SLOVENSKI STANDARD
SIST EN 877:2001/A1:2007

01-marec-2007

Cevi, fitingi in pribor iz litega železa za hišne vodne odtoke – Zahteve, postopki preskušanja in zagotavljanje kakovosti

Cast iron pipes and fittings, their joints and accessories for the evacuation of water from buildings - Requirements, test methods and quality assurance

Rohre und Formstücke aus Gusseisen, deren Verbindungen und Zubehör zur Entwässerung von Gebäuden - Anforderungen, Prüfverfahren und Qualitätssicherung

Tuyaux et raccords en fonte, leurs assemblages et accessoires destinés a l'évacuation des eaux des bâtiments - Prescriptions, méthodes d'essai et assurance qualité

Ta slovenski standard je istoveten z: **EN 877:1999/A1:2006**

ICS:

23.040.10	Železne in jeklene cevi	Iron and steel pipes
23.040.40	Kovinski fitingi	Metal fittings
91.140.80	Drenažni sistemi	Drainage systems

SIST EN 877:2001/A1:2007 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

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EN 877:1999/A1

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ICS 23.040.10; 23.040.40

English Version

Cast iron pipes and fittings, their joints and accessories for the evacuation of water from buildings - Requirements, test methods and quality assurance

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This amendment A1 modifies the European Standard EN 877:1999; it was approved by CEN on 24 August 2006.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for inclusion of this amendment into the relevant 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 amendment 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, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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

Management Centre: rue de Stassart, 36 B-1050 Brussels

Foreword

This document (EN 877:1999/A1:2006) has been prepared by Technical Committee CEN/TC 203 “Cast iron pipes, fittings and their joints”, the secretariat of which is held by AFNOR.

This Amendment to the European Standard EN 877:1999 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by April 2007, and conflicting national standards shall be withdrawn at the latest by July 2008.

This document 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).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

Annex ZA includes the requirements of the Mandate given under the EU Construction Products Directive (89/106). Only if the requirements specified in Annex ZA are met, the CE marking will be affected.

Where evaluation of conformity is required for regulatory purposes Annex D applies.

For reasons of conformity with the rules for ENs and Mandate M/131 “Pipes, tanks and ancillaries not in contact with water intended for human consumption“, EN 877:1999 has been amended by extension with the Annex ZA (see Resolution CEN/BT 113/1994 and CEN/BT 63/1996) and a modification of the Annex D for the evaluation of conformity. This amendment is described in the following pages.

In addition, the amendment of the following parts of EN 877:1999 became necessary.

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, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

2 Normative references

Delete

EN ISO 9001

EN ISO 9002

ISO 4633

Add

EN 681-1, *Elastomeric seals — Materials requirements for pipe joint seals used in water and drainage applications — Part 1: Vulcanized rubber*

EN 13501-1, *Fire classification of construction products and building elements — Part 1: Classification using test data from reaction to fire tests*

EN 13823, *Reaction to fire tests for building products — Building products excluding floorings exposed to the thermal attack by a single burning item*

EN ISO 1716, *Reaction to fire tests for building products — Determination of the heat of combustion (ISO 1716:2002)*

EN ISO 9001:2000, *Quality management systems — Requirements (ISO 9001:2000)*

EN ISO 11925-2, *Reaction to fire tests — Ignitability of building products subjected to direct impingement of flame — Part 2: Single-flame source test (ISO 11925-2:2002)*

3.11 Re-title **Initial type test**

All references in the standard to type testing shall read 'initial type testing'

4.1.3 *Delete completely*

Replace with

4.1.3 Reaction to fire

Uncoated cast iron pipes and fittings, their joints and accessories are Class A1 CWFT according to CEC Decision 96/603/EC as amended.

Considering the products in their end-use conditions (assembled into a discharge system), internal coatings are not relevant as they are not exposed to fire (a very low quantity of smoke is possible but it will go outside buildings through stack vents). Gaskets of joints are not relevant either as in the end-use conditions they are not exposed to fire and represent a very low quantity of organic material.

According to EN 13501-1, as the gross calorific potential (PCS) of the products in their assembled state (pipes, fittings, joints, their components and materials), due to their densities and weight quantities, will always satisfy the requirement on PCS for the product as a whole (≤ 3,0 MJ/kg), the reaction to fire classification shall be obtained as follows:

— external coatings, if containing more than 1 % by weight or volume (whichever is the more onerous) of homogeneously distributed organic material, shall satisfy the requirements of 4.6.3 on ignitability or gross calorific potential, depending on the intended class of reaction to fire

and

— assembled products (including coated pipes, coated fittings and couplings), shall be tested according to EN 13823 (SBI), using the mounting adaptations given in Annex H, and shall satisfy the requirements of classification criteria and additional classifications listed in EN 13501-1 for the intended class of reaction to fire.

NOTE See F.2.

4.1.4 Noise protection

Delete existing paragraphs

Replace with

For installed networks, there may be national installation regulations concerning noise protection, and manufacturers could provide information about solutions for requirements (see also Annex F).

NOTE 1 For installed networks, there can be national installation regulations concerning noise protection, and manufacturers could provide information about solutions for requirements (see also Annex F).

NOTE 2 Noise protection is not mandated under CPD. There are no national regulations concerning noise in direct relation to the product.

Add

4.1.5 Dangerous substances (regulated substances)

The materials which the products are made from shall not release dangerous substances (regulated substances) in excess of the maximum permitted levels specified by a relevant European Standard for the materials or permitted by national regulations in the territory of destination.

4.2.2 External diameter (DE)

Omit NOTE 2 of Table 1 *and renumber* NOTE 3 as NOTE 2.

4.6.3 External coatings

Delete

— flame resistance: not easily flammable if subjected to an external flame.

Replace with

For a classification of the products assembled as a discharge system within classes E to B (see EN 13501-1, table on “classes on reaction to fire on performance for construction products excluding floorings”), each coating shall conform to the following requirements when tested in accordance with 5.7.3.3:

— Ignitability: requirements of classification criteria and additional classifications listed in EN 13501-1 specific to the class.

For an A2 classification of the products assembled as a discharge system (see EN 13501-1, table on “classes on reaction to fire on performance for construction products excluding floorings”), the gross calorific potential of the external coatings, noted $PCS_{\text{system ext. coating}}$, shall conform to the requirements of EN 13501-1 on external components when tested and calculated in accordance with 5.7.3.3:

— gross calorific potential of external coatings, $PCS_{\text{system ext. coating}}$:

— if external coatings are substantial components, PCS $_{\text{system ext. coating}} \leq 3$ MJ/kg;

— if external coatings are non-substantial components, PCS $_{\text{system ext. coating}} \leq 4$ MJ/m^2.

4.7.3.1

Substitute grades “X8CrTi17 and X8CrNb17” *by grades* “X3CrTi17 and X3CrNb17”.

4.7.3.3

Delete

— Conform to ISO 4633

Replace with

— Conform to EN 681-1

4.10.1 General

Delete

Pipes, fittings and accessories as well as the couplings or clamping components and the gaskets shall be legibly and indelibly marked and shall bear at least the following information:

Replace with

If the manufacturer declares conformity of his products with this European Standard, pipes, fittings and accessories as well as the couplings or clamping components and the gaskets shall be legibly and indelibly marked and shall bear at least the following information:

Add the following NOTE at the end:

NOTE See Annex ZA for regulatory marking. Where Annex ZA.3 requires the marking to be accompanied by the same information as required by this clause, the requirements of this clause are met.

5.6 *After the sentence:*

The ring crush strength shall be calculated by the following formula:

Add the formula:

$$\sigma = \frac{3F(\mathrm{DE} - e)}{\pi l e^2}$$

5.7.3.3 *Delete existing wording*

Replace with

5.7.3.3 Reaction to fire – external coatings

— Ignitability:

This property shall be tested in accordance with EN ISO 11925-2.

— Gross calorific potential:

For pipes and fittings where the manufacturer is claiming a reaction to fire class A2 for the coating, each external coating shall be tested according to EN ISO 1716 in order to obtain its gross calorific potential value (PCS).

To classify the products assembled as a discharge system and be representative of final use, the PCS of external coatings for the assembled products, noted PCS $_{\text{system ext. coating}}$, shall be calculated. The method of calculation is detailed in Annex G.

5.8.2.1 Material type test

Delete

Elastomeric gaskets shall be tested in accordance with ISO 4633 (see 4.7.3).

Replace with

Elastomeric gaskets shall be tested in accordance with EN 681-1(see 4.7.3).

Delete

The ozone resistance shall be determined after the fourth cycle in accordance with ISO 4633, applying an ozone concentration of 50 pphm.

Replace with

The ozone resistance shall be determined after the fourth cycle in accordance with EN 681-1, applying an ozone concentration of 50 pphm.

6 Evaluation of conformity

For the purposes of regulatory marking Annex D shall apply.

Annex C

C.2

After the sentence:

The load bearing capacity expressed by the load per unit length uniformly distributed on the top of the pipe may be evaluated by means of the formula below:

Add the formula:

$$f \geq \frac{\pi . \sigma . e_{\min}^2}{3(\mathrm{DE}_{\max} - e_{\min})}$$

Annex D (informative)

Delete

Replace as follows

Annex D
(normative)

Evaluation of conformity

D.1 General

The manufacturer shall demonstrate compliance of his product with the relevant requirements of this European Standard and with the declared values or classes for the product properties by carrying out both of the following tasks:

a) initial type testing of the product (see D.2);

b) factory production control (see D.3), including product inspection.

NOTE This annex can be read in conjunction with Annex E for the purposes of assessment of conformity.

D.2 Initial type testing

Initial type testing shall be performed to show conformity with this European Standard. Tests previously performed in accordance with the provisions of this European Standard (same product, same characteristic(s), test method, sampling procedure, system of attestation of conformity etc.) may be taken into account. For the purposes of testing (including FPC testing), cast iron pipes and fittings, their joints and accessories may be grouped into families where it is considered that the selected property is common to all products within that family.

Samples of prototypes (pipes, fittings, accessories and joints) for each range of DN (see Table 7) shall pass all the type tests listed in Tables 9 and 10 to demonstrate conformity with Clause 4, before production commences.

In case of significant changes in design of the product and/or in manufacturing process, which would change the properties of the finished product, the relevant type tests shall be repeated.

All characteristics in Clause 4 shall be subject to initial type testing.

NOTE In addition, the type tests in accordance with Annex D can be carried out by a competent laboratory accredited in accordance with EN ISO/CEI 17011 and in conformity with EN ISO/IEC 17025 in order to demonstrate compliance with the requirements of this European Standard, retaining full reports of these type tests by the manufacturer and, where applicable, to be made available for examination.

Table D.1 — Type tests for pipes, fittings and accessories

Items to be tested	Number of samples (minimum)	Test method in accordance with	Requirements in accordance with
Surface conditions	3 per DN	5.1	4.1.2
External diameter and ovality	3 per DN	5.2.1/5.2.4	4.2.2/4.2.5
Wall thickness	3 per DN	5.2.2	4.2.3
Internal diameter of pipes	3 per DN	5.2.3	4.2.4
Straightness of pipes	3 per DN	5.2.5	4.2.6
End faces	3 per DN	5.2.6	4.2.7
Length of pipes	3 per DN	5.2.7	4.2.8
Lengths of fittings and sealing zone	3 per DN	5.2.7	4.2.9
Angle of fittings	3 per DN	5.2.8	4.2.11
Masses	3 per DN	5.3	4.4
Tensile strength	3 per range of DN [b]	5.4	4.5.2
Brinell hardness	3 per range of DN [b]	5.5	4.5.2
Ring crush strength of pipes	3 per range of DN [b]	5.6	4.5.2
Internal coatings			
– Resistance to salt spray	3 test panels	5.7.2.1	4.6.2
– Resistance to waste water	3 test panels	5.7.2.2	4.6.2
– Chemical resistance	3 test panels	5.7.2.3	4.6.2
– Dry coating thickness	3 per DN	5.7.2.4	4.6.2
– Adhesion	3 per range of DN [b]	5.7.2.5	4.6.2
– Resistance to hot water	3 per range of DN [b]	5.7.2.6	4.6.2
– Resistance to temperature cycling	1 test set up	5.7.2.7	4.6.2
External coatings			
– Colour	3 test panels	5.7.3.1 (CS) [a]	4.6.3
– Compatibility with other paints	3 test panels	5.7.3.2 CS) [a]	4.6.3
– Ignitability	1 per coating	5.7.3.3 CS) [a]	4.6.3
or gross calorific potential	1 per coating	5.7.3.3 CS) [a]	4.6.3
– Dry coating thickness	3 per DN	5.7.3.4	4.6.3
– Adhesion	3 per range of DN [b]	5.7.3.5	4.6.3
– For buried systems	1 per range of DN [b]	5.9.2	4.8.3.2
Marking	3 per DN	5.11	4.10
Reaction to fire			
– System	1 per system	5.7.3.3/Annex H	4.1.3/4.6.3

[a] Certificate of the supplier.

[b] Ranges of DN: see Table 7.

NOTE Items **in bold** are used by the essential characteristics according to the mandate.

Table 10 — Type tests for joints

Items to be tested	Number of samples (minimum)	Test method in accordance with	Requirements in accordance with
Dimensions	3 per DN	5.8.1	4.7.2
Materials			
– Clamping components, couplings, bolts	3 per DN	Analysis or CS [a]	4.7.3
– Elastomeric gaskets	3 per range of DN [b]	5.8.2.1 CS [a]	4.7.3
Suitability for use	1 per DN	5.8.3	4.7.4
Water tightness under different conditions	1 per range of DN [b]	5.8.4 / 5.8.5	4.7.5
Air tightness	1 per DN	5.8.6	4.7.6
Temperature resistance	1 per range of DN	5.8.7	4.7.7
Marking	3 per DN	5.11	4.10

[a] Certificate of the supplier.

[b] Ranges of DN: See Table 7.

NOTE The item **in bold** is an essential characteristic according to the mandate.

D.3 Factory production control system

D.3.1 Organization

The tasks, responsibilities and authority of the personnel involved in factory production control shall be documented, maintained and implemented, including procedures for, at least, the following activities:

a) demonstration of conformity of the product at appropriate stages;

b) identification and recording of any instance of non-conformity;

c) handling of instances of non-conformity;

d) establishment of causes of non-conformity and possible corrective action (design, materials or production procedures).

An organizational scheme should clarify where the involved personnel perform their activities.

D.3.2 Control system

The manufacturer shall establish, document, maintain and implement a *factory production control system* to ensure that the product put on the market meets the requirements of this European Standard and complies with the specified or declared values.

The factory production control system should consist of procedures, instructions, regular inspections, tests and the utilization of the results to control equipment, raw materials and the other incoming materials, the production process and the product.

Tests on products should be in accordance with D.3 and should at least cover all items in Tables 11 and 12.