

SLOVENSKI STANDARD

SIST EN 295-4:2013

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Nadomešča:

SIST EN 295-10:2005

SIST EN 295-4:1996

SIST EN 295-4:1996/AC:2000

Keramični cevni sistemi za odvod odpadne vode in kanalizacijo - 4. del: Zahteve za prilagodilne in povezovalne dele ter prožne spojke

Vitrified clay pipe systems for drains and sewers - Part 4: Requirements for adaptors, connectors and flexible couplings

STANDARD PREVIEW

(standards.iteh.ai)

Steinzeugrohrsysteme für Abwasserleitungen und -känale - Teil 4: Anforderungen an Übergangs- und Anschlussbauteile und flexible Kupplungen

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Systèmes de tuyaux et accessoires en grès pour les réseaux de branchement et d'assainissement - Partie 4: Exigences pour pièces d'adaptation et accessoires compatibles et assemblages souples

Ta slovenski standard je istoveten z: EN 295-4:2013

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91.140.80	Drenažni sistemi	Drainage systems
93.030	Zunanji sistemi za odpadno vodo	External sewage systems

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EUROPEAN STANDARD

EN 295-4

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Vitrified clay pipe systems for drains and sewers - Part 4: Requirements for adaptors, connectors and flexible couplings

Systèmes de tuyaux en grès vitrifié pour les collecteurs
d'assainissement et les branchements - Partie 4:
Exigences applicables aux adaptateurs, raccords et
assemblages souples

Steinzeugrohrsysteme für Abwasserleitungen und -känäle -
Teil 4: Anforderungen an Übergangs- und
Anschlussbauteile und flexible Kupplungen

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.

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

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EN 295-4:2013 (E)**Foreword**

This document (EN 295-4:2013) 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 295-4:1995 and together with EN 295-1:2013, EN 295-2:2013, EN 295-5:2013, EN 295-6:2013 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 version are listed below:

- reaction to fire added;
- Annex ZA added.

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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* (the present document)
- *Part 5: Requirements for perforated pipes and fittings*
- *Part 6: Requirements for components of manholes and inspection chambers*
- *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 specifies requirements for adaptors and connectors made from vitrified clay and/or other suitable materials for use with vitrified clay pipes and fittings 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.

Adaptors and connectors include insertable fittings, sealing rings for cut pipes and heat-shrinkable sleeves.

This standard also applies for metal banded flexible couplings and adaptors and specifies requirements for rubber, polyurethane, stainless steel and other components used for them.

NOTE 1 The specifiers/purchasers can select adaptors, connectors and flexible couplings according to their requirements.

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 pipe systems for drains and sewers — Part 2: Evaluation of conformity and sampling*

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

EN 295-5:2013, *Vitrified clay pipe systems for drains and sewers — Part 5: Requirements for perforated pipes and fittings*

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

EN 295-7:2013, *Vitrified clay pipe systems for drains and sewers — Part 7: Requirements for pipes and joints for pipe jacking*

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*

EN 1427, *Bitumen and bituminous binders — Determination of the softening point — Ring and Ball method*

EN 10088-2:2005, *Stainless steels — Technical delivery conditions for sheet/plate and strip of corrosion resisting steels for general purposes*

EN ISO 527-1, *Plastics — Determination of tensile properties — Part 1: General principles (ISO 527-1)*

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

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EN ISO 868, *Plastics and ebonite — Determination of indentation hardness by means of a durometer (Shore hardness) (ISO 868)*

EN ISO 1183-1, *Plastics — Methods for determining the density of non-cellular plastics — Part 1: Immersion method, liquid pycnometer method and titration method (ISO 1183-1)*

EN ISO 9445-1:2010, *Continuously cold-rolled stainless steel — Tolerances on dimensions and form — Part 1: Narrow strip and cut lengths (ISO 9445-1:2009)*

ISO 3302-1:1996, *Rubber — Tolerances for products — Part 1: Dimensional tolerances*

ISO 4587, *Adhesives — Determination of tensile lap-shear strength of rigid-to-rigid bonded assemblies*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1**adaptors**

special items, made from vitrified clay and/or other suitable materials, to join together vitrified clay pipes and fittings of different jointing systems or to join them to items of other pipeline materials

3.2**connectors**

any special item made from vitrified clay and/or other suitable materials for making connections to existing pipe systems, manholes, inspection chambers and building works

3.3**metal banded flexible couplings and adaptors**

rubber sleeves, with or without rubber bushes or shear bands, with adjustable stainless steel tension bands by which they are secured to the pipe ends

4 Symbols and abbreviations

d_1	pipe inside diameter (mm)
d_3	spigot outside diameter (mm)
d_4	internal diameter of socket or fairing (mm)
l_2	manufacturer's stated outside barrel length (mm)
OD	outside diameter

5 Requirements for adaptors, connectors and flexible couplings**5.1 Materials, manufacture, water absorption and appearance****5.1.1 Vitrified clay**

For material, manufacture, water absorption and appearance, all vitrified clay elements of adaptors and connectors shall comply with EN 295-1:2013, 5.1.

5.1.2 Rubber sealing materials

Rubber sealing materials shall comply with EN 681-1.

5.1.3 Polyurethane sealing materials

Polyurethane sealing elements shall be in accordance with EN 681-4 for which factory production control shall be in accordance with EN 295-2:2013, 5.3.10.

5.1.4 Other materials

All other materials for adaptors and connectors shall comply with the material requirements of A.3.1, C.2, if applicable. Otherwise they shall comply with the declared specification for the material, which shall have requirements for long term behaviour and comply with thermal cycling stability according to EN 295-1:2013, 6.6 and long term thermal stability according to EN 295-1:2013, 6.7.

5.1.5 Manufacture

Adaptors and connectors shall be free from such defects as would impair their function when in service.

5.2 Internal diameter

The minimum internal diameter of adaptors and connectors used with pipes and fittings according to EN 295-1:2013, EN 295-5:2013, EN 295-6:2013 or EN 295-7:2013 shall be as specified in EN 295-1:2013, 5.2.

5.3 Length

The nominal length of vitrified clay adaptors and connectors, where appropriate, shall be declared in metres. The length shall be measured to the nearest whole millimetre. The tolerance on the declared nominal length shall be from -1% to $+4\%$, or ± 10 mm, whichever is the larger.

5.4 Angles

Adaptors and connectors which include branches shall have preferred nominal angles of 45° and 90° . The preferred nominal angle of surface rodding points is 45° . The tolerance on the declared angle shall be $\pm 5^\circ$ of the nominal value.

5.5 Squareness of ends and joint interchangeability

For adaptors which are straight fittings, the squareness of end shall be in accordance with EN 295-1:2013, 5.4.

The joint interchangeability of adaptors and connectors to vitrified clay pipelines shall be in accordance with EN 295-1:2013, 6.4.

5.6 Bond strength of adhesive for fixing fired vitrified clay parts together

The bond strength of the adhesive shall be in accordance with EN 295-1:2013, 5.12.

5.7 Tightness

The tightness of adaptors and connectors shall be in accordance with EN 295-1:2013, 5.19.

5.8 Chemical resistance

5.8.1 Vitrified clay

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

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NOTE 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 %.

5.8.2 Other materials

All other materials for adaptors and connectors shall comply with the material requirements of A.3.1 or C.2, if applicable. Otherwise they shall comply with the declared specification for the material and shall comply with the requirements for chemical and physical resistance to effluent according to EN 295-1:2013, 6.5.

5.9 Requirements for joint assemblies**5.9.1 Vitrified clay pipeline systems**

Adaptors and connectors used in joint assemblies shall meet the requirements of EN 295-1:2013, Clause 6, where applicable.

5.9.2 Vitrified clay pipelines to other materials

5.9.2.1 Adaptors and connectors used in joint assemblies connecting vitrified clay pipelines to pipelines of other materials which do not undergo significant diametral deflection under shear test load (e.g. concrete, cast iron, ductile iron, steel and fibre-cement), shall meet the requirements of EN 295-1:2013, 6.2, 6.5, 6.6 and 6.7.

5.9.2.2 Adaptors and connectors used in joint assemblies connecting vitrified clay pipelines to pipelines of materials which undergo significant diametral deflection under shear test load (e.g. PVC-U, PE, PP and GRP), shall also meet the requirements of EN 295-1:2013, 6.2, 6.5, 6.6 and 6.7 with the exception that, for 6.2.3, when the shear load is applied to the flexible pipe, the applied load shall be that required to produce a diametrical deflection of $(3 \pm 0,5)$ % on the external diameter.

5.9.3 Metal banded flexible couplings and adaptors

Metal banded flexible couplings and adaptors shall meet the additional performance requirements specified in Annex A.

5.9.4 Connectors, insertable fittings and sealing rings

Connectors, insertable fittings and sealing rings shall meet the additional performance requirements specified in Annex B.

5.9.5 Heatshrinkable sleeves

Heatshrinkable sleeves shall meet the additional performance requirements specified in Annex C.

6 Common requirements for adaptors, connectors and flexible couplings**6.1 Reaction to fire**

Where the use of adaptors or connectors made of vitrified clay, is subject to national regulatory requirements on reaction to fire, their reaction to fire performance shall be declared. Adaptors or connectors made of vitrified clay are classified as Class A1 without the need for testing in accordance with the relevant Commission decision¹⁾.

1) Commission Decision 96/603/EC of 4 October, 1996 (OJEU L267 of 19.10.1996), as amended by both Commission Decision 2000/605/EC of 26 September, 2000 (OJEU L258 of 12.10.2000) and Commission Decision 2003/424/2003 of 6 June, 2003 (OJEU L144, 12.6.2003).

NOTE 1 Vitrified clay, as a homogeneously distributed material for these products, is considered as material of known and stable performance with respect to the reaction to fire performance as it does not consist of any organic material and consequently does not contribute to the fire. Under this condition, it may be considered as the Class A1 material.

NOTE 2 The class of reaction to fire performance of adaptors and connectors made of vitrified clay with their joints is regarded as the class for the constituent material (i.e. vitrified clay).

Conversely, where use of this product is not subject to national regulatory requirements on reaction to fire, either the Class A1 (see above) or Class F (see Note 3) may be declared.

NOTE 3 Class F according to EN 13501-1 is equivalent to "No Performance Determined" (NPD).

Considering the end use situation, adaptors, connectors and flexible couplings made of rubber, polyurethane or other materials are embedded all-round in material of Class A1 and only a negligible area of joint material would be exposed to fire inside the pipe. Due to the special end use situation where it is assured that the outside of the pipeline is completely buried in the ground and wastewater flows through the inside of the pipeline during the working life of the construction, there is no relevance in relation to the reaction to fire performance and embedded sealing rings, flexible couplings and adaptors would not be able to ignite or to propagate fire there. Their contribution to fire spread is not of concern, nor is an influence expected on the fire behaviour of the neighbouring material and the contribution to fire propagation is negligible. Similar components are at a distance of more than 200 mm. Considering these aspects, separate testing and classification of sealing rings and flexible couplings is not necessary.

6.2 Durability

Adaptors, connectors and flexible couplings are products of known and stable performance for defined end use applications with respect to their established durability for which experience has been accumulated over a long period of time.

Durability of tightness is ensured by meeting requirements of EN 295-1:2013, 6.5, 6.6 and 6.7.

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6.3 Dangerous substances

National regulations on dangerous substances may require verification and declaration on release, and sometimes content, when construction products covered by this standard are placed on those markets. In the absence of European harmonised test methods, verification and declaration on release/content should be done taking into account national provisions in the place of use.

NOTE An informative database covering European and national provisions on dangerous substances is available at the Construction web site on EUROPA accessed through: <http://ec.europa.eu/enterprise/construction/cpd-ds/>.

7 Designation

Where required for specification and documentation purposes, the following designation shall be used:

- Block 1: Name of product;
- Block 2: Standard number (EN 295-4);
- Block 3: Individual item block,
 - Block 3.1: Nominal size(s) DN and OD size range, where appropriate,
 - Block 3.2: Length, where appropriate,
 - Block 3.3: Joint system, where appropriate (e.g. system F).

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Example of the designation of a coupling according to EN 295-4 for a pipe DN 150 and an OD size range 175 mm to 190 mm:

EXAMPLE Coupling – EN 295-4 – DN 150 – OD 175 - 190

8 Marking

Adaptors and connectors shall be marked at least with:

- EN 295-4;
- manufacturer's identification;
- date of manufacturing;
- nominal size(s) (DN....) or OD size range;
- joint system according to EN 295-1 if appropriate;
- other applicable pipe system if appropriate;
- type of coupling if applicable (Annex A);
- recommended assembly torque and assembly tool if appropriate (Annex A).

Marking shall be indelible and wherever practicable impressed.

NOTE Where CE marking covers some of the marking requirements of this clause, such requirements need not be repeated here.

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9 Evaluation of conformity

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9.1 General

Products manufactured to this standard shall be subjected to evaluation of conformity procedures as follows:

- a) initial type testing; and
- b) factory production control by the manufacturer, including product assessment.

9.2 Initial type testing

Vitrified clay pipes, fittings and joints shall be subjected to initial type testing according to the relevant subclauses and tables of EN 295-2:2013, 5.2, to show conformity with this European Standard.

9.3 Factory production control (FPC)

Vitrified clay pipes, fittings and joints shall be subjected to factory production control according to the relevant subclauses and tables of EN 295-2:2013, 5.3, to ensure that the declared performance of each stated characteristic is maintained.