



INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION

R 798

CHEMICAL ANALYSIS OF ALUMINIUM AND ITS ALLOYS

GRAVIMETRIC DETERMINATION OF ZINC IN ALUMINIUM ALLOYS

(Zinc content between 0.50 and 6.5 %)

1st EDITION
July 1968

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BRIEF HISTORY

The ISO Recommendation R 798, *Chemical analysis of aluminium and its alloys – Gravimetric determination of zinc in aluminium alloys (Zinc content between 0.50 and 6.5 %)*, 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. 971) 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	India	Sweden
Austria	Ireland	Switzerland
Belgium	Israel	Turkey
Brazil	Italy	U.A.R.
Bulgaria	Japan	United Kingdom
Canada	Netherlands	U.S.A.
Chile	Norway	U.S.S.R.
Czechoslovakia	Poland	Yugoslavia
Germany	South Africa,	
Hungary	Rep. of	
Korea, Rep. of	Spain	

One Member Body opposed the approval of the Draft :

France

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

GRAVIMETRIC DETERMINATION OF ZINC IN ALUMINIUM ALLOYS

(Zinc content between 0.50 and 6.5 %)

1. SCOPE

- 1.1 This ISO Recommendation describes a gravimetric method for the determination of zinc in aluminium alloys.
- 1.2 The method is applicable to the determination of zinc content between 0.50 and 6.5 %.
- 1.3 The method does not apply completely to the special case of alloys with high nickel contents, for which it should be modified as described in the Annex.

2. PRINCIPLE

- 2.1 Attack with oxidizing acid.
- 2.2 Filtration and volatilization of the silica after dehydration in a sulphuric medium. Recovery of any zinc retained in the residue.
- 2.3 Precipitation of Group II metals by treatment with hydrogen sulphide in an acid medium.
- 2.4 Precipitation of zinc with hydrogen sulphide in a formic buffer medium after complexing the aluminium with tartaric acid.
- 2.5 Dissolution of the zinc sulphide with dilute hydrochloric acid. Removal of any traces of heavy metals by means of sodium hydrosulphide.
- 2.6 Oxidation and complexing of the iron with phosphoric acid, followed by precipitation of the zinc as zinc mercuric thiocyanate.
- 2.7 Filtration, washing, drying and weighing of the precipitate.

3. REAGENTS

3.1 Mixed acids :

<i>Sulphuric acid</i> , $d = 1.84$ (approximately 35.6 N)	250 ml	} made up to 1000 ml with water
<i>Hydrochloric acid</i> , $d = 1.19$ (approximately 12 N)	200 ml	
<i>Nitric acid</i> , $d = 1.40$ (approximately 15 N)	200 ml	

Carefully add the sulphuric acid to about 300 ml of water, while cooling. Add the hydrochloric acid, then the nitric acid, and make up the volume to 1000 ml with water.

- 3.2 *Sulphuric acid*, $d = 1.26$ (approximately 9 N).
Carefully add 250 ml of sulphuric acid, $d = 1.84$, to water, cool and make up the volume to 1000 ml.
- 3.3 *Sulphuric acid*, $d = 1.01$ (approximately 0.35 N).
Carefully add 10 ml of sulphuric acid, $d = 1.84$, to water, cool and make up the volume to 1000 ml.
- 3.4 *Sulphuric acid*, $d = 1.48$ (approximately 17.5 N).
Carefully add 50 ml of sulphuric acid, $d = 1.84$, to water, cool and make up the volume to 100 ml.
- 3.5 *Hydrofluoric acid*, 40 %, $d =$ approximately 1.15.