



National Standards Authority of Ireland

STANDARD

I.S. EN 12451:1999

ICS 23.040.15
77.150.30

National Standards
Authority of Ireland
Dublin 9
Ireland

Tel: (01) 807 3800
Fax: (01) 807 3838

**COPPER AND COPPER ALLOYS - SEAMLESS,
ROUND TUBES FOR HEAT EXCHANGERS**

*This Irish Standard was
published under the
authority of the National
Standards Authority of
Ireland
and comes into effect on:
December 10, 1999*

**NO COPYING WITHOUT NSAI
PERMISSION EXCEPT AS
PERMITTED BY COPYRIGHT
LAW**

© NSAI 1999

Price Code H

Údarás um Chaighdeáin Náisiúnta na hÉireann

This is a free 6 page sample. Access the full version online.

ICS 77.120.30; 77.140.90

English version

Copper and copper alloys - Seamless, round tubes for heat exchangers

Cuivre et alliages de cuivre - Tubes ronds sans soudure
pour échangeurs thermiques

Kupfer und Kupferlegierungen - Nahtlose Rundrohre für
Wärmeaustauscher

This European Standard was approved by CEN on 14 June 1999.

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.



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

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

Contents

	Page		Page
Foreword	3	9 Declaration of conformity and inspection documentation	12
1 Scope	4	9.1 Declaration of conformity	12
2 Normative references	4	9.2 Inspection documentation	12
3 Definitions	5	10 Marking, packaging, labelling	12
4 Designations	5	Table 1: Composition of copper and copper alloys	13
4.1 Material	5	Table 2: Mechanical properties of copper and copper alloys	14
4.2 Material condition	5	Table 3: Tolerances on diameter	15
4.3 Product	6	Table 4: Tolerances on length	15
5 Ordering information	7	Table 5: Tolerances on squareness of cut ..	15
6 Requirements	8	Table 6: Sampling rate	15
6.1 Composition	8	Table 7: Drill sizes for production of reference standard tubes	16
6.2 Mechanical properties	8	Annex A (informative) Bibliography	17
6.3 Dimensions and tolerances	8	Annex B (normative) U-bend seamless copper and copper alloy heat exchanger tubes ..	18
6.4 Surface quality	9	Annex ZA (informative) Clauses of this European Standard addressing essential requirements or other provisions of EU Directives	20
6.5 Technological requirements	9		
7 Sampling	9		
7.1 General	9		
7.2 Analysis	9		
7.3 Mechanical tests and stress corrosion resistance test	10		
8 Test methods	10		
8.1 Analysis	10		
8.2 Tensile test	10		
8.3 Hardness test	10		
8.4 Technological tests	10		
8.5 Freedom from defects tests	11		
8.6 Retests	12		
8.7 Rounding of results	12		

Foreword

This European Standard 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 January 2000, and conflicting national standards shall be withdrawn at the latest by January 2000.

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.

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).

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

Within its programme of work, Technical Committee CEN/TC 133 requested CEN/TC 133/WG 3.2 "Tubes for general purposes" to prepare the following standard:

EN 12451

Copper and copper alloys – Seamless, round tubes for heat exchangers

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 Directives.

For relationship with EU Directives, see annex ZA (informative) which is an integral part of this standard.

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

EN 1057

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

EN 12449

Copper and copper alloys – Seamless, round tubes for general purposes

EN 12450

Copper and copper alloys – Seamless, round copper capillary tubes

EN 12452

Copper and copper alloys – Rolled, finned, seamless tubes for heat exchangers

prEN 12735-1

Copper and copper alloys – Seamless, round copper tubes for air conditioning and refrigeration – Part 1: Tubes for piping systems

prEN 12735-2

Copper and copper alloys – Seamless, round copper tubes for air conditioning and refrigeration – Part 2: Tubes for equipment

prEN 13348

Copper and copper alloys – Seamless, round copper tubes for medical gases

prEN 13349

Copper and copper alloys – Pre-insulated copper tubes with solid covering

prEN 13600

Copper and copper alloys – Seamless copper tubes for electrical purposes

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

1 Scope

This European Standard specifies the composition, property requirements and tolerances on dimensions and form for seamless round drawn copper and copper alloy tubes for heat exchangers, condensers, evaporators and desalination equipment, supplied in the size range from 6 mm up to and including 76 mm outside diameter and from 0,5 mm up to and including 3 mm wall thickness.

The sampling procedures and the methods of test for verification of conformity to the requirements of this standard are also specified.

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 1655
Copper and copper alloys – Declarations of conformity
- EN 1971
Copper and copper alloys – Eddy current test for tubes
- EN 10002-1
Metallic materials – Tensile testing – Part 1: Method of test (at ambient temperature)
- EN 10204
Metallic products – Types of inspection documents
- EN 10234
Metallic materials – Tube – Drift expanding test
- EN ISO 196
Wrought copper and copper alloys – Detection of residual stress – Mercury(I) nitrate test (ISO 196 : 1978)
- EN ISO 2624
Copper and copper alloys – Estimation of average grain size (ISO 2624 : 1990)
- EN ISO 6507-1
Metallic materials – Vickers hardness test – Part 1: Test method (ISO 6507-1:1997)
- ISO 6957
Copper alloys – Ammonia test for stress corrosion resistance

NOTE: Informative references to documents used in the preparation of this standard, and cited at the appropriate places in the text, are listed in a bibliography, see annex A.

3 Definitions

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

3.1 seamless round tube

Hollow semi-finished product, circular in cross-section, having a uniform wall thickness which at all stages of production has a continuous periphery.

3.2 mean wall thickness

Arithmetical mean of the maximum and minimum wall thicknesses at the same cross-section of the tube.

This is a free preview. Purchase the entire publication at the link below:

I.S. EN 12451 : 1999 : EN : COMBINED PDF

-
- ⊙ Looking for additional Standards? Visit SAI Global Infostore
 - ⊙ Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation
-

Need to speak with a Customer Service Representative - Contact Us