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Vitrified clay pipes systems for drain and sewers – Part 6: Requirements for components of manholes and inspection chambers

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Denna standard ersätter SS-EN 295-10:2006, utgåva 1 och SS-EN 295-6, utgåva 1.

The European Standard EN 295-6:2013 has the status of a Swedish Standard. This document contains the official version of EN 295-6:2013.

This standard supersedes the Swedish Standard SS-EN 295-10:2006, edition 1 and SS-EN 295-6, edition 1.

Upplysningar om sakinnehållet i standarden lämnas av SIS, Swedish Standards Institute, telefon 08-555 520 00. Standarder kan beställas hos SIS Förlag AB som även lämnar allmänna upplysningar om svensk och utländsk standard.

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Denna standard är framtagen av kommittén för Avloppsteknik, SIS/TK 198/AG 165.

Har du synpunkter på innehållet i den här standarden, vill du delta i ett kommande revideringsarbete eller vara med och ta fram andra standarder inom området? Gå in på www.sis.se - där hittar du mer information.

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 295-6

February 2013

ICS 93.030

Supersedes EN 295-10:2005, EN 295-6:1995

English Version

Vitrified clay pipes systems for drain and sewers - Part 6: Requirements for components of manholes and inspection chambers

Systèmes de tuyaux en grès vitrifié pour les collecteurs d'assainissement et les branchements - Partie 6: Exigences applicables aux composants de regards et de boîtes d'inspection ou de branchement

Steinzeugrohrsysteme für Abwasserleitungen und -kanäle - Teil 6: Anforderungen an Bauteile für Einsteig- und Inspektionsschächte

This European Standard was approved by CEN on 1 December 2012.

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.

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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (EN 295-6:2013) has been prepared by Technical Committee CEN/TC 165 “Wastewater engineering”, the secretariat of which is held by DIN.

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 August 2013, and conflicting national standards shall be withdrawn at the latest by August 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 document supersedes EN 295-6:1995 and together with EN 295-1:2013, EN 295-2:2013, EN 295-4:2013, EN 295-5:2013 and EN 295-7:2013 it supersedes EN 295-10:2005.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

The main changes with respect to the previous edition are listed below:

— reaction to fire added;

— Annex ZA added;

— editorially revised.

The standard series EN 295 "Vitrified clay pipe systems for drains and sewers" consists of the following parts:

— *Part 1: Requirements for pipes, fittings and joints*

— *Part 2: Evaluation of conformity and sampling*

— *Part 3: Test methods*

— *Part 4: Requirements for adaptors, connectors and flexible couplings*

— *Part 5: Requirements for perforated pipes and fittings*

— *Part 6: Requirements for components of manholes and inspection chambers* (the present document)

— *Part 7: Requirements for pipes and joints for pipe jacking*

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 for components for vitrified clay manholes and inspection chambers for buried drain and sewer systems for the conveyance of wastewater (including domestic wastewater, surface water and rainwater) under gravity and periodic hydraulic surcharge or under continuous low head of pressure.

It specifies different strength classes and heights of sections. It also specifies the requirements for components used for joints, systems of joint dimensions and the materials rubber, polyurethane and polypropylene used for joints.

NOTE 1 The specifiers/purchasers can select the components for vitrified clay manholes and inspection chambers according to their requirements.

This standard does not apply to manhole tops and cover slabs.

NOTE 2 Corresponding provisions for the evaluation of conformity (ITT and FPC) and sampling and those for the test methods are further specified in EN 295-2 and EN 295-3, respectively.

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 295-1:2013, *Vitrified clay pipe systems for drains and sewers — Part 1: Requirements for pipes, fittings and joints*

EN 295-2:2013, *Vitrified clay pipes systems for drain and sewers — Part 6: Requirements for components of manholes and inspection chambers*

EN 295-3:2012, *Vitrified clay pipe systems for drains and sewers — Part 3: Test methods*

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

EN 681-4, *Elastomeric seals — Materials 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 terms and definitions given in EN 295-1:2013, and the following apply.

3.1
manhole
chamber with a removable cover constructed on a drain or sewer to permit entry by personnel

[SOURCE: EN 752:2008, 3.41]

Note 1 to entry: An example of a vitrified clay manhole is given in Figure A.1.

3.2
inspection chamber
chamber with a removable cover constructed on a drain or sewer that permits the introduction of cleaning and inspection equipment from surface level, but does not provide access for personnel

[SOURCE: EN 752:2008, 3.34]

Note 1 to entry: Examples of vitrified clay inspection chambers are given in Figure A.2.

4 Requirements for components for manholes and inspection chambers

4.1 Materials, manufacture, water absorption and appearance

4.1.1 Vitrified clay

For material, manufacture, water absorption and appearance, all vitrified clay elements of manholes and inspection chambers shall be in accordance with EN 295-1:2013, 5.1.

4.1.2 Rubber sealing material

Rubber sealing materials shall comply with EN 681-1.

4.1.3 Polyurethane sealing materials

Polyurethane sealing elements shall be in accordance with EN 681-4.

4.1.4 Polypropylene couplings

Polypropylene couplings shall be in accordance with EN 295-1:2013, 6.1.3.

4.1.5 Materials of other components

Components of other materials which are used with vitrified clay manholes and inspection chambers shall comply with the relevant European Standard, European Technical Approval or the manufacturers' declared specification, as applicable, which shall also include requirements for long term behaviour.

4.2 Internal diameter

4.2.1 Chamber rings and raising pieces

The internal diameter of chamber rings and raising pieces shall be in accordance with EN 295-1:2013, 5.2.

4.2.2 Pipeline connections

The internal diameter of pipeline connections from or to manholes shall be in accordance with EN 295-1:2013, 5.2.

4.3 Height

The nominal height of chamber rings and raising pieces shall be as specified by the manufacturer. The preferred heights are 250, 500, 750, 1 000 and 2 000 mm. The limits of tolerance on this height, measured to the nearest whole mm, shall be from –1 % to +4 %, or ± 10 mm, whichever is the larger.

4.4 Angle of curvature and radius of channel bends

The tolerance on the angle of curvature and radius of channel bends incorporated into manhole bases shall be in accordance with EN 295-1:2013, 5.7.

4.5 Branch angles of channel junctions

The tolerance at the branch angles of channel junctions incorporated into manhole bases shall be in accordance with EN 295-1:2013, 5.8.

4.6 Crushing strength (F_N)

The crushing strength (F_N) of chamber rings and raising pieces shall be in accordance with EN 295-1:2013, 5.9.

NOTE 1 Where components have been manufactured according to EN 295-1:2013, they do not need to be retested.

NOTE 2 For structural performance see Annex B.

4.7 Bending tensile strength

If it is required to determine the crushing strength where whole chamber rings and raising pieces are not available, for example after failure in use, a bending tensile strength test, in accordance with EN 295-3:2012, Clause 8, can be carried out on broken chamber rings and raising pieces.

The crushing strength shall be calculated from the mean bending tensile strength of at least ten test pieces.

4.8 Bond strength of adhesive used for fixing fired clay parts together

The bond strength of the adhesive used for fixing fired clay parts together shall be in accordance with EN 295-1:2013, 5.12.

4.9 Fatigue strength under cyclic load

Where the resistance to fatigue under cyclic loads is required, it shall be demonstrated by testing in accordance with EN 295-3:2012, Clause 11, when test pieces shall not fail.

NOTE For chamber rings or raising pieces, vitrified clay pipes in accordance with EN 295-1 are typically used.

4.10 Chemical resistance

When tested in accordance with EN 295-3:2012, Clause 13, the loss of material from the test piece shall be declared.

NOTE 1 Under normal conditions of use, vitrified clay pipes are considered to be resistant to chemical attack and expected to show typical values of loss of material between 0,1 % and 0,25 %.

NOTE 2 For chamber rings or raising pieces vitrified clay pipes in accordance with EN 295-1 are typically used.

4.11 Water tightness of assembled components

When subjected to the test conditions specified in EN 295-3:2012, Clause 26, assembled components manholes and inspection chambers joined by the means specified in 4.12 shall show no visible leakage of water from the body or joints after a time period of 15^{+1}_{0} min and the water needed to maintain the level shall not be greater than 0,04 l/m^2 of internal surface area. The pressure shall be (50 ± 2) kPa for manholes and