



SLOVENSKI STANDARD

SIST EN 14457:2004

01-oktober-2004

General requirements for components specifically designed for use in trenchless construction of drains and sewers

General requirements for components specifically designed for use in trenchless construction of drains and sewers

Allgemeine Anforderungen an Bauteile, die bei grabenlosem Einbau von Abwasserleitungen und -kanälen verwendet werden

Prescriptions générales pour composants utilisés dans la construction des réseaux d'évacuation et d'assainissement sans tranchée

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Ta slovenski standard je istoveten z: EN 14457:2004

ICS:

93.030 Zunanji sistemi za odpadno vodo External sewage systems

SIST EN 14457:2004

en

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EUROPEAN STANDARD
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EN 14457

July 2004

ICS 93.030

English version

General requirements for components specifically designed for use in trenchless construction of drains and sewers

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This European Standard was approved by CEN on 23 April 2004.

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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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

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Foreword

This document (EN 14457:2004) 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 January 2005, and conflicting national standards shall be withdrawn at the latest by January 2005.

Annex A is informative.

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

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EN 14457:2004 (E)**1 Scope**

This European Standard specifies general requirements for pipes and their joints intended for use in drains and sewers which are installed using trenchless construction methods "pipe jacking", "microtunnelling" and "pilot jacking" as defined in EN 12889 as gravity systems, according to EN 476 where any pressure to occur is a maximum of 40 kPa or operated under pressure according to EN 773 where pressure can be more than 40 kPa.

This European Standard provides the general basis for the preparation or revision of product standards. It is not applicable for the evaluation of products and construction techniques.

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

This European Standard applies to components to be used in domestic waste water, rainwater and surface water and other waste waters (e.g. industrial waste water) that will not damage the components.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 773:1999, *General requirements for components used in hydraulically pressurized discharge pipes, drains and sewers.*

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3 Terms and definitions, symbols and abbreviations

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

3.1**external diameter****OD**

mean external diameter of the pipe barrel at any cross section

3.2**gravity system**

system where flow is caused by the force of gravity and where the pipe usually operates partially full

3.3**hydraulically pressurized system**

system where flow is caused by hydraulic pressure and where the pipe usually operates full

3.4**invert**

lowest point of the internal surface of the barrel of a pipe or channel at any cross section

[EN 476:1997]

3.5**internal diameter****ID**

mean internal diameter of the pipe barrel at any cross section

[EN 476:1997]

3.6**joint**

connection between the adjacent ends of two components including the means of sealing and pressure transfer ring, (during installation) if applicable

3.7**nominal size****DN**

numerical designation of size of component, which is a convenient integer approximately equal to a manufacturing diameter in millimetres

3.8**pipe barrel**

cylindrical part of the pipe with a uniform cross section excluding joint

3.9**pipe length**

length of the internal pipe barrel

3.10**ring stiffness**

resistance of a pipe to diametric deflection in response to external loading applied along one diametric plane.

For a circular pipe of uniform wall thickness, this is given by:

$$S = \frac{EI}{D_m^3}$$

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where

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S is the ring stiffness of the pipe in kilonewtons per square metre (kN/m²);

E is the modulus of elasticity in flexure in the circumferential direction in kilonewtons per square metre (kN/m²);

I is the second moment of area of the pipe wall in the longitudinal direction, per unit length, in metres to the fourth power per metre (m⁴/m);

D_m is the diameter of the neutral axis of the pipe wall, in metres (m)

3.11**surface water**

water drained from the surface of buildings, structures or the ground

[EN 476:1997]

3.12**pressure transfer ring**

component to transfer longitudinal loads between the end-surfaces of the pipes during the installation

4 Functional and dimensional requirements**4.1 General**

Product standards may include specifications which are more stringent, but not less stringent than those in this standard.

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4.2 Dimensions

4.2.1 Nominal sizes

Nominal sizes, DN, shall be specified in product standards and shall preferably be selected from Table 1.

Other nominal sizes may be specified in product standards.

Table 1 — Nominal sizes DN

150, 200, 225, 250, 300, 400, 500, 600, 800, 1 000, 1 200, 1 400, 1 600, 1 800, 2 000
--

4.2.2 Diameters

Product standards shall specify at least internal diameters or external diameters.

NOTE It is recommended to consider the external diameter of available jacking machines for the design of pipes.

4.2.3 Tolerances on diameters

4.2.3.1 Tolerances on internal diameter

The maximum admissible tolerances on the internal diameters, ID, are given in Table 2.

Table 2 — Tolerances on internal diameters

Nominal size	Tolerances on mean internal diameter (mm)	Tolerances on individual internal diameter (mm)
$150 \leq \text{DN} \leq 250$	± 5	± 10
$250 < \text{DN} \leq 600$	$\pm 0,02 \text{ DN}$	$\pm 0,04 \text{ DN}$
$\text{DN} > 600$	± 15	± 30

4.2.3.2 Tolerances on external diameter

The admissible tolerances on maximum external diameters are $\begin{smallmatrix} 0 \\ -10 \end{smallmatrix}$ for pipes $\leq \text{DN} 300$ and $\begin{smallmatrix} 0 \\ -0,03 \end{smallmatrix} \times \text{DN}$ for larger pipes, but not exceeding $\begin{smallmatrix} 0 \\ -30 \end{smallmatrix}$ mm.

4.2.4 Straightness

For pipes up to 3 m length, the deviation of a surface line from the straight, shall not exceed the values, given in Table 3 (see also 5.2).

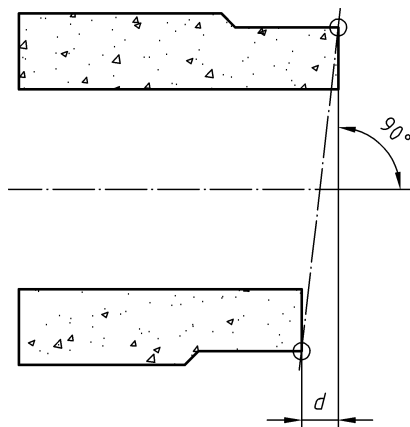
Table 3 — Admissible deviation of straightness

Nominal size	Deviation of straightness (mm)
$\leq \text{DN} 1\ 000$	5
$1\ 000 < \text{DN} \leq 2\ 000$	10
$> \text{DN} 2\ 000$	15

For pipes, longer than 3 m, product standards shall specify the deviation of the surface line from the straight.

4.2.5 Squareness of end faces

Product standards shall specify tolerances on squareness across the external diameter and across the wall thickness of the pipe end faces (see Figure 1).



(a) — Deviation across joint external diameter

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(b) — Deviation across joint wall thickness

Figure 1 — Deviation from squareness

NOTE Squareness of ends of pipes is significant only as it relates to the jacking operation and to the performance of the joint assembly.

4.2.6 Pipe length

Product standards shall specify the tolerances for pipe lengths appropriate for the intended installation methods.

4.2.7 Continuity of invert

Joints shall have continuity of invert within the maximum step at joints according to Table 4: