



TÜVRheinland®

DIN CERTCO

Genau. Richtig.



# Certification Scheme

**ZP 295**

**Unglazed vitrified clay pipes, fittings and their accessories  
for drains and sewers**

**DIN EN 295, Part 1 - 7**

(Edition: January 2016)

## Foreword

DIN CERTCO was founded by the German Institute for Standardization, DIN Deutsches Institut für Normung e.V. for the award of the DIN mark, which is entitled to certify products, persons, services as well as companies on the basis of the DIN norms and equivalent specifications.

As a proof of our neutrality, independency and professionalism we are DIN EN ISO/IEC 17065 accredited. Furthermore customer satisfaction and trust are managed by our DIN EN ISO 9001 qualified QM systems.

The basis for certification of vitrified clay pipe systems is the familiar and well- established European Standard EN 295. This standard covers all requirements which are necessary to guarantee product quality and long lifetime. The proven third-party certification procedures safeguards long-term compliance with the recognized technical rules.

This certification scheme in its own is – apart from the general terms and conditions of DIN CERTCO – a prerequisite for producers of vitrified clay pipes applying for a “DIN*plus*” label, which adduces proof that their products meet and even exceed all requirements under EN 295.

Towards the user the quality label “DIN*plus*” ensures examination and assessment of the test requirements by an independent, neutral and official body. The third-party assessment body takes permanent supervision over the product’s quality and its preservation at all stages of production, adding extra value to our products and constituting a decisive purchase argument for our customers.

Vitrified clay pipe systems are granted the “DIN*plus*” quality label when all requirements described under parts 3 and 4 of this certification scheme are met.

All certificate holders can be found on the homepage of DIN CERTCO ([www.dincertco.de](http://www.dincertco.de)).

## Start of validity

This certification scheme is valid as from 1<sup>st</sup> June 2015. All DIN*plus* certified unglazed vitrified clay systems must meet the requirements of this certification scheme as from 31<sup>st</sup> March 2016.

## Modification

Towards the certification program „Unglazed vitrified clay pipes, fittings and accessories for drainage and sewerage systems” (2007-05) the following changes have been made:

- general revision
- editorial changes
- incorporation of changes in the certification basis (EN 295)

## Previous edition

Certification program „Unglazed vitrified clay pipes, Fittings and accessories for sewers and drains“ (2007-05).

<b>1</b>	<b>Scope</b>	<b>5</b>
<b>2</b>	<b>Test and certification specifications</b>	<b>5</b>
<b>3</b>	<b>Product requirements and test principles</b>	<b>5</b>
3.1	Symbols and abbreviations	6
<b>4</b>	<b>Increased requirements</b>	<b>6</b>
4.1	Appearance	6
4.2	Abrasion resistance	6
4.3	Steel	6
4.4	Continuity of invert of jacking pipes	7
4.5	Deviation from straightness	7
4.6	Crushing strength and bending tensile strength of pipes and jacking pipes and compressive strength of jacking pipes	7
4.7	Bending moment resistance	7
4.8	Fatigue strength under cyclic load (jacking pipes)	7
4.9	Vertical load for connecting system E	8
4.10	Angular deflection	8
4.11	Watertightness of pipes at 2,4 bar (special case)	8
4.12	Watertightness of pipes at 1bar (special case– TB250:BE)	9
4.13	Airtightness of jointed pipes (special cases)	9
4.14	Chemical resistance of joint assemblies	10
4.15	Chemical resistance of jointing materials	10
4.16	Dimensions of pipes and fittings	11
4.17	Assembling, function and seat of coupling	13
<b>5</b>	<b>Testing</b>	<b>14</b>
5.1	General	14
5.2	Testing types	14
5.3	Sampling	15
5.4	Testing process	16
5.5	Test report	16
<b>6</b>	<b>Certification</b>	<b>16</b>
6.1	Application for certification	16
6.2	Classification in types and subtypes	17
6.3	Conformity assessment	17
6.4	Certificate and quality label rights	17
6.5	Publications	18
6.6	Validity of the certificate	18
6.7	Extension of the certificate	18

6.8	Expiry of the certificate .....	18
6.9	Changes/additions .....	18
6.10	Defects in the product .....	19
<b>7</b>	<b>Factory production control by the manufacturer.....</b>	<b>19</b>
7.1	Factory production control (FPC).....	20
7.2	Quality Management System .....	20
<b>8</b>	<b>Surveillance.....</b>	<b>20</b>
8.1	General .....	20
8.2	Inspections.....	20
8.3	Third party certification testing (check tests).....	21
8.4	Further assessment measures .....	21
<b>Annex A</b>	<b>Inspection scope Factory Production Control and Third-party Certification.....</b>	<b>22</b>

## 1 Scope

This certification scheme applies to vitrified clay pipes, fittings and supplied joints produced on the basis of EN 295:2013. It also describes supplementary requirements and sets out principles for inspection and third-party certification under EN 295:2013.

It contains all the requirements for the award of the quality label "DINplus" in combination with the mentioned test basics.

The present certification scheme sets requirements on the product itself, as well as on its testing, monitoring and certification.

## 2 Test and certification specifications

The basis for testing and certification are the documents listed below. For dated references, only the version referred applies. For undated references the latest edition of the referred document including all amendments applies.

EN 295-1	Vitrified clay pipe systems for drains and sewers — Part 1: Requirements for pipes, fittings and joints (2013-05)
EN 295-2	Vitrified clay pipe systems for drains and sewers — Part 2: Assessment and verification of constancy of performance (2013-05)
EN 295-3	Vitrified clay pipe systems for drains and sewers — Part 3: Test methods (2012-03)
EN 295-4	Vitrified clay pipe systems for drains and sewers — Part 4: Requirements for adaptors, connectors and flexible couplings (2013-05)
EN 295-5	Vitrified clay pipe systems for drains and sewers — Part 5: Requirements for perforated pipes and fittings (2013-05)
EN 295-6	Vitrified clay pipes systems for drain and sewers — Part 6: Requirements for components of manholes and inspection chambers (2013-05)
EN 295-7	Vitrified clay pipe systems for drains and sewers — Part 7: Requirements for pipes and joints for pipe jacking (2013-05)
CEN/TR 16626	Vitrified clay pipes systems for drain and sewers: Guidance for voluntary third-party certification procedures (2014-04)

- this certification scheme
- the General Terms and Conditions of DIN CERTCO
- the respective schedule of fees of DIN CERTCO

## 3 Product requirements and test principles

Supplementary requirements over-and-above EN 295:2013 are laid down for:

- Appearance
- Abrasion resistance
- Steel
- Continuity of invert of jacking pipes
- Deviation from straightness
- Crushing strength and bending tensile strength of pipes and jacking pipes and compressive strength of jacking pipes
- Bending moment resistance
- Fatigue strength under cyclic load (jacking pipes)
- Vertical load of connecting sockets C
- Angular deflection
- Watertightness of pipes at 2,4 bar (special case)

- Watertightness of pipes at 1bar (special case– TB250:BE)
- Airtightness of jointed pipes (special cases)
- Chemical resistance of joint assemblies
- Chemical resistance of jointing materials
- Dimensions of pipes and fittings
- Installation, function and seat of elastomer sealing profiles for joints

### 3.1 Symbols and abbreviations

The symbols and abbreviations of EN 295:2013 are applicable to this certification scheme. The following symbols and abbreviations should also be noted:

<b>Symbol</b>	<b>Meaning</b>
$a_m$	Average abrasion depth (abrasion resistance test)
$d_F$	Grinded dimension in mm
$d_M$	Outside diameter of the pipe body in mm for jacking pipes
$d_1$	Internal pipe diameter in mm
$d_{3s}$	Grinded dimension in mm
$d_{3,spr}$	Grinded dimension for the installation of the pre-stressing ring in mm
$e$ min.	Cylindrical shaft length at the spigots of all fittings
$l_1$	Exterior shaft lengths of pipes and fittings
$\Delta Shore A_7$	Relative change in Shore hardness as % after depositing in the test fluid for seven days at $(23 \pm 2)^\circ C$
$\Delta Shore A_{77}$	Relative change in Shore hardness after depositing in test fluid for seven days at $(23 \pm 2)^\circ C$ and subsequent drying-out at normal temperature 23/50 – 2, DIN 50014.
$\Delta V_7$	Relative change in volume as % after depositing in test fluid for seven days at $(23 \pm 2)^\circ C$
$\Delta \varepsilon_{5;0}$	Additional creeping distortion under constant load between times $t = 10^0$ min and $T = 10^5$ min (long-term level)
$\sigma_{bz}$	Bending tensile strength, in $N/mm^2$

## 4 Increased requirements

### 4.1 Appearance

The appearance has to fulfill the requirements according to EN 295-1:2013 section 5.1.4,

### 4.2 Abrasion resistance

Tested in accordance with EN 295-1:2013 section 5.17, a maximum level of  $a_m \leq 0.25$  mm must not be exceeded.

### 4.3 Steel

In accordance with EN 295-7:2013, steel for the sleeves for jacking pipes must comply with material no. 1.4571, under norm DIN EN 10088.

#### 4.4 Continuity of invert of jacking pipes

Tested in accordance with EN 295-7:2013 section 4.2.4, a maximum of 1% of the nominal diameter must not be exceeded.

#### 4.5 Deviation from straightness

The maximum deviation from straightness of 2,5 mm/m must not be exceeded.

#### 4.6 Crushing strength and bending tensile strength of pipes and jacking pipes and compressive strength of jacking pipes

When assessing crushing strength, bending tensile strength and compressive strength in factory production control, the 95% fractal must be indicated and maintained at a 75% confidence level. This assessment relates to a period of a maximum of 8 consecutive weeks.

##### Test methods for determining the bending tensile strength of jacking pipes

Tested in accordance with EN 295-7:2013 section 4.3.2, the test must be performed on cylindrical test specimens which are drilled from the pipe. The crushing strength calculation, according to EN 295-3 section 8 (formula 4), may not be used.

#### 4.7 Bending moment resistance

Whilst testing pipes (which are marked accordingly to the diameters in table 1), tested in accordance with EN 295-1:2013 section 5.11, the minimum values in table 1 must be exceeded.

**Table 1: 4.6 Crushing strength and Bending moment resistance BMR**

DN	System	TKL	FN [kN/m]	BMR [kN m]	
100	E		40	2,5	
150	E		40	5	
200	E	240	48	14	
225	F	200	45	13	
250	E	240	60		
300	E	240	72		

#### 4.8 Fatigue strength under cyclic load (jacking pipes)

Tested in accordance with EN 295-7:2013 section 4.3.6, sample tests will be carried out at varying diameters. Evidence is obtained through the bending tensile strength from one diameter from each nominal-width group.

Group 1: DN 100 – 300

Group 2: DN ≥ 400

#### 4.9 Vertical load for connecting system E

The connecting socket E must be able to resist a vertical load of 37,5 N/mm DN based on TKL 240 without incurring any damage.

##### Test procedure

The load is to be mounted vertically on the assembled supports through a section of pipe with parallel ends, with a length of  $150 \pm 50$  mm. A cushion layer is to be interposed between the section of pipe and the support.

Pressure is to be applied using a Class 1 test machine, with a rate of increase of 0.8 to 1.2 kN/sec.

Once the nominal loading is reached, it is to be maintained for 5 minutes.

After eliminating the load, the connecting socket is to be inspected visually for possible damage.

#### 4.10 Angular deflection

##### Socketed pipes:

Tested in accordance with EN 295-1:2013 section 6.2, the required watertightness must be ensured, using the deflections shown in table 2:

**Table 2: Angular deflection for socketed pipes**

DN 100 to DN 200	100 mm/m pipe length
DN 225 to DN 500	50 mm/m pipe length
DN 600 to DN 800	30 mm/m pipe length

##### Jacking pipes:

Tested in accordance with EN 295-7:2013 section 5.3 & 5.4, the required watertightness must be ensured, using the deflections shown in table 3:

**Table 3: Angular deflection for jacking pipes**

$\leq$ DN 200	25 mm/m pipe length
DN 250 to DN 800	20 mm/m pipe length
$>$ DN 800	10 mm/m pipe length

#### 4.11 Watertightness of pipes at 2,4 bar (special case)

For pipes that are applied according to ATV A 142 (drainage and sewerage in water in water catchment areas):

Tested in accordance with EN 295-1:2013 section 6.2 and EN 295-7 section 5.3.2 the required watertightness must be ensured by applying a test pressure of 2.4 bar (without shear load or angular deflection). During the testing time of 15 minutes no visual leakage may occur.

This test is to be carried out on at least 2 pipes joined together, at room temperature.



#### 4.12 Watertightness of pipes at 1bar (special case– TB250:BE)

Tested in accordance with EN 295-1:2013 section 6.2 and EN 295-7 section 5.3.2 the required watertightness must be ensured by applying a test pressure of 1 bar (without shear load or angular deflection). During the testing time of 15 minutes no visual leakage may occur.

This test is to be carried out on at least 2 pipes joined together, at room temperature.

#### 4.13 Airtightness of jointed pipes (special cases)

##### Airtightness under positive pressure

Tested in accordance with EN 295-1:2013 section 5.18 and EN 295-7 section 4.5 the requirements of table 4 must be ensured.

**Table 4: Airtightness under positive pressure**

Application	Test procedure	$p_0$	$\Delta p$	Test period (minutes)							
				mbar	DN 100	DN 125	DN 150	DN 200	DN 250	DN 300	DN 350
A	LD	200	15	1,5	2	2,5	3	4	5	6	6
	LC	100	15	2,5	3	3,5	4,5	6	7	8	9
B	LE	200	15	5	-	7,5	9	10	11	12,5	14

Application	Test procedure	$p_0$	$\Delta p$	Test period (minutes)								
				mbar	DN 450	DN 500	DN 600	DN 700	DN 800	DN 900	DN 1000	DN 1200
A	LD	200	15	7	8	10	11	13	14	16	19	22
	LC	100	15	10	12	14	16	18	21	23	28	32
B	LE	200	15	15	17,5	20	22	25	30	35	-	-
		100	10	-	-	-	-	-	-	-	57	68

A: Merkblatt Nr. 4.3/6 Bayerisches Landesamt für Wasserwirtschaft, Stand 01.07.1999

B: ÖNORM B2503, section 6.2.2 and GRIS GV11 Steinzeug

##### Airtightness under negative pressure

Tested in accordance with EN 295-1:2013 section 5.18 and EN 295-7 section 4.5 the requirements of table 5 must be ensured.

**Table 5: Airtightness under negative pressure**

Application	Test procedure	$p_0$	$\Delta p$	Test period (mins)							
				mbar	DN 100	DN 125	DN 150	DN 200	DN 250	DN 300	DN 350
A	LD	- 200	11	1,5	2	2,5	3	4,5	5	6	6
	LC	- 100	11	2,5	3	3,5	4,5	9,4	7	8	9

Application	Test procedure	$p_0$	$\Delta p$	Test period (mins)								
				mbar	DN 450	DN 500	DN 600	DN 700	DN 800	DN 900	DN 1000	DN 1200
A	LD	- 200	11	7	8	10	11	13	14	16	19	22
	LC	- 100	11	10	12	14	16	18	21	23	28	32

A: Merkblatt Nr. 4.3/6 Bayerisches Landesamt für Wasserwirtschaft, Stand 01.07.1999

#### 4.14 Chemical resistance of joint assemblies

Tested in accordance with EN 295-1:2013 section 6.5, exposed to:

- sulphuric acid (pH level about 0)
- caustic soda (pH level about 14)
- nitric acid (pH level about 0)
- sodium hypochlorite bleach (pH level about 14)

The watertightness must be ensured.

#### 4.15 Chemical resistance of jointing materials

Sealing elements made of rubber elastomers (KE (NBR / SBR / EPDM), polyurethane elastomers (PU (elastic sealing elements) and Duromers (rigid fairing materials) are used.

Testing the chemical resistance of each separate jointing material in accordance with EN 295-1:2013 sections 6.1.1 & 6.1.2 and EN 295-7:2013 section 5.1.1. Carried out at four test samples in accordance with EN 295-3:2013 section 25.1.1 and exposed over 168 hours at a temperature of  $(23 \pm 2)^\circ\text{C}$ , to:

- sulphuric acid (pH level about 0)
- caustic soda (pH level about 14)

the maximum levels shown in table 7 may not be exceeded.

**Table 7: Requirements**

Material	Property	Unit	Requirement
KE, PU, Duromers	$\Delta V_7$	%	$\leq 5$
PU	$\Delta \text{Shore } A_7$	Shore A	$\leq 10$
PU	$\Delta \text{Shore } A_{7/7}$	Shore A	$\leq 5$

**Test procedure**

After exposing the test samples to the test fluid, the relative change in volume  $\Delta V_7$  and change in Shore A hardness  $\Delta \text{Shore } A_7$  are being determined. After air-drying the change in Shore A hardness  $\Delta \text{Shore } A_{7/7}$  is being determined. The Shore hardness is measured in accordance with DIN ISO 868 and the volume is determined at 0.005 cm<sup>3</sup>.

The time between removal of the test samples from the test fluid and the measurement should be not more than 5 minutes.

In this context:

$\Delta V_7$	relative change in volume as % after depositing in the test fluid for seven days at $(23 \pm 2)^\circ\text{C}$
$\Delta \text{Shore } A_7$	change in Shore A hardness after depositing in the test fluid for seven days at $(23 \pm 2)^\circ\text{C}$
$\Delta \text{Shore } A_{7/7}$	change in Shore A hardness after depositing in the test fluid for seven days at $(23 \pm 2)^\circ\text{C}$ and then drying out for seven days at normal temperature 23/50 - 2 DIN 50014

**4.16 Dimensions of pipes and fittings**

The specifications to be met for pipes and fittings, in addition to EN 295:2013 per jointing system, are set out in the following tables.

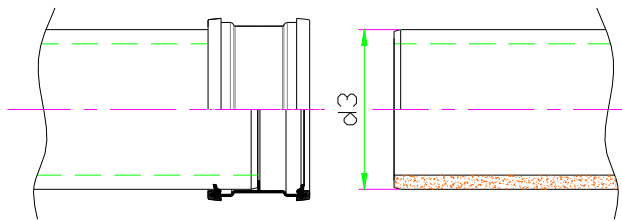
**Test procedure**

Diameters of pipes and fittings DN 100 to DN 150 are measured at 0.5 mm, all other dimensions at 1 mm. Connection sizes with permissible deviations  $\leq 1$  mm are to be measured at 0.1 mm.

The various diameters are to be measured at the following locations, recording the lowest and highest levels:

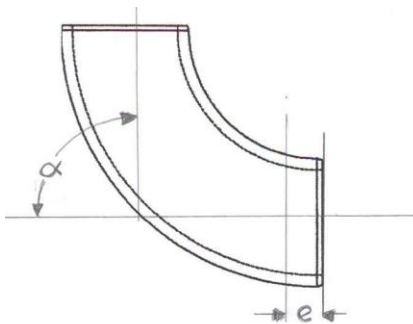
- Internal diameter  $d_1$  on the interior side of the pipe shaft, at approx. 50 mm from the socket or spigot end
- Outside diameter of the spigot end  $d_3$  at the exterior side of the pipe shaft at approx. 50 mm from the spigot end

The bend length has to be measured, using a talmeter, at the inside of the bend. The measured bend lengths may be below those specified.



**Table 8: Dimensions of pipes, system E**

DN	System	TKL	FN <sup>1</sup>	d <sub>1min</sub>	d <sub>3</sub>	Max. deviat.	Max. deviat. <sup>2</sup>	d <sub>3max</sub>
100	E	40	40	96	122	± 3,0	± 1,5	123,5
150	E	40	40	146	178	± 3,0	± 1,5	179,5
200	E	240	48	195	237	± 4,0	± 2,0	239,0
225	E	200	45	219	263	± 4,0	± 2,0	265,0
250	E	240	60	244	296	± 4,0	± 3,0	299,0
300	E	240	72	293	357	± 4,0	± 4,0	341,0



**Table 9: Dimensions of bends, system E**

DN	e <sub>min.</sub>	Bend angle $\alpha$			
		15° ± 3°	30° ± 4°	45° ± 5°	90° ± 5°
100	40	x	x	x	x
150	50	x	x	x	x
200	60	x	x	x	x
225	65	x	x	x	
250	85	x	x	x	x
300	90	x	x	x	x

Die genormten Bogenwinkel der einzelnen Nennweiten sind durch liegendes Kreuz (x) gekennzeichnet.

**Table 10: Dimensions of bends, system E**

DN	Bend length in mm							
	15°		30°		45°		90°	
		max. dev.		max. dev.		max. dev.		max. dev.
100	165	± 25	165	± 25	170	± 25	x <sup>3</sup>	± 25
150	180	± 25	190	± 25	230	± 25	x <sup>3</sup>	± 25
200	235	± 25	270	± 25	305	± 25	x <sup>3</sup>	± 25
225	230	± 25	265	± 25	295	± 25		

<sup>1</sup> 95% Fraktile according to 4.5.2

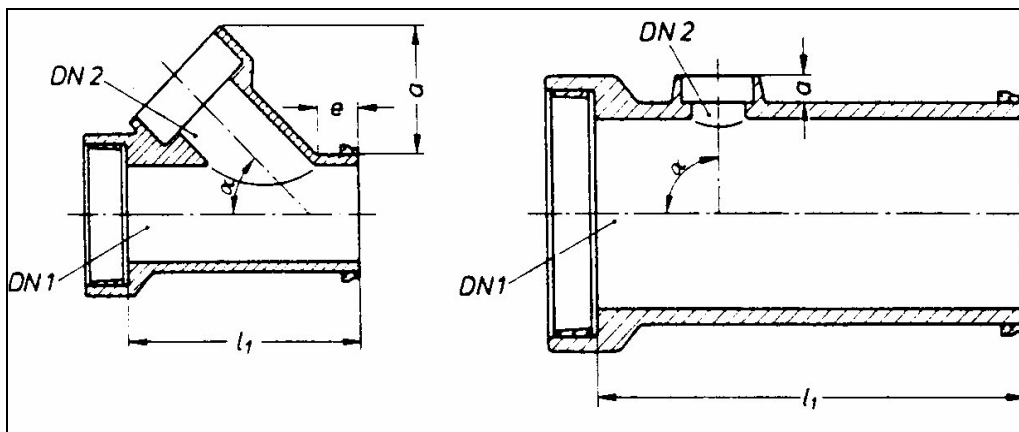
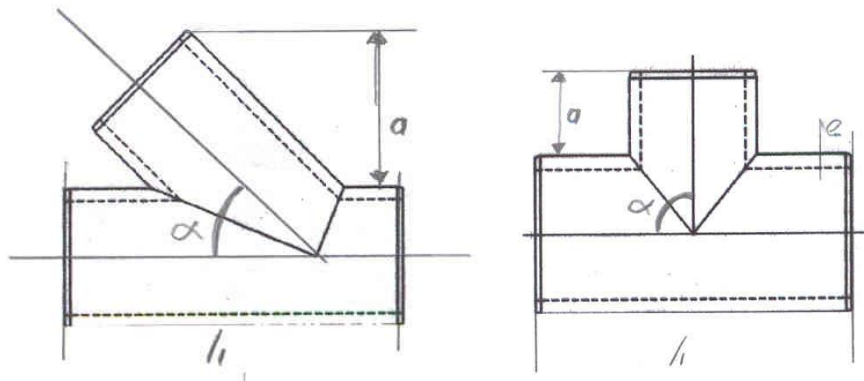
<sup>2</sup> The values are defined for the mean value of the outer diameter according to U/π

<sup>3</sup> The bend lengths of 60° and 90° bends are defined by the production site.

Fehler! Textmarke nicht definiert. + <sup>3</sup> all values have to be checked and recorded by the internal monitoring (QA). External monitoring includes checking of the values recorded and external testing.

<b>250</b>	260	± 25	360	± 25				
<b>300</b>	435	± 30	390	± 30				

The requirements additional to DIN EN 295-1 regarding the dimensions of the junctions are given in table 11.



**Table 11: Dimensions of junctions**

DN 1	DN 2	e min	length 45°	a	length 90°	a
100	100	40	350	160	350	115
150	100	50	450	165	450	95
150	150	50	450	215	450	120
200	100	60	500	135	500	112
200	150	60	500	180	500	112
200	200	60	600	280	600	112
250	150	70	500	265	500	140
250	200	70	700	290	700	140
300	150	90	600	240	500	110
300	200	90	800	260	600	110

Marking of the crown is not mandatory in system E.

#### 4.17 Assembling, function and seat of coupling

The function and the proper seating of the coupling must be ensured according to EN 295-1:2013 section 6.4 table 14.

##### Test procedure

The assembly, function and determination of insertion forces  $F_E$  are determined (requirements see table 13) with test plugs, which sizes are listed in table 12.

**Table 12: Diameter and insertion forces**

DN	Diameter of the test plugs	
	Angular deflection	Insertion forces
100	128/131 mm	131/134 mm
125	155,5/159 mm	159/162,5 mm
150	182/186 mm	186/190 mm
200	237/242 mm	242/247 mm

**Table 13: Diameter and insertion forces**

DN	$F_E$ in kN
100	1
150	1,5
200	2
225	2,4
250	2,75
300	3,25

Compliance is checked by visual inspection.

Whilst using pipes and fittings instead of test plugs the insertion force  $F_E$  is determined during the test according to EN 295-1:2013 section 6.2.

If no manufacturer declared insertion forces  $F_E$  are available than  $F_E$  (kN) = 1 % DN (mm).

## 5 Testing

### 5.1 General

For conducting the necessary tests as a basis for the evaluation and certification of products DIN CERTCO uses accredited laboratories.

### 5.2 Testing types

#### Pre-testing (Type Testing)

The pre-test is a type test (construction type test, type approval test) that serves as a means to assess if the product complies with the requirements according to section 2, 3 and 4 of this certification scheme.

### **Third party certification testing (Check Test)**

Third party certification testing is carried out in regular, fixed intervals and is determining whether the certified product meets the requirements of the type tested product in the production phase.

Third party certification testing is carried out on the authority of DIN CERTO and has to be accompanied by a positive assessment report.

Nature and scope of third party certification testing is defined in Annex A Inspection scope Factory Production Control and Third-party Certification.

### **Supplementary testing**

Supplementary testing occurs when additions, enhancements or modifications (see section 6.9) to the certified product have been made that affect the conformity with the underlying requirements.

Nature and scope of supplementary testing is set by DIN CERTCO for individual cases in accordance with the accredited laboratory.

### **Drawing testing**

Drawing testing is only performed in case:

- a complete type test of a comparable product of the same series was made and was demonstrated that it complies with the requirements of this certification scheme.
- the product eligible for the drawing testing does not substantially differ from the certified product in terms of installation and arrangement of the functional parts

The product successfully tested on the basis of a drawing test is considered to be standard-compliant.

### **Special assessment testing**

Special assessment testing will be performed in case:

- of detected deficiencies
- to substantiated instigation by DIN CERTCO
- on written request by a third parties claiming a particular interest in the enforcement of market regulations concerning competitive trading and quality

Nature and scope of special assessment testing is set by DIN CERTCO for individual cases in accordance with the accredited laboratory.

In case the special assessment detects deficiencies or has to be performed as a result of a production stop, the certification holder has to bear the cost for the special assessment.

In case the special assessment was applied for by a third party and no deficiencies are detected, the applicant ( i.e. the third party) has to bear the cost for the special assessment.

## **5.3 Sampling**

The samples for the type testing and third party certification testing are usually delivered by the manufacturer to the testing laboratory responsible for carrying out the tests. The manufacturer shall bear the associated costs.

The number of samples is commonly agreed upon by DIN CERTO and the testing laboratory, whereas it remains undefined by the current testing requirements.

#### **5.4 Testing process**

The tests are performed in accordance with the specifications of EN 295 or section 4 (increased requirements).

#### **5.5 Test report**

The test laboratory informs the contracting authority the results of the tests in a test report. This must be presented CERTCO DIN in an original format.

The test report must as a rule not be older than 6 months for submission. In some cases older reports can be recognized, if the testing laboratory in writing confirms the validity of the information referred to in the test report.

The test report must comply with DIN EN ISO/IEC17025, section 5.10 and contain at least the following information.

- Name and address of the manufacturer
- Name and address of the applicant (in so far not the manufacturer)
- Test requirements (Standards and Certification Scheme) including date of issue
- Type of the testing (e.g. type test, third party certification testing, etc.)
- Date of testing
- Results and assessment of the testing
- Name and signature of the person responsible for the testing
- any more normative required points

### **6 Certification**

Certification as described in this certification scheme is conducted over a product's conformity assessment performed by DIN CERTO and is based on the test reports from the accredited testing laboratories for continuous production. Here the products to be certified for compliance (compliance) with the requirements referred to in section 2, 3 and 4 are tested and subsequently monitored.

A list of certified products is available at as well the certifying body as the manufacturer.

The right of use for the quality label "DIN*plus*" will be issued by issuing a relevant certificate.

The certification is not applicable for the testing of products without the complete and comprehensible production history corresponding to.

#### **6.1 Application for certification**

Applicants may only be manufacturers according to § 4 Produkthaftungsgesetz (ProdHaftG).

The following documents need to be submitted to DIN CERTO by the applicant:

- original application for certification form including a legally binding signature
- recent test report as described under section 5.5 concerning the pre-test (see section 5.2) in so far the assessment was not enquired for by DIN CERTO



- Third party certification testing contract between the manufacturer and the testing laboratory

The applicant receives an order confirmation with a processing number, guidelines for the further course of the procedure and any remaining application documents by DIN CERTCO after receipt of the request.

## 6.2 Classification in types and subtypes

Unglazed vitrified clay pipes and fittings which differ in essential certification-relevant characteristics are defined as a type or model. Certification relevant features such as properties that significantly affect the safety, function or handling and therefore are marketed under an own trade name. A separate certificate is issued for each type.

Usually those products of a model/type are called subtypes, differing only in the size/performance, formal or not certification relevant characteristics. They can be collectively assembled under one certificate.

## 6.3 Conformity assessment

On the basis of the submitted application documents DIN CERTCO carries out the conformity assessment. Of particular importance here are the test reports and the complete and comprehensive Factory Production Control, which are valuable as to check the product's conformity to the certification scheme and standard requirements.

About possible differences, the applicant is informed in writing by DIN CERTCO.

## 6.4 Certificate and quality label rights

After successful testing and conformity assessment of the submitted application documents, DIN CERTCO issues the applicant with a certificate and grants the right of use for the quality label "DINplus" in conjunction with a corresponding registration number.



Structure of register number:

**P1S0Y000**

Unglazed vitrified clay pipes and fittings, for which the right of use for the quality label "DINplus" is granted, must be marked with the quality label "DINplus".

This "DINplus" label must be stamped into the product before firing the product.

If this isn't possible a sticker is allowed.

Quality label and registration number must be used only for the type for which the certificate has been granted and which corresponds to the approved product.

A registration number will be awarded per type. Identical registration numbers are issued for subtypes of a type (see section 6.2).

In addition, the terms and conditions of DIN CERTCO apply.

## 6.5 Publications

All certificate holders can be retrieved daily from the homepage of DIN CERTCO [www.dincerto.de](http://www.dincerto.de). Manufacturers, users and consumers use this search option to learn about certified products.

In addition to the contact details of the owner of the certificate (phone, fax, email, website), also the technical data of the registered unglazed vitrified clay pipes and fittings is available.

## 6.6 Validity of the certificate

The certificate has a validity of 5 years. The validity period is specified in the certificate. The right of use for the quality label expires when the certificate expires.

## 6.7 Extension of the certificate

In the case the certification should remain valid after the validity term specified in the certificate, a recently established positive test report and an application for extension of the certification has to be send to DIN CERTO. On the basis of the submitted application documents DIN CERTCO carries out the conformity assessment.

Compliance with the requirements according to section 2, 3 and 4 of this certification scheme is carried out in the course of a test according to section 5.4 evaluated by DIN CERTCO.

## 6.8 Expiry of the certificate

If re-testing for compliance according to section 5 has not taken place in time, before the expiry of the validity period, the right of use for the quality label "DIN*plus*" and the registration number expires, without requiring an explicit notification by DIN CERTCO.

Furthermore the certificate can expire in case:

- the monitoring measures according to section **Fehler! Verweisquelle konnte nicht gefunden werden.** are not in time or performed incomplete
- the quality label "DIN*plus*" is misused by the certificate holder
- the requirements of this certification scheme or its accompanying documents have not been met
- the certification fees are not timely paid
- the conditions for granting the certificate no longer exist

## 6.9 Changes/additions

### Product changes/additions

The certificate holder is obliged to inform DIN CERTCO promptly about any changes to the product. DIN CERTCO decides in accordance with the testing laboratory, to what extent testing according to section 5.2 is required and whether there is a significant change. The test report thereon will be redirected by the testing laboratory to DIN CERTCO.

In case DIN CERTCO observes a significant change, the certificate with the associated register number expires. A request for pre-testing and the right of use for the quality label "DIN*plus*" can be applied for.

The certificate holder furthermore is obliged to notify all changes from formal specifications (such as the certificate holder or its address).

The certificate holder may request an extension of the existing certificate for more subtypes of the same type. DIN CERTCO decides whether supplementary testing is required for this extension. The subtypes, provided that the requirements are met, will be included in the existing certificate and apply as its integral part.

### **Change on the basis of the test**

In case changes to the certification testing basics occur, within 6 months after notification by DIN CERTCO a request to amend the certification is to be submitted, followed by a positive test report to prove the conformity with the modified test basis usually after 12 months (see section 5.2).

### **6.10 Defects in the product**

If deficiencies in a certified product are identified in the market, the certificate holder will receive a written request from CERTCO DIN, to eliminate the defects.

DIN CERTCO decides in accordance with the testing laboratory, whether it is a major or minor defect.

In case of defects, which directly or indirectly affect the safety or technical function behavior (major defects), the manufacturer is obliged to take care that the products are no longer marked with the quality label until the deficiencies have been resolved.

Products with the detected defects which are on already built-in or are currently in stock need to be removed immediately. Within 3 months the manufacturer has to prove to DIN CERTCO, by presenting a report on special assessment testing according to section 5.2, that the defects have been corrected and the complained product again complies with the requirements set.

In case of defects which do not affect the safety or technical function behavior (minor defects), the manufacturer is obliged to inform DIN CERTCO within 3 months in an appropriate manner that the defects of the complained product have been corrected.

If the manufacturer does not comply with these deadlines, the certificate and the right of use for the quality label "DIN*plus*" will expire.

If the reason of the complaint still exists, the certificate will initially be suspended by DIN CERTCO and simultaneously a last deadline for the correction of the defects will be given.

If the manufacturer does not comply with this last deadline or cannot demonstrate that the defects have been corrected, the certificate and the right of use for the quality label "DIN*plus*" will expire.

## **7 Factory production control by the manufacturer**

The manufacturer is bound to ensure that, by the means of proper quality measures, the characteristics of products maintain the same as during the certification. This can be done over factory production control verifying the product and its production process, and over a well-measured quality management system covering the standards series DIN EN ISO 9000.

Basically the complete production process is to be taken in account.

## **7.1 Factory production control (FPC)**

Factory production control means continuous monitoring the complete production process by the manufacturer, which ensures compliance of the manufactured products with the specified requirements.

Appropriate records are to submit on request of DIN CERTCO or their representatives. They must include at least the following information:

- Description of the test item
- Manufacturing date
- Testing date
- Results of the test and when provided, comparison with the requirements
- Signature of the person responsible for the testing
- Date of recording

With negative test results, the manufacturer is immediately obliged to take all measures needed to correct the defect. Defective products have to be identified and discarded. The test has to be repeated regularly to determine whether the deficiency is eliminated.

## **7.2 Quality Management System**

The establishment and certification of a quality management system according to the standard series DIN EN ISO 9000 ff is required.

# **8 Surveillance**

## **8.1 General**

Integral part of the certification is the continuous monitoring of the certified product throughout the term of the certificate. The monitoring takes place at regular two times a year.

DIN CERTCO validates and assesses the conformity of the product with the requirements of this certification scheme, as well as in the framework of inspecting the effectiveness of the factory production control according to section 7.1.

## **8.2 Inspections**

In the context of an inspection DIN CERTCO or a appointed third party verifies the manufacturing and testing facilities, as well as the quality assurance (QA measures), whether they are suitable for the proper production.

The inspection is also determining whether the manufacturing requirements for a continuous compliance of the products with the requirements referred to in section 2, 3 and 4 are met.

During this inspection the test samples for the monitoring each half year are determined. The manufacturer has to create corresponding production lists.

A separate inspection report is issued.

If the results of an initial survey of the plant are insufficient, the applicant must be informed immediately. The scope of additional measures to meet all requirements has to be set

between CA and applicant. If the applicant is not able to implement the necessary measures, the procedure will be aborted.

### **8.3 Third party certification testing (check tests)**

The third party certification testing will also take place twice a year to the extent of the table shown in Annex A Inspection scope Factory Production Control and Third-party Certification.

### **8.4 Further assessment measures**

#### **Integrated sealing elements**

Each vitrified clay manufacturer which buys sealing elements, stainless steel sleeves for jacking pipes and accessories must ensure the quality of the delivered products. A documented release of drawings of the products, that only takes place after type testing on the products, must be demonstrated. The document control must be ensured in the quality management system of the vitrified clay manufacturer.

The dimensions and materials of the products need to be specified to the third party certification body.

The sealing elements manufacturer is obliged to prove, at least twice a year, compliance with the requirements of the material properties through test reports from an accredited third party testing laboratory to DIN CERTCO.

The third party testing laboratory must be accredited and recognized by DIN CERTCO. Product-related type tests in accordance with DIN EN 681-1, section 7.3 are held every 5 years after taking samples from the sealing elements manufacturer.

The third party testing needs to ensure that each compound per production facility of the manufacturer is tested once per year. The sampling can also be done in the vitrified clay manufacturer's stock. The test reports shall be given to the vitrified clay manufacturer.

The results of the factory production control of the manufacturer need to be provided to the third party certification body (DIN CERTCO).

Function tests are carried out in the framework of third party testing of the vitrified clay manufacturer.

Significant changes to the recipe of the material, the dimensions, the marking or manufacturing procedures have to be clarified in advance with the vitrified clay manufacturer.

More additional surveillance measures are not planned at the time - but at any time they can be requested by the Quality Assurance Committee at DIN CERTCO.

## Annex A Inspection scope Factory Production Control and Third-party Certification.

Subject to be tested	Characteristic	Requirements			Sample size according	Testing conform			Factory Production Control						Third party testing twice a year	Testing Factory Production Control
		EN 295-1	EN 295-7	ZP WN 295		EN 295-2	EN 295-3	ZP WN 295	Batch	Up to 8 week batches	Semi-annually each nominal diameter produced	Annually	Continuous	Type Test		
Material	Material	5.1.1	4.1	-	5.3.4	-	-	-	-	-	-	X	X	-	-	X
	Manufacturing	5.1.2	4.1	-	-	-	-	-	-	-	-	X	X	-	-	X
	Water absorption	5.1.3	4.1	-	5.3.8.6	28	-	X	-	-	-	-	X	-	X	X
	Appearance	5.1.4	4.1	4.1	-	-	-	-	-	-	-	X	X	-	X	X
	Chemical resistance	5.15	4.6	-	-	13	-	-	-	-	X	-	X	-	-	X
	Abrasion resistance	5.17	4.8	4.2	-	15	-	-	-	-	-	-	-	X	-	-
	Resistance against high pressure water jetting	5.20	4.9	-	-	17	-	-	-	-	X	-	X	-	-	X
Pipes	Crushing strength	5.9	4.3.1	4.6 4.16	5.3.8.2 up to 5.3.8.5	7	-	X	X <sup>1</sup>	-	-	-	X	-	X	X
	Bending moment resistance	5.11	-	4.7	5.3.8.7	9	-	-	-	X <sup>2</sup>	-	-	X	-	X <sup>2</sup>	X
Jacking pipes	Stainless steel	-	5.1.3	4.3	-	-	-	-	-	-	-	X	X	-	-	X
	Bending tensile strength	-	4.3.2	4.6 4.16	-	8	-	-	X <sup>1</sup>	-	-	-	-	-	-	-
	Compressive strength	-	4.3.3	4.6	5.3.19	27	-	-	-	X <sup>1</sup>	-	-	-	-	-	X
	Fatigue strength under cyclic load jacking pipes	-	4.3.6	4.8	-	11	-	-	-	-	-	-	-	X	-	-
Fittings	Vertical load for connecting sockets C	-	-	4.9	-	-	4.9	-	-	-	-	-	-	X	-	-
	Water seal of trapped fittings	5.6	-	-	5.3.9.5 5.3.9.8	-	-	X	-	-	-	-	X	-	X	X
	Dimensions of bends	5.2 5.7	-	4.16	5.3.9.2 up to 5.3.9.4	-	4.16	X	-	-	-	-	X	-	X	X
	Dimensions of junctions	5.2 5.8	-	4.16	5.3.9.2 up to 5.3.9.4	-	4.16	X	-	-	-	-	X	-	X	X

<sup>1</sup> Statistical evaluation

<sup>2</sup> DN100 up to DN225

Subject to be tested	Characteristic	Requirements			Sample size according	Testing conform		Factory Production Control							Third party testing twice a year	Testing Factory Production Control
		EN 295-1	EN 295-7	ZP WN 295		EN 295-2	EN 295-3	ZP WN 295	Batch	Up to 8 week batches	Semi-annually each nominal diameter produced	Annually	Continuous	Type Test		
Pipes and fittings	Dimensions	5.2 up to 5.5 6.3	4.2	4.4 4.16	5.3.8.2 up to 5.3.8.5	5, 6, 22	4.16	X	-	-	-	-	X	-	X	X
	Watertightness	5.14	4.4	-	5.3.8.6 5.3.9.7	12	-	X	-	-	-	-	X	-	X	X
	Assembling, function and seat of elastomer sealing profiles for joints	-	-	4.17	-	-	4.17	-	-	-	-	-	-	X	-	-
	Marking	9	8	-	-	-	-	X	-	-	-	X	-	-	X	X
	Bond strength of adhesive used for fixing fired clay parts together	5.12	-	-	5.3.9.9	10	-	X	-	-	-	-	X	-	-	X
	Airtightness	5.18	4.5	-	5.3.8.6 5.3.9.6	16	-	-	-	X	-	-	X	-	X	X
Joint assemblies	Watertightness	6.2	5.3 up to 5.5	4.10	5.3.10 5.3.20	21	-	-	-	X	-	-	X	-	X	X
	Watertightness (Special case)	-	-	4.11 4.12	-	21	4.11 4.12	-	-	X	-	-	-	-	X	X
	Airtightness of jointed pipes (Special case)	-	-	4.13	-	16	4.13	-	-	X	-	-	X	-	X	X
	Chemical resistance of joint assemblies	6.5	5.6	4.14	5.3.10 5.3.20	23	-	-	-	-	X	-	X	-	-	X
	Thermal cycling stability	6.6	5.7	-	5.3.10 5.3.20	24.1	-	-	-	-	X	-	X	-	-	X
	Long-term thermal stability	6.7	5.8	-	5.3.10 5.3.20	24.2	-	-	-	-	X	-	X	-	-	X
	Joint interchangeability	6.4	-	4.16	5.3.8.2 up to 5.3.8.5	-	4.16	-	-	X	-	-	X	-	X	X
Duromers	Creep resistance	6.1.4.2	-	-	5.3.13.2	25.1	-	-	-	-	-	-	-	-	X	X
Rubber elastomers	Chemical resistance of jointing materials	6.1.1	5.1.1	4.15	-	-	4.15	-	-	-	-	-	-	-	X	X
Polyurethane elastomers	Chemical resistance of jointing materials	6.1.2	-	4.15	-	-	4.15	-	-	-	-	-	-	-	X	X
Polyurethane elastomers	Material properties	6.1.2	-	-	5.3.11	18	-	-	-	-	-	X	-	X	X	

Subject to be tested	Characteristic	Requirements	Sample size according	Testing conform	Factory Production Control	Third party testing	Testing Factory
----------------------	----------------	--------------	-----------------------	-----------------	----------------------------	---------------------	-----------------

		EN 295-4	EN 295-6	ZP WN 295	EN 295-2	EN 295-3	EN 295-4	ZP WN 295	Semi-annually	Annually each nominal diameter produced	Continuous	Type Test	Optional	twice a year	Production Control
Manholes	Dimensions	-	4.3 4.4 4.5	-	5.3.8.2 up to 5.3.8.5	-	-	4.16	-	-	X	X	-	X	X
	Bond strength of adhesive used for fixing fired clay parts together	-	4.8	-	5.3.8.2 up to 5.3.8.5	10	-	-	X	-	-	X	-	-	X
	Water tightness of assembled components	-	4.11	-	5.3.18	26	-	-	-	X	-	X	-	X	X
	Joint systems	-	4.12	-	5.3.8.2 up to 5.3.8.5	-	-	4.16	-	X	-	X	-	X	X
	Marking	-	7	-	-	-	-	-	-	-	X	-	-	X	X
Accessories flexible couplings	Dimensions	A.3.2	-	8.4	5.3.15.1	-	-	-	X <sup>1</sup>	-	-	X <sup>2</sup>	-	X <sup>2</sup>	X <sup>2</sup>
	Clamping band assembly torque test	A.3.3.4	-	8.4	5.3.15.2.3	-	A.3.4.2	-	X <sup>1</sup>	-	-	X <sup>2</sup>	-	X <sup>2</sup>	X <sup>2</sup>
	Watertightness	A.3.3	-	4.10 4.11 4.12	5.3.15.2	21	-	-	-	-	-	X	-	X	-
Accessories connecting sockets and sealing rings	Dimensions	B.3 B.4	-	8.4	5.3.15.1	-	-	-	X <sup>1</sup>	-	-	X <sup>2</sup>	-	X <sup>2</sup>	X <sup>2</sup>
	Watertightness	B.5	-	4.10 4.12	5.3.15.2	21	-	-	-	-	-	X	-	X	-

<sup>1</sup> Tested by the sealing elements manufacturer

<sup>2</sup> Checked at the sealing elements manufacturing site