International Standard 1190/1

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Copper and copper alloys — Code of designation — Part 1 : Designation of materials

Cuivre et alliages de cuivre — Code de désignation — Partie 1 : Désignation des matériaux

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 1190/1 was developed by Technical Committee ISO/TC 26, *Copper and copper alloys*, and was circulated to the member bodies in August 1981.

It has been approved by the member bodies of the following countries :

Belgium	Hungary	Romania
Bulgaria	India	South Africa, Rep. of
Canada	Iran	Spain
China	Ireland	Sweden
Czechoslovakia	Italy	Switzerland
Egypt, Arab Rep. of	Korea, Dem. P. Rep. of	Turkey
Finland	Netherlands	United Kingdom
France	Norway	USA
Germany, F. R.	Poland	USSR

The member bodies of the following countries expressed disapproval of the document on technical grounds :

Australia
Japan

This International Standard cancels and replaces ISO Recommendation R 1191/1-1971, of which it constitutes a technical revision.

Printed in Switzerland

Copper and copper alloys — Code of designation — Part 1 : Designation of materials

1 Scope and field of application

This part of ISO 1190 relates to the designation of coppers and copper alloys in terms of their material composition.

2 Material designation

2.1 Basis of designation

2.1.1 The material designations of copper and its alloys shall be based on the chemical composition limits.

NOTE — Alternative numerical designation systems for metals are currently under discussion.

2.1.2 All material designations shall have the prefix "ISO".

NOTE — This prefix may be omitted for brevity in International Standards as well as in correspondence where it is obvious that ISO designations are used.

2.1.3 International chemical symbols shall be used for the designation of the base element and the major alloying elements, followed by letters indicating the metal grade or by numbers indicating the nominal alloy content.

2.1.4 Assignment or revisions of material designations shall be approved by Technical Committee ISO/TC 26, *Copper and copper alloys*.

2.2 Coppers

Designations for unalloyed copper shall consist of the international chemical symbol of the element (Cu), followed by a series of capital letters referring to the type of copper.

The capital letters shall be separated from the chemical symbol by a hyphen to indicate that these letters do not correspond to chemical symbols, for example Cu-ETP, Cu-DHP, Cu-FRHC.

2.3 Copper alloys

2.3.1 Designations for copper alloys shall consist of the chemical symbols of the base element (Cu) and the alloying elements followed preferably by whole numbers indicating their amount (if these elements are present in nominal amounts of about 1 % or more).

2.3.2 The alloying elements shall be listed according to the nominal alloy contents specified. The alloying elements shall be listed in decreasing order of percentages (for example CuZn36Pb3) or, if of equal percentage, in alphabetical order of the chemical symbols (for example CuAl10Fe5Ni5), provided that the principal alloying element of the type of alloy is listed first irrespective of its content (for example CuNi18Zn27 — not CuZn27Ni18).

Due to similar composition limits, wrought and cast alloys may have the same designation. Therefore, in any case, cast alloys shall have the prefix G — for identification.

According to the casting process, the following prefixes apply :

GS : sand casting

GM : permanent mould casting

GZ : centrifugal casting

GC : continuous casting

GP : pressure die casting

NOTES

1 The designation of a casting alloy in ingot form is derived from the composition specified for the corresponding alloy in the form of castings. This is to avoid confusion in instances where a narrower composition range for ingot metal would give a different mean alloy content, thus giving the ingot metal a different alloy designation from that of castings made from it.

2 In a case where more than two alloying elements are present, it is not necessary to list all of the minor constituents in the designation, except where they are essential for the proper identification of the alloy.

3 In all cases where two or more alloys have the same composition and differ only in the limits of an impurity, the symbol of the impurity element allowed in higher amounts should be added to the designation in brackets.

2.3.3 When a range is specified for an alloying element, the rounded off mean shall be used in the designation. When only a minimum percentage is specified for the alloying element, the rounded off minimum percentage shall be used in the designation. When the mean of the range is halfway between two whole numbers, it should be normally rounded off to the nearest even number.

The designation of the main alloying element by its chemical symbol, followed by two digits separated by a decimal point, may be necessary to distinguish alloys differing in the content of this main alloying element by less than 1 %.