

Copper and copper alloys — Seamless, round copper tubes for air conditioning and refrigeration —

Part 2: Tubes for equipment

The European Standard EN 12735-2:2001, with the incorporation of amendment A1:2005, has the status of a British Standard

ICS 77.150.30; 91.140.30

National foreword

This British Standard is the official English language version of EN 12735-2:2001, including amendment A1:2005.

The start and finish of text introduced or altered by CEN amendment is indicated in the text by tags **A1** **A1**. Tases indicating changes to CEN text carry the number of the CEN amendment. For example, text altered by CEN amendment A1 is indicated by **A1** **A1**.

The UK participation in its preparation was entrusted by Technical Committee NFE/34, Copper and copper alloys, to Subcommittee NFE/34/1, Wrought and unwrought copper and copper alloys, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this subcommittee can be obtained on request to its secretary.

Cross-references

The British Standards which implement international or European publications referred to in this document may be found in the BSI Standards Catalogue under the section entitled “International Standards Correspondence Index”, or by using the “Find” facility of the BSI Standards Electronic Catalogue.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

This British Standard, having been prepared under the direction of the Engineering Sector Committee, was published under the authority of the Standards Committee and comes into effect on 15 June 2001

Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 18 and a back cover.

The BSI copyright date displayed in this document indicates when the document was last issued.

Amendments issued since publication

Amd. No.	Date	Comments
16369	August 2006	See national foreword

English version

**Copper and copper alloys - Seamless, round copper tubes for
air conditioning and refrigeration - Part 2: Tubes for equipment
(includes amendment A1:2005)**

Cuivre et alliages de cuivre - Tubes ronds sans soudure en
cuivre pour l'air conditionné et la réfrigération - Partie 2:
Tubes pour le matériel
(inclut l'amendement A1:2005)

Kupfer und Kupferlegierungen - Nahtlose Rundrohre aus
Kupfer für die Kälte- und Klimatechnik - Teil 2: Rohre für
Apparate
(enthält Änderung A1:2005)

This European Standard was approved by CEN on 6 March 2001. Amendment A1:2005 was approved by CEN on 15 March 2005.

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 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 Management Centre 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

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

Contents

	Page		Page
Foreword	3	8 Test methods	13
Introduction	4	8.1 Analysis	13
1 Scope	4	8.2 Tensile test	13
2 Normative references	4	8.3 Estimation of average grain size	13
3 Terms and definitions	4	8.4 Drift expanding test	13
4 Designations	5	8.5 Residue test	13
4.1 Material	5	8.6 Eddy current test	14
4.2 Temper	5	8.7 Retests	14
4.3 Product	5	9 Declaration of conformity and inspection documentation	14
5 Ordering information	6	9.1 Declaration of conformity	14
6 Requirements	7	9.2 Inspection documentation	14
6.1 Composition	7	10 Packaging, marking and form of delivery	15
6.2 Mechanical properties and grain size ...	7	10.1 Packaging and marking	15
6.3 Dimensions and tolerances for smooth tubes	7	10.2 Form of delivery	15
6.4 Dimensions and tolerances for inner grooved tubes	11	Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 97/23/EC	16
6.5 Drift expanding (for smooth tubes)	12	Bibliography	17
6.6 Surface quality	12		
6.7 Identification of defects	12		
7 Sampling	13		

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 October 2001, and conflicting national standards shall be withdrawn at the latest by October 2001.

Within its programme of work, Technical Committee CEN/TC 133 requested CEN/TC 133/WG 3.1 "Copper tubes" to prepare the following standard:

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

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.

The attention of the user of this standard is drawn to the fact that national or local regulations or practices might restrict the choice of dimensions and tempers in the application of products conforming to this standard.

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 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 13348 A1, *Copper and copper alloys — Seamless, round copper tubes for medical gases.*

EN 13349 A1, *Copper and copper alloys — Pre-insulated copper tubes with solid covering.*

EN 13600 A1, *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, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Foreword to Amendment A1

This document (EN 12735-2:2001/A1:2005) has been prepared by Technical Committee CEN/TC 133 "Copper and copper alloys", the secretariat of which is held by DIN.

This Amendment to the European Standard EN 12735-2:2001 shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 2005, and conflicting national standards shall be withdrawn at the latest by October 2005.

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.

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

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.

Introduction

It is recommended that tubes manufactured to this standard are certified as conforming to the requirements of this standard based on continuing surveillance which should be coupled with an assessment of a supplier's quality management system against EN ISO 9001.

1 Scope

This European Standard specifies the requirements, sampling, test methods and conditions of delivery for seamless round copper tubes, smooth or inner grooved, used for heat exchangers and their internal connecting pipes in the manufacturing of refrigeration and air conditioning equipment.

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 (including amendments).

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 2624, *Copper and copper alloys — Estimation of average grain size (ISO 2624 : 1990).*

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

3 Terms and definitions

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

3.1

seamless round copper tube

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

NOTE The inner surface of the tube may be enhanced, for example by grooves.

3.2

level wound coil (LWC)

coil in which the turns are wound into layers parallel to the axis of the coil such that successive turns in a given layer are next to one another

3.3

mean diameter

arithmetical mean of any two diameters normal to each other at the same cross-section of the tube