PD CEN/TS 13388:2013

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# Copper and copper alloys — Compendium of compositions and products

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

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# CEN/TS 13388

February 2013

ICS 77.120.30; 77.150.30

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English Version

# Copper and copper alloys - Compendium of compositions and products

Cuivre et alliages de cuivre - Inventaire des compositions et des produits

Kupfer und Kupferlegierungen - Übersicht über Zusammensetzungen und Produkte

This Technical Specification (CEN/TS) was approved by CEN on 17 December 2012 for provisional application.

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## Foreword

This document (CEN/TS 13388:2013) has been prepared by Technical Committee CEN/TC 133 “Copper and copper alloys”, the secretariat of which is held by DIN.

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 CEN/TS 13388:2008.

According to the CEN/CENELEC Internal Regulations, the national standards organisations of the following countries are bound to announce this Technical Specification: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, 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 revision takes into account the latest changes regarding materials and compositions to:

— EN 1172:2011;

— EN 1976:2012;

— EN 12449:2012;

— EN 12163:2011;

— EN 12164:2011;

— EN 12165:2011;

— EN 12166:2011;

— EN 12167:2011;

— EN 12168:2011.

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# Introduction

CEN/TC 133 "Copper and copper alloys" was established in 1988 to prepare and maintain standards in the field of unwrought, wrought and cast products made from copper and copper alloys. Its responsibilities included developing, defining, specifying and giving guidance on, as appropriate, material compositions, designations, terminology, dimensions and tolerances, mechanical and physical characteristics, conditions of delivery and methods of testing peculiar to copper and copper alloys.

During the development of standards for copper and copper alloy products, the experts realised the necessity and seised the opportunity:

a) to co-ordinate and in some cases also to rationalise the composition limits which already existed for the various product forms;

b) to establish unique, new and identifiably European designations for copper and copper alloys, including a numerical option to be particularly convenient for computerised handling;

c) to confirm, clarify and re-define where necessary, the terminology which already existed in common usage, at the international level or in customs nomenclature.

CEN/TC 133 decided, in view of the new form of presentation and new parameters for the description and provision of information on copper and copper alloy products, to prepare and publish the present consolidation and summary of essential details.

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# 1 Scope

This Technical Specification provides a summary of material designations, compositions and the product forms in which they are available, for coppers and copper alloys standardised in European Standards by CEN/TC 133 "Copper and copper alloys".

It also includes copper alloys which are not standardised by CEN/TC 133 but by other CEN Technical Committees responsible for products in copper alloys, and other copper alloys not yet standardised. These alloys have been registered by CEN/TC 133 in accordance with the procedures laid down in CR 12776.

# 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 1976, *Copper and copper alloys — Cast unwrought copper products*

EN 1982:2008, *Copper and copper alloys — Ingots and castings*

# 3 Compositions of coppers and copper alloys standardised by CEN/TC 133

## 3.1 Composition of coppers

The symbol and number designations and compositions of copper grades are given in the following tables:

Table 1.1 — Composition of copper cathodes according to EN 1978:1998, Cu-CATH-1 (CR001A) and Cu-CATH-2 (CR002A)

Table 1.2 — Composition of unalloyed copper grades made from Cu-CATH-1 (CR001A)

Table 1.3 — Composition of unalloyed copper grades other than those made from Cu-CATH-1 (CR001A)

Table 1.4 — Composition of phosphorus-containing copper grades

Table 1.5 — Composition of silver-containing copper grades (silver-bearing coppers)

## 3.2 Composition of copper alloys

The symbol and number designations and compositions of copper alloys are given in the following tables:

Table 2 — Composition of copper alloys, low alloyed (less than 5 % alloying elements)

Table 3 — Composition of copper-aluminium alloys

Table 4 — Composition of copper-nickel alloys

Table 5 — Composition of copper-nickel-zinc alloys

Table 6 — Composition of copper-tin alloys

Table 7 — Composition of copper-zinc alloys, binary

Table 8 — Composition of copper-zinc-lead alloys

Table 9 — Composition of copper-zinc alloys, complex

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