BRITISH STANDARD

BS EN
1173:2008

Copper and copper alloys — Material condition designation

ICS 77.120.30

BSI
British Standards

National foreword

This British Standard is the UK implementation of EN 1173:2008. It supersedes BS EN 1173:1996 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee NFE/34, Copper and copper alloys.

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

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

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English Version

Copper and copper alloys - Material condition designation

Cuivre et alliages de cuivre - Désignation des états métallurgiques

Kupfer und Kupferlegierungen - Zustandsbezeichnungen

This European Standard was approved by CEN on 21 March 2008.

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

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Foreword

This document (EN 1173:2008) 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of an identical text or by endorsement, at the latest by October 2008, and conflicting national standards shall be withdrawn at the latest by October 2008.

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 1173:1995.

Within its programme of work, Technical Committee CEN/TC 133 decided to prepare the revision of the following standard:

EN 1173:1995, *Copper and copper alloys — Material condition or temper designation*

In comparison with the first edition of EN 1173:1995, the following significant technical changes were made:

— title has been changed, the term “temper” has been withdrawn;

— examples in Clause 4 have been completed;

— alloy designation in 4.10 has been corrected.

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, 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 the United Kingdom.

1 Scope

This European Standard establishes a system for designation of material conditions to be used for the identification of mandatory property requirements. These designations are applicable to wrought products of copper and copper alloys.

2 Basis of designation system

The material condition designation is based on the mandatory property requirement(s), the level of property required and if necessary, any special additional treatment.

3 Structure of designation

3.1 General

The material condition designation usually consists of four characters. In position 1 there shall be a letter and in positions 2 to 4 there shall be figures. A further figure shall be added in position 5 or, in the case of additional treatment, a suffix letter shall be added in position 5 or 6.

Only one designation is allowed for a certain material condition and the whole size range, for which the minimum requirement applies.

3.2 Position 1

Position 1 indicates the designating mandatory property, specified in the appropriate European product standard, by one capital letter of the alphabet.

The use of a letter indicating the designating mandatory property does not preclude the combination of two or more mandatory properties if specified in the appropriate product standard.

Letters shall be used in accordance with Table 1.

Table 1 — Letters for Position 1

Letter	Designating mandatory property
A	Elongation
B	Spring bending limit
D	As drawn, without specified mechanical properties
G	Grain size
H	Hardness (Brinell or Vickers)
M	As manufactured, without specified mechanical properties
R	Tensile strength
Y	0,2%-proof strength
NOTE The manufacturing process including heat treatment is not indicated by these letters.	

3.3 Positions 2 to 4

Except for designations D, G and M, positions 2 to 4 consist of a three digit figure to designate the minimum value of the mandatory property specified in the European product standard. Designations D and M are not followed by any further characters. For designation G, positions 2 to 4 consist of a three digit figure to designate the mid-range value of the mandatory property specified in the European product standard.

In the case of a value of two significant digits a zero "0" is to be indicated at position 2 in front of the value specified, e.g. for hardness. In the case of a value of one significant digit, zeros are to be indicated at positions two and three in front of the value specified, e.g. for elongation.

3.4 Positions 5 and 6

If necessary a four digit figure may be indicated by use of the additional position 5, e.g. for very high tensile strength of precipitation hardened alloys.

If an additional treatment is applicable for the purpose of stress relieving a product, the suffix "S" is added in position 5 or 6.

4 Examples

4.1 General

The material condition designation is intended to be used in product designation and ordering information. In the product designation the material condition designation shall follow the material designation and be separated from it by a hyphen ("—").

Some examples of material condition designations in accordance with this standard are given in 4.2 to 4.10.

4.2 Elongation

Wire EN 13602 — Cu-OF — A007 — .....[1)] [7]

4.3 Spring bending limit

Strip EN 1654 — CuSn8 — B410 — .....[1)] [2]

4.4 As drawn

Tube EN 13600 — Cu-ETP — D — .....[1)] [6]

4.5 Grain size

Strip EN 1652 — CuZn37 — G020 — .....[1)] [1]

1) Continued according to the appropriate product standard, see Bibliography.

4.6 Hardness

Sheet EN 1652 — CuZn37 — H150 — .....[1)] [1]

4.7 As manufactured

Hollow rod EN 12168 — CuZn36Pb3 — M — .....[1)] [4]

4.8 Tensile strength

Rod EN 12164 — CuZn39Pb3 — R500 — .....[1)] [3]

or

Strip EN 1652 — CuBe2 — R1200 — .....[1)] [1]

4.9 0,2% proof strength

Strip EN 1654 — CuZn30 — Y460 — .....[1)] [2]

4.10 Additional treatment "Stress relieving"

Tube EN 12452 — CuZn20Al2As — R340S — .....[1)] [5]

Bibliography

[1] EN 1652, *Copper and copper alloys — Plate, sheet, strip and circles for general purposes*

[2] EN 1654, *Copper and copper alloys — Strip for springs and connectors*

[3] EN 12164, *Copper and copper alloys — Rod for free machining purposes*

[4] EN 12168, *Copper and copper alloys — Hollow rod for free machining purposes*

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

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

[7] EN 13602, *Copper and copper alloys — Drawn round copper wire for the manufacture of electrical conductors*

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