

**Keraamiliste torude süsteemid дренаážile ja kanalisatsioonile. Osa 4: Nõuded siirdmikele, ühendustele ja elastsetele muhvidele**

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

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

See Eesti standard EVS-EN 295-4:2013 sisaldab Euroopa standardi EN 295-4:2013 ingliskeelset teksti.	This Estonian standard EVS-EN 295-4:2013 consists of the English text of the European standard EN 295-4:2013.
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 06.02.2013.	Date of Availability of the European standard is 06.02.2013.
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](mailto: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](http://www.evs.ee); telefon 605 5050; e-post [info@evs.ee](mailto: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](http://www.evs.ee); phone 605 5050; e-mail [info@evs.ee](mailto:info@evs.ee)

English Version

## 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 -kanäle -  
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.

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

**Management Centre: Avenue Marnix 17, B-1000 Brussels**

# Contents

Page

Foreword.....	4
1 Scope.....	5
2 Normative references.....	5
3 Terms and definitions .....	6
4 Symbols and abbreviations .....	6
5 Requirements for adaptors, connectors and flexible couplings.....	6
5.1 Materials, manufacture, water absorption and appearance .....	6
5.1.1 Vitrified clay.....	6
5.1.2 Rubber sealing materials .....	6
5.1.3 Polyurethane sealing materials .....	7
5.1.4 Other materials.....	7
5.1.5 Manufacture.....	7
5.2 Internal diameter .....	7
5.3 Length.....	7
5.4 Angles.....	7
5.5 Squareness of ends and joint interchangeability .....	7
5.6 Bond strength of adhesive for fixing fired vitrified clay parts together.....	7
5.7 Tightness .....	7
5.8 Chemical resistance.....	7
5.8.1 Vitrified clay.....	7
5.8.2 Other materials.....	8
5.9 Requirements for joint assemblies.....	8
5.9.1 Vitrified clay pipeline systems.....	8
5.9.2 Vitrified clay pipelines to other materials.....	8
5.9.3 Metal banded flexible couplings and adaptors .....	8
5.9.4 Connectors, insertable fittings and sealing rings.....	8
5.9.5 Heatshrinkable sleeves .....	8
6 Common requirements for adaptors, connectors and flexible couplings .....	8
6.1 Reaction to fire .....	8
6.2 Durability .....	9
6.3 Dangerous substances .....	9
7 Designation .....	9
8 Marking .....	10
9 Evaluation of conformity.....	10
9.1 General .....	10
9.2 Initial type testing.....	10
9.3 Factory production control (FPC).....	10
Annex A (normative) Metal banded flexible couplings and adaptors .....	11
A.1 General .....	11
A.2 Types of metal banded flexible couplings and adaptors.....	11
A.2.1 Type 1 couplings (without shear bands).....	11
A.2.2 Type 2 couplings (with shear bands) .....	11
A.2.3 Metal banded adaptors .....	12
A.2.4 Bushes.....	12
A.3 Requirements .....	12
A.3.1 Materials .....	12
A.3.2 Dimensions and tolerances .....	13
A.3.3 Performance requirements .....	14

<b>A.3.4</b>	<b>Testing</b>	<b>14</b>
<b>Annex B</b>	<b>(normative) Connectors, insertable fittings and sealing rings</b>	<b>16</b>
<b>B.1</b>	<b>General</b>	<b>16</b>
<b>B.2</b>	<b>Connectors</b>	<b>16</b>
<b>B.3</b>	<b>Insertable fittings</b>	<b>16</b>
<b>B.4</b>	<b>Sealing rings for cut pipes</b>	<b>17</b>
<b>B.5</b>	<b>Performance requirements</b>	<b>17</b>
<b>Annex C</b>	<b>(normative) Heatshrinkable sleeves</b>	<b>18</b>
<b>C.1</b>	<b>General</b>	<b>18</b>
<b>C.2</b>	<b>Materials and manufacture</b>	<b>18</b>
<b>C.3</b>	<b>Dimensions</b>	<b>19</b>
<b>C.4</b>	<b>Performance requirements</b>	<b>19</b>
<b>Annex ZA</b>	<b>(informative) Clauses of this European Standard addressing the provisions of the EU Construction Products Directive</b>	<b>20</b>
<b>ZA.1</b>	<b>Scope and relevant characteristics</b>	<b>20</b>
<b>ZA.2</b>	<b>Procedures for the attestation of conformity of adaptors, connectors and flexible couplings</b>	<b>24</b>
<b>ZA.2.1</b>	<b>System of attestation of conformity</b>	<b>24</b>
<b>ZA.2.2</b>	<b>EC declaration of conformity</b>	<b>25</b>
<b>ZA.3</b>	<b>CE marking and labelling</b>	<b>26</b>
<b>ZA.3.1</b>	<b>General</b>	<b>26</b>
<b>ZA.3.2</b>	<b>CE marking on the product</b>	<b>26</b>
<b>ZA.3.3</b>	<b>CE marking on the accompanying documents</b>	<b>27</b>
	<b>Bibliography</b>	<b>29</b>

## 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.

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)*

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.