
INTERNATIONAL STANDARD



1783

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Magnesium alloys — Determination of zinc — Volumetric method

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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 now in the process of being transformed into International Standards. As part of this process, International Standard ISO 1783 replaces ISO Recommendation R 1783-1970 drawn up by Technical Committee ISO/TC 79, *Light metals and their alloys*.

The Member Bodies of the following countries approved the Recommendation :

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

The Member Body of the following country expressed disapproval of the Recommendation on technical grounds :

France

Magnesium alloys – Determination of zinc – Volumetric method

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a volumetric method for the determination of zinc in magnesium alloys not containing cadmium.

This method is applicable to the determination of zinc content between 0,10 and 8,0 %.

2 PRINCIPLE

Hydrochloric acid attack and elimination of the excess of acid by evaporation. Taking up of the residue in hydrochloric acid solution (2 N) and passage of the solution through a strongly basic anion exchange resin.

Elution of the zinc absorbed on the resin with hydrochloric acid solution (0,005 N).

Titration of the zinc by EDTA standard solution using dithizone indicator.

3 REAGENTS

During the analysis use only distilled water or water of equivalent purity.

3.1 Strongly basic anion exchange resin, either heteroporous or isoporous, of the polystyrene type with quaternary ammonium groups (for example Dowex 1 X 2, De-Acidite FF SRA 62 or equivalent) in the chloride form, containing from 2 to 3 % cross linking (expressed as a percentage by mass of D.V.B. (divinylbenzene)), and preferably with a particle size between 150 and 295 μm ($-52 + 100$ mesh).

3.2 Acetone, ρ approximately 0,79 g/ml.

3.3 Hydrochloric acid, ρ approximately 1,18 g/ml, 37 % (m/m) solution or approximately 12 N.

3.4 Hydrogen peroxide, ρ approximately 1,135 g/ml, approximately 36 % (m/m) solution.

3.5 Hydrochloric acid, ρ approximately 1,03 g/ml, approximately 2 N solution.

Dilute 170 ml of the hydrochloric acid (3.3) with water and make up the volume to 1 000 ml.

3.6 Hydrochloric acid, ρ approximately 1,01 g/ml, approximately N solution.

Dilute 85 ml of the hydrochloric acid (3.3) with water and make up the volume to 1 000 ml.

3.7 Hydrochloric acid, ρ approximately 1,0 g/ml, approximately 0,005 N solution.

Dilute 5 ml of the hydrochloric acid (3.6) with water and make up the volume to 1 000 ml.

3.8 Nitric acid, ρ approximately 1,4 g/ml, approximately 67 % (m/m) solution or 15 N.

3.9 Ammonia, ρ approximately 0,90 g/ml, approximately 28 % (m/m) solution or 14 N.

3.10 Acetic acid, ρ approximately 1,007 g/ml, approximately N solution.

Dilute 58 ml of glacial acetic acid (ρ approximately 1,05 g/ml), approximately 17,4 N solution, with water and make up the volume to 1 000 ml.

3.11 Ammonium acetate, 500 g/l solution.

Dissolve 50 g of ammonium acetate ($\text{CH}_3\text{COONH}_4$) in water and make up the volume to 100 ml.

3.12 Zinc, standard solution containing 2 g of zinc per litre.

Weigh, to the nearest 0,001 g, 2,00 g of extra pure zinc and dissolve in 25 ml of the hydrochloric acid solution (3.3) diluted with approximately 75 ml of water. Dilute and transfer the solution quantitatively to a 1 000 ml volumetric flask. Make up to volume and mix.

1 ml of this solution contains 2 mg of zinc.

3.13 Disodium salt of ethylenediaminetetra-acetic acid (EDTA), standard volumetric solution 0,02 M.

3.13.1 Preparation of the solution

Dissolve approximately 7,5 g of EDTA in water, filter if necessary, and make up the volume to 1 000 ml. Keep in a plastics bottle.