



SLOVENSKI STANDARD

SIST EN 773:2000

01-november-2000

Splošne zahteve za elemente tlačnih cevovodov za odvod odpadne vode in kanalizacijo

General requirements for components used in hydraulically pressurized discharge pipes, drains and sewers

Allgemeine Anforderungen an Bauteile von hydraulisch betriebenen Abwasserdruckleitungen

Prescriptions générales pour les composants utilisés dans les réseaux d'évacuation, de branchement et d'assainissement sous pression hydraulique

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ICS:

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93.030	Zunanji sistemi za odpadno vodo	External sewage systems

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en

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EUROPEAN STANDARD
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English version

General requirements for components used in hydraulically
 pressurized discharge pipes, drains and sewers

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 les réseaux d'évacuation, de branchement et
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 betriebenen Abwasserdruckleitungen

This European Standard was approved by CEN on 13 December 1998.

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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

Contents

FOREWORD	3
1. SCOPE	4
2. NORMATIVE REFERENCES	4
3. DEFINITIONS, SYMBOLS AND ABBREVIATIONS	5
4. FUNCTIONAL AND DIMENSIONAL REQUIREMENTS	6
4.1 DIMENSIONS OF PIPES AND FITTINGS.....	6
4.1.1 Nominal sizes.....	6
4.1.2 Internal diameters and limit deviations.....	6
4.2 GEOMETRY OF PIPES.....	7
4.3 GEOMETRY OF FITTINGS.....	7
4.3.1 General.....	7
4.3.2 Bends.....	7
4.3.3 Branches.....	7
4.4 SMOOTHNESS OF BORE.....	8
4.5 APPEARANCE AND SOUNDNESS.....	8
4.6 LONGITUDINAL BENDING MOMENT RESISTANCE.....	8
4.7 INTERCONNECTION.....	8
4.8 CORROSION RESISTANCE.....	8
4.9 ABRASION RESISTANCE.....	8
4.10 MODIFICATION.....	8
4.11 COATINGS AND LININGS.....	8
4.12 LONG-TERM BEHAVIOUR.....	8
4.13 DURABILITY.....	8
4.14 SEALING ELEMENTS.....	9
4.15 MECHANICAL STRENGTH.....	9
4.16 PRESSURE CLASSES FOR PIPES, FITTINGS AND JOINTS.....	9
4.17 WATERTIGHTNESS.....	9
4.17.1 Seals for joints.....	9
4.17.2 Rigid joints.....	10
4.17.3 Adjustable joints.....	10
4.17.4 Flexible joints.....	10
4.18 RESTRAINED JOINTS.....	10
4.19 TEMPERATURE.....	11
4.20 DIMENSIONAL STABILITY.....	11
5. TEST METHODS	11
5.1 MEASUREMENT OF DIAMETERS AND WALL THICKNESSES.....	11
5.1.1 Mean internal diameter of barrels.....	11
5.1.2 Mean external diameter of barrels.....	11
5.1.3 Wall thickness of barrels.....	11
5.2 MEASUREMENT OF DEVIATION FROM STRAIGHTNESS OF BARRELS.....	11
5.3 MEASUREMENT OF DEVIATION FROM SQUARENESS OF THE ENDS OF THE PIPES.....	11
5.4 LONGITUDINAL BENDING MOMENT RESISTANCE TEST FOR PIPES.....	11
5.5 CRUSHING TEST FOR PIPES WITH RIGID BEHAVIOUR.....	12
5.6 STIFFNESS TEST FOR PIPES WITH FLEXIBLE BEHAVIOUR.....	12
5.7 PRESSURE TESTS.....	12
5.7.1 Test for pipes.....	12
5.7.2 Test for joints.....	12
5.7.3 Test for restrained joints.....	13
5.8 TESTS FOR FITTINGS.....	13
6. QUALITY CONTROL	13
7. MARKING	13

FOREWORD

This European Standard has been prepared by Technical Committee CEN/TC 165 "Waste water 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 October 1999, and conflicting national standards shall be withdrawn at the latest by October 1999.

This European Standard 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).

This European Standard provides the basis for the preparation or revision of product standards for discharges pipes, drains and sewers operating as hydraulically pressurized systems (see clause 1 "Scope").

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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1. Scope

This European Standard specifies general requirements for components for use in hydraulically pressurized discharge pipes, drains and sewers.

This European Standard provides the general basis for the preparation or revision of product standards. Some of its provisions may need modification when drafting harmonized European Standards. It is not applicable for evaluation of products.

It is applicable as a reference for drawing up a product specification, if there is no product standard available.

Components covered are pipes, fittings and joints.

This European Standard includes marking, quality control and optional certification requirements.

Components are those used in systems that convey in a satisfactory manner:

- domestic waste water;
- rainwater and surface water;
- other waste waters (e.g. industrial waste water) that will not damage the components.

This European Standard applies equally to components which are factory-made and to those constructed on site, where applicable.

2. Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 681-1	Elastomeric seals - Material requirements for pipe joint seals used in water and drainage applications - Part 1 : Vulcanized rubber.
prEN 681-2	Elastomeric seals - Material requirements for pipe joint seals used in water and drainage applications - Part 2 : Thermoplastic elastomers.
prEN 805:1996	Water supply - Requirements for systems and components outside buildings
EN ISO 9001:1994	Quality systems - Model for quality assurance in design, development, production, installation and servicing. (ISO 9001 : 1994).
EN ISO 9002:1994	Quality systems - Model for quality assurance in production, installation and servicing. (ISO 9002 : 1994).
EN 45011	General requirements for bodies operating product certification systems (ISO/IEC Guide 65:1996)
EN 45012	General requirements for bodies operating assessment and certification/registration of quality systems (ISO/IEC Guide 62:1996)
ISO 48	Rubber, vulcanized or thermoplastic - Determination of hardness (Hardness between 10 IRHD and 100 IRHD)

3. Definitions, symbols and abbreviations

For the purposes of this standard, the following definitions apply:

- 3.1 adjustable joint:** Joint which permits significant angular deflection at the time of installation but not thereafter.
- 3.2 allowable maximum operating pressure PMA:** Maximum hydrostatic pressure including surge that a component can withstand from time to time in service.
- 3.3 allowable operating pressure PFA:** Maximum hydrostatic pressure that a component can withstand continuously in service.
- 3.4 allowable test pressure PEA:** Maximum hydrostatic pressure that a newly installed component can withstand for a relatively short duration when either fixed above ground level or laid and backfilled under ground, in order to ensure the integrity and tightness of the pipeline.
- 3.5 external diameter OD:** Mean external diameter of the pipe barrel at any cross section. For pipes with external profiles on the barrels, the external diameter is the maximum diameter when viewed in cross section.
- 3.6 factory production control:** Surveillance mode in which a manufacturer performs its own surveillance on the result of its production according to a set of rules formally specified in quality assurance or quality management provision.
- 3.7 flexible joint:** Joint which permits significant angular deflection, both during and after installation and which can accept a slight offset of the centre line.
- 3.8 hydraulically pressurized system:** System where flow is caused by hydraulic pressure and where the pipe normally operates full.
- 3.9 joint:** Connection between the adjacent ends of two components including the means of sealing.
- 3.10 mean internal diameter ID:** Mean internal diameter of the pipe barrel at any cross section.
- 3.11 nominal size DN:** Numerical designation of size of component, which is a convenient integer approximately equal to a manufacturing dimension in mm. This can apply to either the internal diameter (DN/ID) or the external diameter (DN/OD).
- 3.12 pipe barrel:** Cylindrical part of the pipe with a uniform cross section excluding socket and spigot.
- 3.13 proof load:** Specified test load which a component withstands where the related requirements of the product standard are met.
- 3.14 quality control system:** Organizational structure, responsibilities, procedures, processes and resources for implementing quality management.
- 3.15 rigid joint:** Joint that does not permit significant angular deflection, either during or after installation.
- 3.16 ring stiffness:** Resistance of a pipe to diametrical deflection in response to external loading applied along one diametric plane given as follows:

$$S = \frac{EI}{D_{m^3}}$$

where:

S is the ring stiffness of the pipe in kilonewtons per square metre;

E is the modulus of elasticity in flexure in the circumferential direction, in kilonewtons per square metre;

I is the second moment of area of the pipe wall in the longitudinal direction, per unit length, in metre to the fourth power per metre;

D_m is the diameter of the neutral axis of the pipe wall, in metre.

3.17 ultimate load: That load which causes failure of a component (under test) which shall be as specified in product standards.

4. Functional and dimensional requirements

Product standards may include specifications which are more stringent, but not less stringent than those of this European Standard.

4.1 Dimensions of pipes and fittings

4.1.1 Nominal sizes

Nominal sizes DN shall be given in product standards as DN/ID or DN/OD.

Nominal sizes specified in product standards should preferably be selected from table 1 or 2.

Other nominal sizes may be specified in product standards.

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Table 1: Nominal sizes DN/ID

20, 25, 30, 40, 50, 60, 80, 100, 125, 150, 200, 250, 300, 350, 400, 450, 500, 600, 700, 800, 900, 1000, 1100, 1200, 1300, 1400, 1500, 1600, 1800, 2000, 2100, 2200, 2400, 2500, 2600, 2800, 3000, 3200, 3500, 4000.

Table 2: Nominal sizes DN/OD

22, 25, 28, 32, 40, 50, 63, 75, 90, 100, 110, 125, 140, 160, 180, 200, 225, 250, 280, 315, 355, 400, 450, 500, 560, 630, 710, 800, 900, 1000
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4.1.2 Internal diameters and limit deviations

Product standards shall specify:

- internal diameters and limit deviations, or
- external diameters, wall thicknesses and limit deviations, or
- minimum bores (see 5.1).

Limit deviations on the internal diameter ID are shown in Table 3:

Table 3: Limit deviations on internal diameters

Nominal size	Limit deviations on mean internal diameter mm	Limit deviations on individual internal diameter mm
DN ≤ 100	± 0,05 DN	± 0,10 DN
100 < DN ≤ 250	± 5	± 10
250 < DN ≤ 600	± 0,02 DN	± 0,04 DN
DN > 600	± 15	± 30

NOTE: DN in Table 3 can be applied to either DN/ID or DN/OD.

4.2 Geometry of pipes

Except in the case of pipes delivered in coils, pipes shall be straight, within tolerances specified in product standards (see 5.2). If pipes are delivered in coils, product standards shall specify a minimum radius of the coils.

The angle between the planes of the end faces of the pipe and the relevant axis shall be 90° with a tolerance such that the function of the pipe joint shall not be impaired (see 5.3).

A range of pipe lengths can be specified in product standards.

Limit deviations on the wall thickness and the pipe length shall be specified in product standards. Where the thickness and/or the length themselves are not specified, product standards shall require the manufacturer to declare the limit deviations.

4.3 Geometry of fittings

4.3.1 General

Angles for fittings shall be stated in the product standards.

Where applicable, tolerances on angles shall be specified in product standards.

4.3.2 Bends

Angles α for bends shall be specified in product standards. Angles α should preferably be selected from table 4.

Table 4 : Angles α for bends

<p>https://standards.itih.ai/catalog/standards/sist/0552c7d6-f54c-4157-9613-300223047100</p> <p>11°15', 15°, 20° to 22°30', 30°, 45°, 60°, 90°</p>
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Other angles α may be allowed in product standards.

NOTE: Radii r for bends should be specified in product standards.

4.3.3 Branches

Angles β for branches specified in product standards should preferably be selected from table 5.

Table 5 : Angles β for branches

45°, 60°, 90°

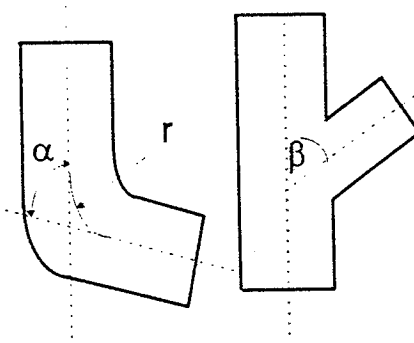


Figure 1: Illustrations of angles and radius of fittings.