
INTERNATIONAL STANDARD



1554

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Wrought and cast copper alloys — Determination of copper content — Electrolytic method

Alliages de cuivre corroyés et moulés — Dosage du cuivre — Méthode électrolytique

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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.

Prior to 1972, the results of the work of the technical committees were published as ISO Recommendations; these documents are in the process of being transformed into International Standards. As part of this process, Technical Committee ISO/TC 26, *Copper and copper alloys*, has reviewed ISO Recommendation R 1554-1971 and found it technically suitable for transformation. International Standard ISO 1554 therefore replaces ISO Recommendation R 1554-1971, to which it is technically identical.

ISO Recommendation R 1554 had been approved by the member bodies of the following countries :

Australia	India	South Africa, Rep. of
Belgium	Iran	Spain
Canada	Israel	Sweden
Czechoslovakia	Italy	Switzerland
Egypt, Arab Rep. of	Netherlands	Thailand
Finland	New Zealand	Turkey
France	Norway	United Kingdom
Germany	Peru	U.S.A.
Hungary	Poland	Yugoslavia

No member body had expressed disapproval of the Recommendation.

The member bodies of the following countries disapproved the transformation of the Recommendation into an International Standard :

Hungary
Italy

Wrought and cast copper alloys – Determination of copper content – Electrolytic method

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies an electrolytic method for the determination of the copper content of wrought and cast copper-zinc alloys, copper-aluminium alloys and copper-nickel-zinc alloys, as listed in the relevant ISO publications.

2 REFERENCES

ISO 1553, *Unalloyed copper containing not less than 99,90 % of copper – Determination of copper content – Electrolytic method.*

ISO/R 1811, *Chemical analysis of copper and copper alloys – Sampling of copper refinery shapes.*

3 PRINCIPLE

Electrolytic determination of the copper content of a fluoroboric-nitric acid solution of a test portion.

4 REAGENTS

During the analysis, use only reagents of recognized analytical grade and only distilled or deionized water.

4.1 Boric acid (H_3BO_3), 40 g/l solution.

4.2 Hydrofluoric acid, 38 to 40 % (m/m) or 48 % (m/m).

4.3 Nitric acid, diluted 1 + 1 (V + V) (ρ approximately 1,2 g/ml).

4.4 Ammonia solution, ρ approximately 0,91 g/ml.

5 APPARATUS

Ordinary laboratory apparatus and

5.1 Current source.

For preference, use a 6 V accumulator. If a rectifier is to be used, an additional buffer battery is recommended.

5.2 Electrolysis equipment, the electrodes of which meet the following requirements :

5.2.1 Platinum cathode, Winkler type¹⁾, made preferably from gauze containing approximately 400 meshes per square centimetre (50 meshes per linear inch), woven from wire of diameter approximately 0,20 mm. The cathode shall be stiffened by doubling the gauze for about 3 mm at the top and the bottom of the cylinder or by reinforcing the gauze at the top and bottom with a platinum band or ring. The diameter of the cylinder shall be 30 to 50 mm and the height 40 to 60 mm. The stem shall be made from a platinum alloy wire, such as platinum-iridium, platinum-rhodium or platinum-ruthenium, having a diameter of approximately 1,30 mm, flattened and welded the entire length of the gauze. The overall height of the cathode shall be approximately 130 mm. The cathode shall be sandblasted.

5.2.2 Spiral anode, made of platinum alloy wire of minimum diameter 1 mm, formed into a spiral of seven turns, having a height of approximately 50 mm and a diameter of 12 mm, the overall height being approximately 130 mm. The spiral section shall be sandblasted.

In the case of an analysis of alloys containing lead, gauze anodes shall be used.

5.3 Electric oven, capable of being controlled at 110 °C.

6 SAMPLING

Sampling shall be carried out in accordance with the procedure given in ISO/R 1811.

7 PROCEDURE

7.1 Test portion

Weigh, to the nearest 0,000 1 g, 2,5 g of the test sample, preferably in the form of fine drillings.

1) Platinum cathodes formed from plain or perforated sheets may also be used.