



SLOVENSKI STANDARD

SIST EN 295-2:2013

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SIST EN 295-10:2005

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**Keramični cevni sistemi za odvod odpadne vode in kanalizacijo - 2. del:
Vrednotenje skladnosti in vzorčenje**

Vitrified clay pipe systems for drains and sewers - Part 2: Evaluation of conformity and sampling

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Steinzeugrohrsysteme für Abwasserleitungen und -kanäle - Teil 2: Bewertung der Konformität und Probenahme

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Systèmes de tuyaux et accessoires en grès pour les réseaux de branchement et d'assainissement - Partie 2: Evaluation de la conformité et échantillonnage

Ta slovenski standard je istoveten z: EN 295-2:2013

ICS:

23.040.50	Cevi in fitingi iz drugih materialov	Pipes and fittings of other materials
91.140.80	Drenažni sistemi	Drainage systems
93.030	Zunanji sistemi za odpadno vodo	External sewage systems

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Vitrified clay pipe systems for drains and sewers - Part 2: Evaluation of conformity and sampling

Systèmes de tuyaux et accessoires en grès pour les
réseaux de branchement et d'assainissement - Partie 2:
Evaluation de la conformité et échantillonnage

Steinzeugrohrsysteme für Abwasserleitungen und -kanäle -
Teil 2: Bewertung der Konformität und Probenahme

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

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Contents

Page

Foreword.....	3
1 Scope	4
2 Normative references	4
3 Terms and definitions	5
4 Abbreviations	5
5 Evaluation of conformity	5
5.1 General	5
5.2 Initial type testing (ITT) and type testing (TT)	6
5.2.1 General	6
5.2.2 Sampling procedure	6
5.2.3 Test reports	11
5.3 Factory production control (FPC)	12
5.3.1 General	12
5.3.2 Requirements	12
5.3.3 Equipment	13
5.3.4 Raw materials and components	13
5.3.5 Product testing and evaluation	13
5.3.6 Change in batch condition	14
5.3.7 Records	14
5.3.8 FPC testing of pipes, special fittings, adaptors and compatible accessories manholes and inspection chambers, perforated pipes and jacking pipes	14
5.3.9 FPC testing of fittings according to EN 295-1:2013 and EN 295-5:2013	19
5.3.10 FPC testing of joint assemblies according to EN 295-1:2013	23
5.3.11 FPC of polyurethane sealing elements according to EN 295-1:2013, 6.1.2	23
5.3.12 FPC Testing of polypropylene sleeve couplings according to EN 295-1:2013, 6.1.3	24
5.3.13 FPC of rigid fairing materials according to EN 295-1:2013, 6.1.4	26
5.3.14 FPC testing of adaptors and connectors to EN 295-4:2013, 5.7	26
5.3.15 FPC testing of metal banded flexible couplings and adaptors according to EN 295-4:2013, Annex A	27
5.3.16 FPC testing of connectors, insertable fittings and sealing rings for cut pipes for making connections to existing pipelines, manholes or building works according to EN 295-4:2013, Annex B	28
5.3.17 FPC testing of heatshrinkable sleeves according to EN 295-4:2013, Annex C	28
5.3.18 FPC testing of watertightness of manholes and inspection chambers	29
5.3.19 FPC testing of compressive strength of jacking pipes according to EN 295-7:2013	29
5.3.20 FPC testing of joint assemblies of jacking pipes according to EN 295-7:2013	29
Annex A (normative) Acceptability determination and switching rules	31
A.1 General	31
A.2 Inspection by attributes	31
A.2.1 Acceptability determination	31
A.2.2 Operation of switching rules	32
A.2.3 Tightened inspection for rejected batches	32
A.3 Inspection by variables	32
A.3.1 Distribution	32
A.3.2 Acceptability determination	33
A.3.3 Operation of switching rules	33
Bibliography	38

Foreword

This document (EN 295-2:2013) 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 295-2:1991 and together with EN 295-1:2013, EN 295-4:2013, 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.

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

- clauses on Evaluation of conformity revised in accordance with the framework given by the CEN Construction sector;
- requirements for the resistance to high pressure water jetting added;
- requirements for water absorption 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* (the present document)
- *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*
- *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.

EN 295-2:2013 (E)**1 Scope**

This European Standard specifies requirements for the evaluation of conformity of products manufactured from vitrified clay and other materials (referred to as "products") specified in the following standards:

- pipes, fittings and joints according to EN 295-1;
- adapters, connectors and flexible couplings according to EN 295-4;
- perforated pipes and fittings according to EN 295-5;
- components of manholes and inspection chambers according to EN 295-6; and
- pipes and joints for pipe jacking according to EN 295-7.

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

EN 295-4:2013, *Vitrified clay pipe systems for drains and sewers — Part 4: Requirements for adaptors, connectors and flexible couplings*

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 ISO 10012, *Measurement management systems — Requirements for measurement processes and measuring equipment (ISO 10012)*

ISO 2859-1, *Sampling procedures for inspection by attributes — Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection*

ISO 3951 (all parts), *Sampling procedures for inspection by variables*

3 Terms and definitions

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

3.1

initial type testing

complete set of tests or other procedures (e.g. calculation) described in the harmonised technical specification, to determine the performance of samples of products representative of the product type

Note 1 to entry: In the case of a CE marked product, the initial type testing provides the reference for the declared performance concerning the essential characteristics.

3.2

type testing

test or series of tests aimed at approving a project to determine that the element designed is able to fulfil the requirements of the product specification

3.3

factory production control

permanent internal control of production exercised by the manufacturer

3.4

batch

clearly identifiable collection of units manufactured essentially from the same materials and under the same conditions

3.5

isolated batch

clearly identifiable collection of unassessed units manufactured essentially from the same materials but not necessarily all manufactured or fired at the same time

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4 Abbreviations

AQL	Acceptance quality limit
MDV	Manufacturers declared value
FPC	Factory production control
PU	Polyurethane
PP	Polypropylene

5 Evaluation of conformity

5.1 General

The conformity of the products covered by this European Standard, with the requirements of the corresponding specific product standards (i.e. EN 295-1:2013, EN 295-4:2013, EN 295-5:2013, EN 295-6:2013 and EN 295-7:2013) and with the declared values (including classes) shall be demonstrated by:

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

The manufacturer shall always retain the overall control and shall have the necessary means to take responsibility for the product.

EN 295-2:2013 (E)

5.2 Initial type testing (ITT) and type testing (TT)

5.2.1 General

Initial type testing and type testing shall be performed to demonstrate compliance of the products with the relevant specific product standards.

All essential characteristics **in bold in Table 1** for which the manufacturer declares performances, are subject to initial type testing. In addition, the need to perform Type Tests applies to the characteristics according to 5.2.2 and 5.2.3 when the manufacturer claims compliance, unless the standard gives provisions (e.g. use of previously existing data, CWFT and conventionally accepted performance) for declaring performances without performing tests.

Tests previously performed in accordance with the provisions of this standard may be taken into account provided that they were made to the same or a more rigorous test method, under the same system of attestation of conformity on the same product or products of similar design, construction and functionality, such that the results are applicable to the product in question.

ITT shall be performed at the beginning of the production of a new type of the product or at the beginning of a new method of production, where this may affect the stated properties. Tests previously performed in accordance with the provisions of the specific product standard (i.e. same product, characteristic(s), test method, sampling procedure, system of attestation of conformity, etc.) may be taken into account for the ITT purpose of that specific product.

Where components of the products are used whose characteristics have already been determined by the component manufacturer on the basis of conformity with other product standards, these characteristics need not be reassessed provided that

- the components' performance or method of assessment remain the same,
- the characteristics of the component are suitable for the intended end use of the finished product, and
- insofar as the manufacturing process does not have a detrimental effect on the determined characteristics.

Components and raw materials, marked in accordance with appropriate harmonised European specifications, may be presumed to have performances as declared. However, this does not replace the responsibility of the product manufacturer to ensure that such products, as a whole, are correctly designed and their components have the necessary performance values to meet the design according to the relevant specific product standard.

Tests shall be repeated for the appropriate characteristics wherever a change occurs in the product design, in the raw material or in the supplier of the components, or in the production process, which could affect significantly one or more of the characteristics.

Full reports of these tests shall be retained by the product manufacturer and shall be available for examination. Complete test reports shall be kept for at least 10 years.

5.2.2 Sampling procedure

Test samples shall be selected from a batch at random, without any consideration given to the condition or quality of the selected products. Sampling shall be carried out in accordance with Tables 1 to 5 according to the relevant specific product standard.

Table 1 — Number of units and conformity criteria for initial type testing and type testing of pipes, fittings and joints according to EN 295-1:2013

Characteristic	Requirement according to EN 295-1: 2013, clause	Test method according to	Number of units	Conformity criteria
Pipes and fittings:				
Material, manufacture, appearance	5.1.1, 5.1.2 and 5.1.4	Visual inspection	3 samples of each nominal size	"Pass"
Water absorption	5.1.3	EN 295-3:2012, Clause 28	3 samples	"Pass"
Dimensions and tolerances	5.2 to 5.8, 6.3, 6.4	Measurement, EN 295-3:2012 Clauses 5 and 6, where applicable	3 samples of each nominal size	"Pass"
Crushing strength	5.9	EN 295-3:2012, Clause 7	3 samples of each nominal size	"Pass" acc. to the value declared
Chemical resistance	5.15	EN 295-3:2012, Clause 13	3 samples	"% loss"
Bending moment resistance	5.11	EN 295-3:2012, Clause 9	3 samples of each nominal size	"Pass" acc. to the value declared
Watertightness of pipes and junctions	5.14	EN 295-3:2012, Clause 12	1 sample of each nominal size	"Pass"
Airtightness of pipes	5.18	EN 295-3:2012, Clause 16	1 sample of each nominal size	"Pass"
Bond strength of fittings	5.12	EN 295-3:2012, Clause 10	1 sample of each nominal size	"Pass"
Watertightness and airtightness of fittings	5.19	EN 295-3:2012, Clause 16	1 sample of each nominal size	"Pass"
Resistance to high pressure water jetting	5.20	EN 295-3:2012, 17.2 and 17.3	3 samples	"Pass"
Joints:				
Material:				
— Rubber sealing elements	6.1.1	EN 681-1	See EN 681-1	See EN 681-1
— Polyurethane sealing elements	6.1.2	EN 681-4	See EN 681-4	See EN 681-4
— Polypropylene sleeve couplings	6.1.3	EN 295-3:2012, Clause 19	one sample per moulding plant	"Pass"
— Creep resistance of rigid fairing materials	6.1.4	EN 295-3:2012, 25.1 or 25.2, as appropriate	one sample per moulding plant	"Pass"
— Other jointing materials	6.1.5	Manufacturer's declaration	—	MDV
Watertightness of joint assemblies	6.2	EN 295-3:2012, Clause 21	1 joint assembly of each nominal size	"Pass"
Chemical and physical resistance to effluent	6.5	EN 295-3:2012, Clause 23	one size of joint assembly	"Pass"
Thermal cycling stability	6.6	EN 295-3:2012, 24.1	1 joint assembly of each system	"Pass"
Long-term thermal stability	6.7	EN 295-3:2012, 24.2	1 joint assembly of each system	"Pass"
NOTE 1	For reaction to fire see EN 295-1:2013, 7.1.			
NOTE 2	For durability see EN 295-1:2013, 7.2.			
NOTE 3	For dangerous substances see EN 295-1:2013, 7.3.			

EN 295-2:2013 (E)

Table 2 — Number of units and conformity criteria for initial type testing and type testing of adaptors, connectors, flexible couplings and heat shrinkable sleeves according to EN 295-4:2013

Characteristic	Requirement according to	Test method according to	Number of units	Conformity criteria
Adaptors, connectors and flexible couplings:				
Vitrified clay material, manufacture, appearance	EN 295-4:2013, 5.1, A.3.1, B.2 to B.4 and C.2	Visual inspection	3 samples of each nominal size	"Pass"
Joint materials:				
— Rubber sealing elements	EN 295-4:2013, 5.1.2	EN 681-1	see EN 681-1	See EN 681-1
— Polyurethane sealing elements	EN 295-4:2013, 5.1.3	EN 681-4	see EN 681-4	See EN 681-4
— Tension band strength	EN 295-4:2013, A.3.3.4	EN 295-4:2013, A.3.4.2	one sample of each size group	"Pass"
Water absorption	EN 295-4:2013, 5.1.1, B.2 to B.4	EN 295-3:2012, Clause 28	3 samples	"Pass"
Dimensions and tolerances	EN 295-4:2013, 5.2 to 5.5, A.3.2, B.2 to B.4 and C.3	Measurement, EN 295-3:2012 Clauses 5 and 6, where applicable	3 samples of each nominal size	"Pass"
Tightness of adaptors and connectors	EN 295-4:2013, 5.7	EN 295-3:2012, Clause 12 or 16	1 sample of each nominal size	"Pass"
Bond strength of fittings	EN 295-4:2013, 5.6	EN 295-3:2012, Clause 19	1 sample of each nominal size	"Pass"
Chemical resistance	EN 295-4:2013, 5.8	EN 295-3:2012, Clause 13	3 samples	"Pass"
Watertightness of joint assemblies	EN 295-4:2013, 5.9, B.4 and B.5	EN 295-3:2012, Clause 21	1 joint assembly of each nominal size	"Pass"
Watertightness of metal banded flexible couplings and adaptors	EN 295-4:2013, A.3.3.2 and A.3.3.3	EN 295-3:2012, Clause 21	Once for each new joint design or new joint material	"Pass"
	EN 295-4:2013, A.3.4.1	EN 295-3:2012, Clause 21	Only one joint assembly of specific size	"Pass"
Chemical and physical resistance to effluent	EN 295-1:2013, 6.5	EN 295-3:2012, Clause 23	one size of joint assembly	"Pass"
Thermal cycling stability	EN 295-1:2013, 6.6	EN 295-3:2012, 24.1	1 joint assembly of each system	"Pass"
Long-term thermal stability	EN 295-1:2013, 6.7	EN 295-3:2012, 24.2	1 joint assembly of each system	"Pass"
Watertightness of Heatshrinkable sleeves	EN 295-4:2013, C.4	EN 295-3:2012, Clause 21	1 joint assembly of specific size	"Pass"
NOTE 1	For reaction to fire see EN 295-1:2013, 6.1.			
NOTE 2	For durability see EN 295-1:2013, 6.2.			
NOTE 3	For dangerous substances see EN 295-1:2013, 7.3.			

Table 3 — Number of units and conformity criteria for initial type testing and type testing of perforated pipes according to EN 295-5:2013

Characteristic	Requirement according to EN 295-5:2013, Clause	Test method according to	Number of units	Conformity criteria
Perforated pipes:				
Material, manufacture, appearance	4.1	Visual inspection	3 samples of each nominal size	"Pass"
water absorption	4.1	EN 295-3:2012, Clause 28	3 samples	"Pass"
Dimensions and tolerances	4.2 to 4.7	Measurement, EN 295-3:2012 Clauses 5 and 6, where applicable	3 samples of each nominal size	"Pass"
Crushing strength	4.8	EN 295-3:2012, Clause 7	3 samples of each nominal size	"Pass"
Chemical resistance	4.9	EN 295-3:2012, Clause 13	3 samples	"% loss" ¹
NOTE 1	For reaction to fire see EN 295-1:2013, 6.1.			
NOTE 2	For durability see EN 295-1:2013, 6.2.			
NOTE 3	For dangerous substances see EN 295-1:2013, 7.3.			

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EN 295-2:2013 (E)

Table 4 — Number of units and conformity criteria for initial type testing and type testing for components for manholes in accordance with EN 295-6:2013

Characteristic	Requirement according to	Test method according to	Number of units	Conformity criteria
Components for manholes:				
Material, manufacture, appearance	EN 295-6:2013, 4.1	Visual inspection	3 samples of each nominal size	"Pass"
water absorption	EN 295-6:2013, 4.1	EN 295-3:2012, Clause 28	3 samples	"Pass"
Joint materials:				
— Rubber sealing elements	EN 295-6:2013, 4.1.2	EN 681-1	See EN 681-1	See EN 681-1
— Polyurethane sealing elements	EN 295-6:2013, 4.1.3	EN 681-4	See EN 681-4	See EN 681-4
— Polypropylene sleeve couplings	EN 295-6:2013, 4.1.4	EN 295-3:2012, Clause 19	one sample per moulding plant	"Pass"
— Other jointing materials	EN 295-6:2013, 4.1.5	Visual inspection of manufacturer's declaration	—	MDV
Dimensions and tolerances	EN 295-6:2013, 4.2 to 4.5 and 4.12	Measurement, EN 295-3:2012, Clauses 5 and 6, where applicable	3 samples of each nominal size	"Pass"
Crushing strength	EN 295-6:2013, 4.6	EN 295-3:2012, Clause 7	3 samples of each nominal size	"Pass"
Bond strength of fittings	EN 295-6:2013, 4.8	EN 295-3:2012, Clause 19	1 sample of each nominal size	"Pass"
Chemical resistance	EN 295-6:2013, 4.10	EN 295-3:2012, Clause 13	3 samples	"% loss"
Watertightness of assembled components of manholes and inspection chambers	EN 295-6:2013, 4.11 and 4.12	EN 295-3:2012, Clause 26	1 assembly of each nominal size including one joint	"Pass"
Chemical and physical resistance to effluent	EN 295-1:2013, 6.5	EN 295-3:2012, Clause 23	one size of joint assembly according to EN 295-1	"Pass"
Thermal cycling stability	EN 295-1:2013, 6.6	EN 295-3:2012, 24.1	1 joint assembly of a system according to EN 295-1	"Pass"
Long-term thermal stability	EN 295-1:2013, 6.7	EN 295-3:2012, 24.2		"Pass"
NOTE 1 For reaction to fire see EN 295-1:2013, 6.1.				
NOTE 2 For durability see EN 295-1:2013, 6.2.				
NOTE 3 For dangerous substances see EN 295-1:2013, 7.3.				

Table 5 — Number of units and conformity criteria for initial type testing and type testing for vitrified pipes and joints for pipe jacking according to EN 295-7:2013

Characteristic	Requirement according to	Test method according to	Number of units	Conformity criteria
Pipes and fittings for pipe jacking:				
Material, manufacture, appearance	EN 295-7:2013, 4.1	Visual inspection	3 samples of each nominal size	"Pass"
water absorption	EN 295-7:2013, 4.1	EN 295-3:2012, Clause 28	3 samples	"Pass"
Dimensions and tolerances	EN 295-7:2013, 4.2.2 to 4.2.8	Measurement, EN 295-3:2012, Clauses 5 and 6, where applicable	3 samples of each nominal size	"Pass"
Crushing strength	EN 295-7:2013, 4.3.1	EN 295-3:2012, Clause 7	3 samples of each nominal size	"Pass"
Watertightness of pipes	EN 295-7:2013, 4.4	EN 295-3:2012, Clause 12	1 sample of each nominal size	"Pass"
Airtightness of pipes	EN 295-7:2013, 4.5	EN 295-3:2012, Clause 16	1 sample of each nominal size	"Pass"
Joints for pipe jacking:				
Joint materials:	EN 295-7:2013, 5.1.1	EN 681-1	See EN 681-1	See EN 681-1
— Rubber sealing elements	EN 295-7:2013, 5.1.2	EN 681-4	See EN 681-4	See EN 681-4
— Polyurethane sealing elements	EN 295-7:2013, 5.1.4	EN 295-3:2012, Clause 19	one sample per moulding plant	"Pass"
— Polypropylene sleeve couplings	EN 295-7:2013, 5.1.3	Manufacturer's declaration	—	MDV
— Stainless steel	EN 295-7:2013, 5.1.5	Manufacturer's declaration	—	MDV
— Other jointing materials				
Watertightness of joint assemblies	EN 295-7:2013, 5.3	EN 295-3:2012, Clause 21	1 joint assembly of each nominal size	"Pass"
Chemical and physical resistance to effluent	EN 295-7:2013, 5.6	EN 295-3:2012, Clause 23	one size of joint assembly	"Pass"
Thermal cycling stability	EN 295-1:2013, 6.6	EN 295-3:2012, 24.1	1 joint assembly of a system	"Pass"
Long-term thermal stability	EN 295-1:2013, 6.7	EN 295-3:2012, 24.2	1 joint assembly of a system	"Pass"
NOTE 1	For reaction to fire see EN 295-1:2013, 6.1.			
NOTE 2	For durability see EN 295-1:2013, 6.2.			
NOTE 3	For dangerous substances see EN 295-1:2013, 7.3.			

5.2.3 Test reports

The results of all type tests shall be recorded and held by the manufacturer for at least 10 years after the last date of production of the product(s) to which they apply.