

INTERNATIONAL STANDARD

ISO
1634-1

First edition
1987-06-01



INTERNATIONAL ORGANIZATION FOR STANDARDIZATION
ORGANISATION INTERNATIONALE DE NORMALISATION
МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ

Wrought copper and copper alloy plate, sheet and strip

Part 1:

Technical conditions of delivery for plate, sheet and strip
for general purposes

Plaques, tôles et bandes en cuivre et en alliages de cuivre corroyés —

Partie 1: Conditions techniques de livraison des plaques, tôles et bandes pour usages généraux

Reference number
ISO 1634-1:1987 (E)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established 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. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 1634-1 was prepared by Technical Committee ISO/TC 26, *Copper and copper alloys*.

With ISO 1634-2, it cancels and replaces ISO 1634 : 1974, of which they constitute a technical revision.

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

Wrought copper and copper alloy plate, sheet and strip —

Part 1:

Technical conditions of delivery for plate, sheet and strip for general purposes

1 Scope and field of application

This part of ISO 1634 specifies the technical conditions of delivery for wrought copper and copper alloy plate, sheet and strip for general purposes currently available in commercial quantities.

For the purpose of this part of ISO 1634, the definitions for copper and copper alloys in ISO 197-1 and for plate, sheet and strip in ISO 197-3 as well as the principles for designation in ISO 1190-1 and ISO 1190-2 apply.

For technical conditions of delivery for plate, sheet and strip

- for boilers, pressure vessels and heat-exchangers, see ISO 1634-2;
- for strip for springs, see ISO 1634-3.

2 References

2.1 Definitions

ISO 197, *Copper and copper alloys — Terms and definitions*

- *Part 1: Materials.*
- *Part 3: Wrought products.*

2.2 Designations

ISO 1190, *Copper and copper alloys — Code of designation*

- *Part 1: Designation of materials.*
- *Part 2: Designation of tempers.*

2.3 Chemical composition

ISO 426, *Wrought copper-zinc alloys — Chemical composition and forms of wrought products*

- *Part 1: Non-leaded and special copper-zinc alloys.*
- *Part 2: Leaded copper-zinc alloys.*

ISO 427, *Wrought copper-tin alloys — Chemical composition and forms of wrought products.*

ISO 429, *Wrought copper-nickel alloys — Chemical composition and forms of wrought products.*

ISO 430, *Wrought copper-nickel-zinc alloys — Chemical composition and forms of wrought products.*

ISO 1187, *Special wrought copper alloys — Chemical composition and forms of wrought products.*

ISO 1336, *Wrought coppers (having minimum copper content of 97,5 %) — Chemical composition and forms of wrought products.*

ISO 1337, *Wrought coppers (having a minimum copper content of 99,85 %) — Chemical composition and forms of wrought products.*

2.4 Technical conditions of delivery

ISO 1634, *Wrought copper and copper alloy plate, sheet and strip*

- *Part 2: Technical conditions of delivery for plate and sheet for boilers, pressure vessels and heat-exchangers.*
- *Part 3: Technical conditions of delivery for strip for springs.*

2.5 Methods of test

2.5.1 Sampling

ISO 4739, *Wrought copper and copper alloy products — Selection and preparation of specimens and test pieces for mechanical testing.*

2.5.2 Tensile testing

ISO 6892, *Metallic materials — Tensile testing.*

2.5.3 Hardness testing

ISO 2712, *Copper and copper alloys — Rockwell superficial hardness test (N and T scales).*

- ISO 6507, *Metallic materials — Hardness test — Vickers test*
- Part 1: HV 5 to HV 100.
 - Part 2: HV 0,2 to less than HV 5.

ISO 6508, *Metallic materials — Hardness test — Rockwell test (scales A — B — C — D — E — F — G — H — K).*

2.5.4 Estimation of grain size

ISO 2624, *Copper and copper alloys — Estimation of average grain size.*

2.5.5 Technological testing

ISO 7438, *Metallic materials — Bend test.*

ISO 7799, *Metallic materials — Sheet and strip 3 mm thick or less — Reverse bend test.*

ISO 8490, *Metallic materials — Sheet and strip — Modified Erichsen cupping test.*

2.5.6 Stress corrosion testing

ISO 196, *Wrought copper and copper alloys — Detection of residual stress — Mercury(I) nitrate test.*

ISO 6957, *Copper and copper alloys — Ammonia test for stress corrosion resistance.*¹⁾

2.6 Dimensional tolerances

ISO 3486, *Wrought copper and copper alloys — Cold rolled flat products delivered in lengths (sheet) — Dimensions and tolerances.*

ISO 3487, *Wrought copper and copper alloys — Cold-rolled flat products in coils or on reels (strip) — Dimensions and tolerances.*

3 Ordering information

The purchaser shall state on his inquiry and order the following information:

- a) quantity;
- b) designation of the material and temper required (see table 2);
- c) dimensions: thickness, width, length and — if necessary — the tolerances, as appropriate;
- d) the mandatory mechanical properties: hardness, tensile strength, grain size (see 4.2);
- e) in case of hardness, whether Vickers or Rockwell hardness is mandatory;

¹⁾ At present at the stage of draft.

- f) the tests to be carried out, including the details to be agreed upon, for example lot size, technological tests, stress corrosion tests (see clause 5).

4 Requirements

4.1 Chemical composition

The chemical composition shall comply with the requirements as specified in the International Standards referred to in table 1.

Table 1 — Chemical composition

Materials	Chemical composition in accordance with
Coppers	ISO 1336, ISO 1337
Copper-zinc alloys	ISO 426-1
Copper-tin alloys	ISO 427
Copper-nickel alloys	ISO 429
Copper-nickel-zinc alloys	ISO 430
Special copper alloys	ISO 1187

4.2 Mandatory mechanical properties

4.2.1 This part of ISO 1634 embodies the principle that either

- hardness or
- tensile strength and elongation

are generally sufficient to define the condition of the material. Exact conversion between tensile strength and hardness is not possible.

At the option of the purchaser, mandatory properties of the material may be either

- hardness or
- tensile strength and elongation,

but not both.

In case of hardness, it shall be indicated whether the Vickers or the Rockwell hardness test method is mandatory.

If mandatory properties are not specified by the purchaser, the supplier may choose to meet either

- hardness or
- tensile strength and elongation.

Mechanical properties are given in table 2.

Values shown in brackets are given for information only.