

საქართველოს სტანდარტი

სპილენძი და სპილენძის შენადნობები- უნაკერო, მრგვალი სპილენძის მილები წყლისა და აირებისთვის, სანიტარიულ და გათბობის სისტემებში გამოყენებისათვის

საქართველოს სტანდარტებისა და მეტროლოგიის
ეროვნული სააგენტო
თბილისი

სსტ ენ 1057:2006+A1:2010/2013

საინფორმაციო მონაცემები

1 შემუშავებულია საქართველოს სტანდარტების და მეტროლოგიის ეროვნული სააგენტოს სტანდარტების დეპარტამენტის მიერ

2 დამტკიცებულია და შემოღებულია სამოქმედოდ საქართველოს სტანდარტების და მეტროლოგიის ეროვნული სააგენტოს 2013 წლის 11 ნოემბრის № 84 განკარგულებით

3 მიღებულია გარეკანის თარგმნის მეთოდით სტანდარტიზაციის ევროპული კომიტეტის სტანდარტი ენ 1057:2006+A1:2010 „სპილენძი და სპილენძის შენადნობები-უნაკერო, მრგვალი სპილენძის მილები წყლისა და აირებისთვის, სანიტარიულ და გათბობის სისტემებში გამოყენებისათვის”

4 პირველად

5 რეგისტრირებულია საქართველოს სტანდარტების და მეტროლოგიის ეროვნული სააგენტოს რეესტრში: 2013 წლის 11 ნოემბერი №268-1.3-5616

წინამდებარე სტანდარტის სრული ან ნაწილობრივი აღწარმოება, ტირაჟირება და გავრცელება საქართველოს სტანდარტების და მეტროლოგიის ეროვნული სააგენტოს ნებართვის გარეშე არ დაიშვება

English Version

Copper and copper alloys - Seamless, round copper tubes for water and gas in sanitary and heating applications

Cuivre et alliages de cuivre - Tubes ronds sans soudure en cuivre pour l'eau et le gaz dans les applications sanitaires et de chauffage

Kupfer und Kupferlegierungen - Nahtlose Rundrohre aus Kupfer für Wasser- und Gasleitungen für Sanitärinstallationen und Heizungsanlagen

This European Standard was approved by CEN on 23 March 2006 and includes Amendment 1 approved by CEN on 10 January 2010.

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 CEN Management Centre 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 CEN Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, 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: Avenue Marnix 17, B-1000 Brussels

Contents

Page

Foreword.....4

Introduction6

1 Scope7

2 Normative references7

3 Terms and definitions8

4 Designations9

4.1 Material9

4.1.1 General.....9

4.1.2 Symbol9

4.1.3 Number9

4.2 Material condition9

4.3 Product9

5 Ordering information10

6 Material characteristics11

6.1 Safety in case of fire – Reaction to fire11

6.2 Properties at high temperature11

6.3 Weldability11

7 Requirements11

7.1 Composition11

7.2 Mechanical properties11

7.3 Dimensions and tolerances14

7.3.1 General.....14

7.3.2 Nominal dimensions.....14

7.3.3 Tolerances on outside diameter.....15

7.3.4 Tolerances on wall thickness16

7.3.5 Tolerances on length.....16

7.4 Freedom from defects17

7.5 Surface quality17

7.6 Bending.....17

7.7 Drift expanding.....17

7.8 Flanging17

8 Evaluation of conformity18

8.1 General.....18

8.2 Type testing18

8.2.1 Initial type testing18

8.2.2 Sampling, testing and conformity criteria.....19

8.3 Factory production control (FPC)19

8.3.1 General.....19

8.3.2 General FPC requirements20

8.3.3 Manufacturer-specific FPC system requirements20

9 Sampling21

10 Test methods.....22

10.1 Analysis22

10.2 Tensile test22

10.3 Hardness test22

10.4 Carbon content test22

10.5 Carbon film test.....22

10.6 Bending test22

10.7 Drift-expanding test23

10.8 Flanging test.....23

10.9 Freedom from defects tests.....23

10.10 Retests23

საინფორმაციო ნაწილი. სრული ტექსტის სახსრად შეიძინეთ სტანდარტი.

11	Inspection documentation	24
12	Marking and form of delivery	24
12.1	Marking	24
12.2	Form of delivery	24
Annex A (normative) Standardized dimensions for reconsideration at a future revision.....		25
Annex B (normative) Carbon film test		26
B.1	Preparation of the test piece	26
B.2	Procedure	26
B.3	Detection and assessment of films.....	26
Annex C (normative) Freedom from defects tests		27
C.1	Eddy current test	27
C.2	Hydrostatic test.....	27
C.3	Pneumatic test	27
Annex ZA (informative) Clauses of this European Standard addressing the provisions of the EU Construction Products Directive (CPD) 89/106/EEC		29
ZA.1	Scope and relevant characteristics	29
ZA.2	Procedure(s) for attestation of conformity of pipes	31
ZA.2.1	System(s) of attestation of conformity	31
ZA.2.2	EC Certificate and Declaration of conformity	32
ZA.3	CE marking and labelling.....	33
Annex ZB (informative) Relationship between this European Standard and the Essential Requirements of the EU Pressure Equipment Directive (PED) 97/23/EC.....		35
Bibliography		36
Tables		
Table 1 — Mechanical properties.....		12
Table 2 — Minimal elongation values for R250 (half hard) material condition tubes.....		13
Table 3 — Standardized dimensions		15
Table 4 — Tolerances on outside diameter		16
Table 5 — Tolerances on wall thickness.....		16
Table 6 — Quantitative and qualitative specification for carbon residues.....		17
Table 7 — Testing of bending, drift expanding and flanging.....		18
Table 8 — Sampling rate		21
Table 9 — Minimum radius of curvature		23
Table 10 — Recommended form of delivery.....		24
Table A.1 — Standardized dimensions for reconsideration at a future revision		25
Table C.1 — Maximum drill diameters for the reference standard tube		27
Table C.2 — Hydraulic pressure test		27
Table ZA.1 — Relevant clauses.....		30
Table ZA.2 — Systems of attestation of conformity		31
Table ZA.3.1 — Assignment of evaluation of conformity tasks for pipes under system 3 — 1/5.....		32
Table ZA.3.2 — Assignment of evaluation of conformity tasks for pipes under system 4 — 2/5.....		32
Table ZB.1 — Correspondence between this European Standard and Directive 97/23/EC		35

Foreword

This document (EN 1057:2006+A1:2010) has been prepared by Technical Committee CEN/TC 133 "Copper and copper alloys", 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 August 2010, and conflicting national standards shall be withdrawn at the latest by August 2010.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document includes Amendment 1, approved by CEN on 2010-01-10.

This document supersedes A1 EN 1057:2006 A1.

The start and finish of text introduced or altered by amendment is indicated in the text by tags A1 A1.

Within its programme of work, Technical Committee CEN/TC 133 requested CEN/TC 133/WG 3 "Copper tubes (installation and industrial)" to prepare the revision of the following standard:

EN 1057:1996, *Copper and copper alloys — Seamless, round copper tubes for water and gas in sanitary and heating applications*

This document has been prepared within the framework of two mandates given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of the EU Construction Products Directive (CPD) 89/106/EEC and the EU Pressure Equipment Directive (PED) 97/23/EC.

For relationship with EU Directives, see informative Annexes ZA and ZB, which are integral parts of this document.

In comparison with the first edition of EN 1057:1996, the following significant technical changes were made:

- harmonization of the standard to the Construction Product Directive (CPD) and to the Pressure Equipment Directive (PED);
- introduction of two new definitions: "permanently marked" and "durably marked";
- updating of the definitions regarding soldering, brazing, fusion welding, braze welding and mean diameter;
- introduction of five new items in Clause 5 "Ordering information" regarding options on tests and documents;
- due to the process of harmonization to the CPD, introduction of three new characteristics in Clause 6 "Material characteristics" inherent to copper material which are not to be tested;
- modification of Table 3 "Standardized dimensions";
- simplification of Table 6 "Quantitative and qualitative specification for carbon residues": Suppression of the residual and potential carbon and application of the thresholds to the total carbon;
- text in Clause 8 "Evaluation of conformity" added due to the process of harmonization to the CPD;
- for permanent and durable markings, specification of their applicability in 12.1 "Marking";
- modification of the table in Annex A, introduction of new diameters and wall thicknesses;
- due to the process of harmonization to the CPD and PED introduction of Annexes ZA and ZB.

საინფორმაციო ნაწილი. სრული ტექსტის ხანახანად შექმნილი სტანდარტი.

This is one of a series of European Standards for copper and copper alloy tubes. Other products are specified as follows:

EN 12449, *Copper and copper alloys — Seamless, round tubes for general purposes*

EN 12450, *Copper and copper alloys — Seamless, round copper capillary tubes*

EN 12451, *Copper and copper alloys — Seamless, round tubes for heat exchangers*

EN 12452, *Copper and copper alloys — Rolled, finned, seamless tubes for heat exchangers*

EN 12735-1, *Copper and copper alloys — Seamless, round copper tubes for air conditioning and refrigeration — Part 1: Tubes for piping systems*

EN 12735-2, *Copper and copper alloys — Seamless, round copper tubes for air conditioning and refrigeration — Part 2: Tubes for equipment*

EN 13348, *Copper and copper alloys — Seamless, round copper tubes for medical gases or vacuum*

EN 13349, *Copper and copper alloys — Pre-insulated copper tubes with solid covering*

EN 13600, *Copper and copper alloys — Seamless copper tubes for electrical purposes*

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, 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.

Introduction

Products in conformity with this European Standard are considered suitable for drinking water applications subject to either

- a) compliance with any national regulations in the country of intended destination; or
- b) compliance in due course with the proposed European Acceptance Scheme (EAS) that will introduce common EU requirements for testing for fitness for contact with drinking water. When the EAS is implemented, this European Standard will have added to it a special Annex (Z/EAS) to incorporate the provisions of the EC mandate M/136 and a) will no longer be applicable.

This European Standard provides the basis for the assessment of a manufacturer's production process for products manufactured in accordance with this European Standard. The assessment could be based on initial and continuing surveillance of the factory production control system which could be concurrent with an assessment of the manufacturer's quality management system against EN ISO 9001.

Regulatory marking and the means by which regulatory marking is applied, is dealt with in Annex ZA.

Tubes having an outside diameter of not more than 108 mm are suitable for soldering, brazing or assembling by mechanical compression, collared, push-fit or press fittings. For tubes having an outside diameter of more than 108 mm, assembly should preferably be performed by welding or braze welding.

Reference can be made to this European Standard for tubes intended for other applications or for the transportation of other fluids. In such cases special requirements (for specifications, conditioning or delivery conditions) can be agreed between the purchaser and the supplier.

NOTE Appropriate precautions should be taken if applying insulating/protecting material because it could be detrimental to the copper tube.