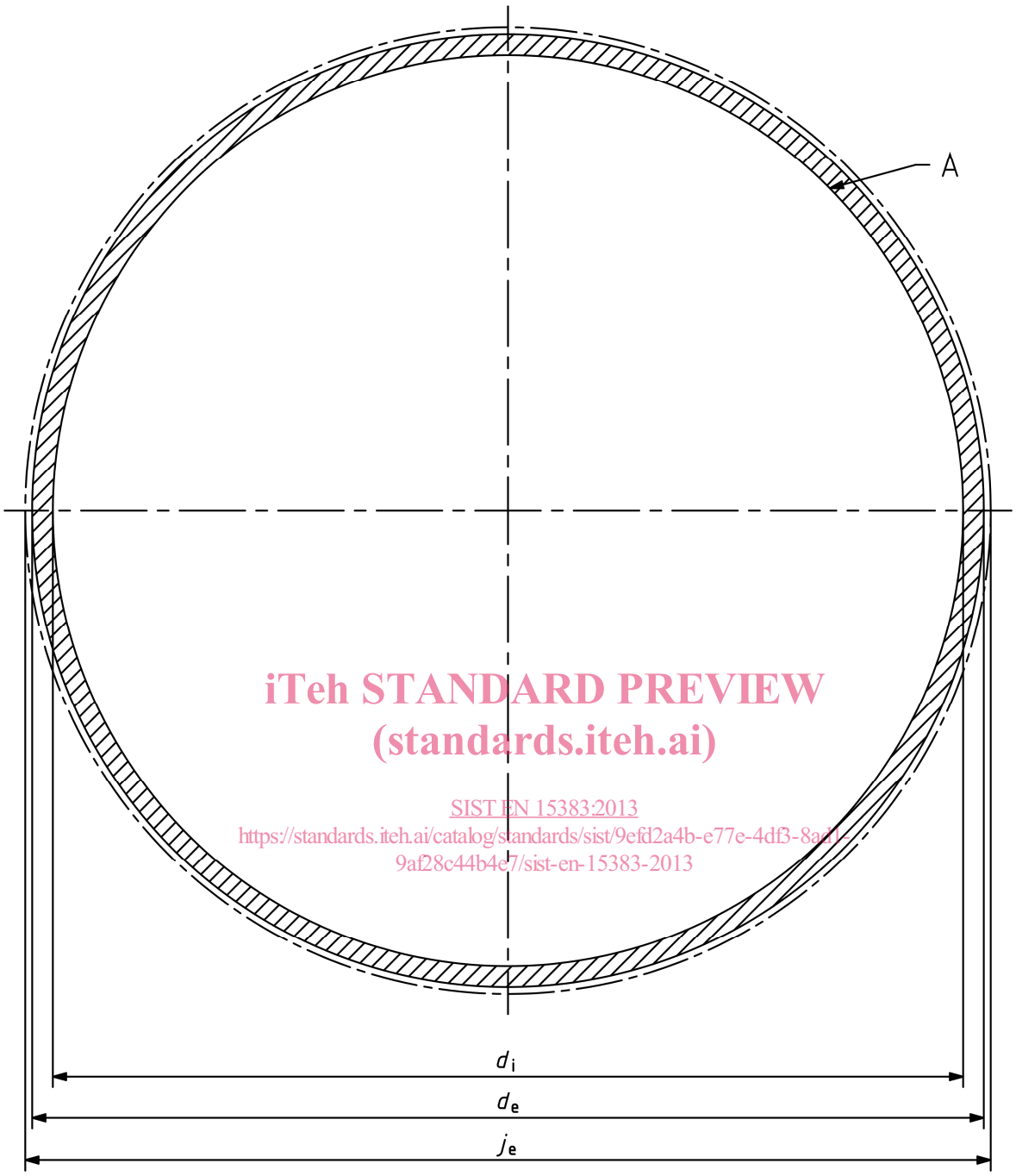
Note 2 to entry: Minimum cross-sectional area at the spigot is calculated using Formula (2):

$$A_s = \pi\left[\left(0,5 j_e\right)^2 - \left(0,5 d_i\right)^2\right] \quad (2)$$

where

j_e is outside diameter of the joint, in millimetres (mm);

d_i is internal diameter of shaft or chamber unit, in millimetres (mm).



Key

d_e outside diameter of unit (see 3.6)

j_e joint outside diameter

d_i internal diameter of unit (see 3.8)

(A) minimum unit cross-sectional area at spigot, A_s (see 3.22)

Figure 1 — Areas and diameters referred to in this standard