

# DIN EN 295-1:2013-05 (E)

## Vitrified clay pipe systems for drains and sewers - Part 1: Requirements for pipes, fittings and joints

---

<b>Contents</b>		<b>Page</b>
Foreword .....		4
1	Scope .....	6
2	Normative references .....	6
3	Terms and definitions .....	6
4	Symbols and abbreviations .....	7
4.1	Symbols .....	7
4.2	Abbreviations .....	7
5	Requirements for pipes and fittings .....	8
5.1	Materials, manufacture, water absorption and appearance .....	8
5.2	Internal diameter .....	8
5.3	Length .....	9
5.4	Squareness of ends .....	9
5.5	Deviation from straightness .....	9
5.6	Water seal of trapped fittings .....	9
5.7	Angle of curvature and radius of bends .....	10
5.8	Branch angle of junctions .....	10
5.9	Crushing strength (FN) .....	10
5.10	Bending tensile strength .....	12
5.11	Bending moment resistance (BMR) .....	12
5.12	Bond strength of adhesive used for fixing fired clay parts together .....	12
5.13	Fatigue strength under cyclic load .....	13
5.14	Watertightness of pipes and junctions .....	13
5.15	Chemical resistance .....	13
5.16	Hydraulic roughness .....	13
5.17	Abrasion resistance .....	13
5.18	Airtightness .....	13
5.19	Tightness of fittings .....	14
5.20	Resistance against high pressure water jetting .....	14
6	Requirements for joints and joint assemblies .....	15
6.1	Joint materials .....	15
6.2	Watertightness of joint assemblies under deflection and shear load .....	16
6.3	Continuity of invert in joint assemblies .....	17
6.4	Joint interchangeability of pipes and fittings in joint assemblies .....	17
6.5	Chemical and physical resistance to effluent of joint assemblies .....	19
6.6	Thermal cycling stability of joint assemblies .....	20
6.7	Long-term thermal stability of joint assemblies .....	20
7	Common requirements for pipes, fittings and joints .....	20
7.1	Reaction to fire .....	20
7.2	Durability .....	20
7.3	Dangerous substances .....	21
8	Designation .....	21
9	Marking .....	21

9.1	Pipes and fittings .....	21
9.2	Joints .....	22
10	Evaluation of conformity .....	22
10.1	General .....	22
10.2	Initial type testing .....	22
10.3	Factory production control (FPC) .....	22
<b>Annex A (normative) Requirements for vitrified clay fittings .....</b>		<b>23</b>
<b>Annex B (informative) Guidance on design, installation and operation of sewers and drains constructed from vitrified clay pipes .....</b>		<b>24</b>
B.1	General .....	24
B.2	Hydraulic design .....	24
B.3	Structural design .....	24
B.4	Installation .....	24
B.5	Operation and maintenance .....	24
B.6	Economy .....	25
B.7	Environmental characteristics .....	25
<b>Annex ZA (informative) Clauses of this European Standard addressing the provisions of the EU Construction Products Directive .....</b>		<b>26</b>
<b>ZA.1 Scope and relevant characteristics .....</b>		<b>26</b>
<b>ZA.2 Procedures for the attestation of conformity of vitrified clay pipes, fittings and pipe joints .....</b>		<b>28</b>
<b>ZA.3 CE marking .....</b>		<b>29</b>
<b>Bibliography .....</b>		<b>34</b>