

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

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 15383:2012+A1:2013 sisaldab Euroopa standardi EN 15383:2012+A1:2013 ingliskeelset teksti.	This Estonian standard EVS-EN 15383:2012+A1:2013 consists of the English text of the European standard EN 15383:2012+A1:2013.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 23.10.2013.	Date of Availability of the European standard is 23.10.2013.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 93.030

Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardikeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardikeskusega:
Aru 10, 10317 Tallinn, Eesti; www.evs.ee; telefon 605 5050; e-post info@evs.ee

The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation:
Aru 10, 10317 Tallinn, Estonia; www.evs.ee; phone 605 5050; e-mail info@evs.ee

English Version

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

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

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

This European Standard was approved by CEN on 27 October 2012 and includes Amendment 1 approved by CEN on 10 September 2013.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of 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 United Kingdom.



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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

Page

Foreword	4
1 Scope	5
2 Normative references	5
3 Terms, definitions and symbols	6
4 General requirements	12
4.1 Classification	12
4.1.1 Categories	12
4.1.2 Nominal stiffness	12
4.2 Materials for shaft or chamber units	12
4.2.1 General	12
4.2.2 Elastomers	12
4.2.3 Metals	12
4.3 Reference conditions for testing	13
4.3.1 Temperature	13
4.3.2 Properties of water for testing	13
4.3.3 Loading conditions	13
4.3.4 Preconditioning	13
4.3.5 Measurement of dimensions	13
4.4 Joints	13
4.4.1 Types of joint	13
4.4.2 Length and diameter of joint	13
4.4.3 Flexibility of the jointing system	13
4.4.4 Sealing ring	13
4.4.5 Adhesives	13
4.5 Joint performance	14
4.5.1 Performance requirements	14
4.5.2 Interchangeability	14
4.5.3 Test pieces	15
4.5.4 Number of test pieces for type test purposes	15
4.5.5 Test temperature	15
4.5.6 Flexible joints with elastomeric sealing rings	15
4.5.7 Rigid joints of the wrapped or cemented type	15
4.5.8 Test parameters	15
5 Geometrical characteristics	16
5.1 Diameter, wall thickness and length of GRP-UP shaft and chamber components — Dimensional requirement	16
5.2 Size of openings in manholes	16
6 Mechanical characteristics	16
6.1 General	16
6.2 Longitudinal compressive strength	16
6.2.1 Initial longitudinal compressive stress at break	16
6.2.2 Requirements	16
6.3 Longitudinal compressive load	17
6.3.1 General	17
6.3.2 Ultimate longitudinal load, F_{ult}	17
6.3.3 Manufacturer's declared load for which a manhole or inspection chamber ring is designed, F_j and the permissible force, $F_{perm, p}$	17

7	Leak-tightness of manholes and inspection chambers and their joints.....	18
8	Minimum required marking.....	18
9	Ancillary products	19
9.1	Manhole and inspection chamber tops.....	19
9.2	Manhole steps and ladders.....	19
9.2.1	Location of steps.....	19
9.2.2	Load bearing capacity of installed steps.....	20
9.3	Precast concrete components	21
10	Dangerous substances	21
11	Manufacturer's installation recommendations	21
12	Evaluation of conformity.....	21
Annex A (normative) Determination of the longitudinal compressive properties measured on prism shaped test pieces		22
A.1	Scope.....	22
A.2	General	22
A.3	Test-pieces	22
A.4	Test equipment	25
A.5	Test procedure.....	25
A.6	Calculation and expression of results.....	25
A.7	Test report.....	26
Annex B (normative) Determination of the resistance of installed steps to vertical or horizontal loading ..		27
B.1	Scope.....	27
B.2	Principle	27
B.3	Apparatus.....	27
B.4	Preparation	27
B.5	Procedure	28
B.6	Test report.....	29

Foreword

This document (EN 15383:2012+A1:2013) 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 April 2014, and conflicting national standards shall be withdrawn at the latest by April 2014.

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 document supersedes EN 15383:2012.

This document includes Amendment 1 approved by CEN on 2013-09-10.

The start and finish of text introduced or altered by amendment is indicated in the text by tags **A1** **A1**.

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).