



NSAI
Standards

Irish Standard
I.S. EN 12451:2012

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

I.S. EN 12451:2012

Incorporating amendments/corrigenda/National Annexes issued since publication:

The National Standards Authority of Ireland (NSAI) produces the following categories of formal documents:

I.S. xxx: Irish Standard – national specification based on the consensus of an expert panel and subject to public consultation.

S.R. xxx: Standard Recommendation - recommendation based on the consensus of an expert panel and subject to public consultation.

SWIFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

This document replaces:
EN 12451:1999

This document is based on: EN 12451:2012
Published: 28 May, 2012

This document was published under the authority of the NSAI and comes into effect on:
28 May, 2012

ICS number:

23.040.15
77.150.30

NSAI
1 Swift Square,
Northwood, Santry
Dublin 9

T +353 1 807 3800
F +353 1 807 3838
E standards@nsai.ie
W NSAI.ie

Sales:
T +353 1 857 6730
F +353 1 857 6729
W standards.ie

Údarás um Chaighdeáin Náisiúnta na hÉireann

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 20 April 2012.

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-CENELEC 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-CENELEC 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, Turkey 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.....	3
1 Scope	5
2 Normative references	5
3 Terms and definitions	5
4 Designations	6
4.1 Material	6
4.2 Material condition	6
4.3 Product	6
5 Ordering information	7
6 Requirements	8
6.1 Composition	8
6.2 Mechanical properties	8
6.3 Dimensions and tolerances	9
6.4 Surface quality	9
6.5 Technological requirements	10
7 Sampling	10
7.1 General.....	10
7.2 Analysis	10
7.3 Mechanical tests and stress corrosion resistance test.....	11
8 Test methods.....	11
8.1 Analysis	11
8.2 Tensile test	11
8.3 Hardness test	11
8.4 Technological tests	11
8.5 Freedom from defects tests.....	11
8.6 Retests	13
8.7 Rounding of results	13
9 Declaration of conformity and inspection documentation.....	13
9.1 Declaration of conformity	13
9.2 Inspection documentation	13
10 Marking, packaging, labelling.....	14
Annex A (normative) U-bend seamless copper and copper alloy heat exchanger tubes	19
Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Pressure Equipment Directive (PED) 97/23/EC	21
Bibliography	22

Tables

Table 1 — Composition of copper and copper alloys.....	15
Table 2 — Mechanical properties of copper and copper alloys	16
Table 3 — Tolerances on diameter	17
Table 4 — Tolerances on length.....	17
Table 5 — Tolerances on squareness of cut	17
Table 6 — Sampling rate	18
Table 7 — Drill sizes for production of reference standard tubes.....	18
Table ZA.1 — Correspondence between this European Standard and Directive 97/23/EC	21

Foreword

This document (EN 12451:2012) 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 November 2012, and conflicting national standards shall be withdrawn at the latest by November 2012.

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 supersedes EN 12451:1999.

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 97/23/EC Pressure Equipment Directive (PED).

For relationship with EU Directive 97/23/EU, see informative Annex ZA, which is an integral part of this document.

In comparison with EN 12451:1999, the following significant technical changes were made:

a) for Cu-DHP (CW024A):

- 1) the material condition R220 in Table 2 was added;
- 2) elongation values were modified for R250 and R290.

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

EN 12451:1999, *Copper and copper alloys — Seamless, round tubes for heat exchangers*

This is one of a series of European Standards for copper and copper alloy tubes. Other products are 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*

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*

I.S. EN 12451:2012

EN 12451:2012 (E)

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, Turkey and the United Kingdom.

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

[Product Page](#)

-
- [Looking for additional Standards? Visit Intertek Inform Infostore](#)
 - [Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation](#)
-