

Transformed

ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION

R 796

CHEMICAL ANALYSIS OF ALUMINIUM AND ITS ALLOYS

ELECTROLYTIC DETERMINATION OF COPPER IN ALUMINIUM ALLOYS

(Copper content greater than or equal to 0.50 %)

1st EDITION

July 1968

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BRIEF HISTORY

The ISO Recommendation R 796, *Chemical analysis of aluminium and its alloys – Electrolytic determination of copper in aluminium alloys (Copper content greater than or equal to 0.50 %)*, was drawn up by Technical Committee ISO/TC 79, *Light metals and their alloys*, the Secretariat of which is held by the Association Française de Normalisation (AFNOR).

Work on this question by the Technical Committee began in 1956 and led, in 1963, to the adoption of a Draft ISO Recommendation.

In June 1966, this Draft ISO Recommendation (No. 969) was circulated to all the ISO Member Bodies for enquiry. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies :

Argentina	Hungary	South Africa,
Austria	Korea, Rep. of	Rep. of
Belgium	India	Spain
Brazil	Ireland	Sweden
Bulgaria	Israel	Switzerland
Canada	Italy	Turkey
Chile	Japan	U.A.R.
Czechoslovakia	Netherlands	United Kingdom
France	Norway	U.S.S.R.
Germany	Poland	Yugoslavia

One Member Body opposed the approval of the Draft :

U.S.A.

The Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided, in July 1968, to accept it as an ISO RECOMMENDATION.

CHEMICAL ANALYSIS OF ALUMINIUM AND ITS ALLOYS

ELECTROLYTIC DETERMINATION OF COPPER
IN ALUMINIUM ALLOYS

(Copper content greater than or equal to 0.50 %)

1. SCOPE

- 1.1 This ISO Recommendation describes an electrolytic method for the determination of copper in aluminium alloys.
- 1.2 The method is applicable to the determination of copper content greater than or equal to 0.50 %.
- 1.3 The method does not apply completely to the following special cases for which it should be modified as described in Annex A and Annex B :
 - (a) alloys containing tin or antimony (see Annex A);
 - (b) alloys containing bismuth (see Annex B).

2. PRINCIPLE

- 2.1 Attack with a mixture of perchloric acid and nitric acid.
- 2.2 Dehydration of the silica in a perchloric medium and filtration of the insoluble residue.
- 2.3 Volatilization of the siliceous residue and recovery of copper from the residue.
- 2.4 Electrolysis of the solution after addition of nitric acid.

3. REAGENTS

- 3.1 *Ethanol*, 95 %, $d =$ approximately 0.816.
- 3.2 *Sulphamic acid* ($\text{NH}_2\text{SO}_3\text{H}$).
- 3.3 *Hydrobromic acid*, 48 %, $d =$ approximately 1.49.
- 3.4 *Hydrochloric acid*, $d = 1.1$ (approximately 6 N).
Take 500 ml of hydrochloric acid, $d = 1.19$ (approximately 12 N), and make up the volume to 1000 ml with water.
- 3.5 *Hydrofluoric acid*, 40 %, $d =$ approximately 1.15.
- 3.6 *Nitric acid*, $d = 1.40$ (approximately 15 N).
- 3.7 *Nitric acid*, $d = 1.23$ (approximately 7.4 N).
Take 500 ml of nitric acid, $d = 1.40$, and make up the volume to 1000 ml with water.
- 3.8 *Perchloric acid*, $d = 1.67$ (approximately 11.7 N).
(Perchloric acid, $d = 1.54$ (approximately 9 N), can also be used. 1000 ml of perchloric acid, $d = 1.67$, is equivalent to 1270 ml of perchloric acid, $d = 1.54$).
- 3.9 *Perchloric acid*, $d = 1.33$ (approximately 5.8 N).
Take 500 ml of perchloric acid, $d = 1.67$, and make up the volume to 1000 ml with water.
- 3.10 *Sulphuric acid*, $d = 1.33$ (approximately 11.7 N).
Carefully add 35 ml of sulphuric acid, $d = 1.84$, to water and, after cooling, make up the volume to 100 ml.