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International Standard



197/5

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**Copper and copper alloys — Terms and definitions —  
Part 5 : Methods of processing and treatment**

*Cuivres et alliages de cuivre — Termes de référence et définitions — Partie 5 : Méthodes d'élaboration et de traitement*

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## Foreword

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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 197/5 was developed by Technical Committee ISO/TC 26, *Copper and copper alloys*, and was circulated to the member bodies in May 1978.

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

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No member body expressed disapproval of the document.

# Copper and copper alloys — Terms and definitions — Part 5 : Methods of processing and treatment

## 1 Scope and field of application

This International Standard gives terms and definitions relating to methods of processing and treatment in the field of copper and copper alloys.

## 2 Terms and definitions

**2.1 hot working** : Plastic deformation of a metal or alloy within a temperature range such that strain hardening does not occur.

**2.2 cold working** : Plastic deformation of a metal or alloy at a temperature such that strain hardening occurs.

**2.3 strain hardening** : Modification of a metal structure by cold working, resulting in an increase in strength and hardness, generally with some loss of ductility.

**2.4 annealing** : A thermal treatment to soften metal by removal of strain hardening resulting from cold working, by recrystallization and/or by coalescing precipitates from the solid solution.

**2.5 partial annealing** : A thermal treatment of a cold-worked metal or alloy to reduce the strength properties to a controlled level.

**2.6 temper** : Designates a state after processing (for example by mechanical and/or thermal treatments), required to produce characteristic physical and/or mechanical properties in a metal or an alloy.

**2.7 homogenizing** : A process in which a metal or an alloy is heated for a period at a high temperature to eliminate or decrease chemical segregation by diffusion.

**2.8 solution heat treatment** : A process in which an alloy is heated to a suitable temperature and is held at this temperature long enough to allow soluble constituents to enter into solid solution where they are retained in a super-saturated state after quenching.

**2.9 natural ageing** : Strengthening of an alloy by spontaneous precipitation of soluble constituents from a super-saturated solid solution at room temperature.

**2.10 artificial ageing (precipitation heat treatment)** : A thermal treatment of an alloy at above room temperature to produce strengthening by precipitation of soluble constituents from the super-saturated solid solution.

**2.11 solution treated and artificially aged (full heat treatment)** : Solution heat treatment followed by precipitation heat treatment (artificial ageing).

**2.12 quenching** : A process of cooling a metal or alloy from an elevated temperature, by contact with a solid, a liquid or a gas, at a rate rapid enough to retain some or all of the soluble constituents in solid solution.

Quenching may also be employed for rapid temperature reduction following annealing or hot working, to minimize surface scaling or prevent further grain growth.

**2.13 stress relieving** : A treatment of a product to reduce residual stresses, either by thermal treatment without causing recrystallization, or by mechanical treatment without causing a significant change in size.