

International Standard



4742

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Copper alloys — Determination of nickel content — Gravimetric method

Alliages de cuivre — Dosage du nickel — Méthode gravimétrique

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (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 authorized 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 4742 was developed by Technical Committee ISO/TC 26, *Copper and copper alloys*, and was circulated to the member bodies in December 1981.

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

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

No member body expressed disapproval of the document.

Copper alloys — Determination of nickel content — Gravimetric method

WARNING : Throughout this International Standard, normal precautions regarding the use of perchloric acid in laboratory work should be observed.

1 Scope and field of application

This International Standard specifies a gravimetric method for the determination of the nickel content in all types of copper alloys listed in International Standards.

The method is applicable to the determination of nickel contents between 2 and 50 % (*m/m*).

2 Reference

ISO 1554, *Wrought and cast copper alloys — Determination of copper content — Electrolytic method*.

3 Principle

Dissolution of a test portion in nitric acid and removal of tin and silicon, if present. Separation of copper by electrolysis and precipitation of nickel from the copper-free electrolyte by the sodium salt of dimethylglyoxime in the presence of citric acid. Separation of the precipitate by filtration.

4 Reagents

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

4.1 Nitric acid. ϱ 1,40 g/ml.

4.2 Perchloric acid. ϱ 1,67 g/ml.

4.3 Hydrobromic acid. ϱ 1,38 g/ml.

4.4 Ammonia solution. ϱ 0,925 g/ml.

4.5 Nitric acid solution, 1 + 1.

Dilute 100 ml of the nitric acid (4.1) with 100 ml of water.

4.6 Sulfamic acid, 100 g/l solution.

4.7 Citric acid, 250 g/l solution.

4.8 Sodium dimethylglyoximate, 25,9 g/l solution.

5 Apparatus

Ordinary laboratory apparatus, and

5.1 Beakers, electrolytic, capacity 300 to 400 ml.

5.2 Electrolysis equipment, including current source and platinum electrodes, as specified in ISO 1554.

5.3 Filter crucible, of fritted glass, pore size 16 to 40 μm .

6 Procedure

6.1 Test portion

6.1.1 Nickel content between 2 and 4,25 % (*m/m*)

Weigh, to the nearest 0,000 1 g, about 2 g of the test sample. The nickel content of the test portion will be 40 to 85 mg.

6.1.2 Nickel content between 4 and 8,5 % (*m/m*)

Weigh, to the nearest 0,000 1 g, about 1 g of the test sample. The nickel content of the test portion will be 40 to 85 mg.

6.1.3 Nickel content between 8 and 50 % (*m/m*)

Weigh, to the nearest 0,000 1 g, between 0,25 and 1 g of the test sample so that the nickel content of the test portion will be 80 to 125 mg.