
INTERNATIONAL STANDARD



3255

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Magnesium and magnesium alloys — Determination of aluminium — Chromazurol S photometric method

Magnésium et alliages de magnésium — Dosage de l'aluminium — Méthode photométrique au chromazurol S

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Sample Document

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.

International Standard ISO 3255 was drawn up by Technical Committee ISO/TC 79, *Light metals and their alloys*, and circulated to the Member Bodies in July 1973.

It has been approved by the Member Bodies of the following countries :

Australia	France	Romania
Belgium	Germany	South Africa, Rep. of
Bulgaria	Hungary	Spain
Canada	Ireland	Sweden
Chile	Italy	Turkey
Egypt, Arab Rep. of	New Zealand	United Kingdom
Finland	Poland	U.S.A.

No Member Body expressed disapproval of the document.

Magnesium and magnesium alloys – Determination of aluminium – Chromazurol S photometric method

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a photometric method using chromazurol S for the determination of aluminium in magnesium and certain magnesium alloys.

The method is applicable to the determination of aluminium content between 0,01 and 0,20 %.

This method does not apply to alloys containing zirconium and/or rare earths and/or thorium.

2 PRINCIPLE

Dissolution with sulphuric acid.

Complexing of the iron and the copper by the addition of ascorbic acid and sodium thiosulphate. Formation of the aluminium-chromazurol S complex in a buffered medium (pH 5,3 to 5,5).

Photometric measurement of the coloured complex at a wavelength of about 545 nm.

3 REAGENTS

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

3.1 Sulphuric acid, ρ 1,26 g/ml, approximately 9 N solution.

Carefully add 250 ml of sulphuric acid (ρ 1,84 g/ml), 35,6 N approximately, to about 500 ml of water. After cooling, make up the volume to 1 000 ml and mix.

3.2 Ascorbic acid, 10 g/l solution.

Dissolve 1 g of ascorbic acid ($C_6H_8O_6$) in water. Make up the volume to 100 ml and mix.

Use a freshly prepared solution.

3.3 Buffer solution.

Dissolve 150 g of sodium acetate ($CH_3COONa \cdot 3H_2O$) and 5 g of sodium thiosulphate ($Na_2S_2O_3 \cdot 5H_2O$) in water, filter if necessary, make up the volume to 1 000 ml and mix.

Use a freshly prepared solution.

3.4 Chromazurol S, 0,1 g/l methanolic solution.

Dissolve 0,1 g of chromazurol S in a 50 % (V/V) solution of water and methanol. Make up the volume to 1 000 ml with the same methanol solution and mix.

3.5 Acetone.

3.6 Aluminium, 0,05 g/l standard solution.

Dissolve 0,879 2 g of aluminium potassium sulphate [$Al_2(SO_4)_3 \cdot K_2SO_4 \cdot 24H_2O$] in water. Transfer the solution quantitatively to a 1 000 ml volumetric flask, make up to volume and mix.

1 ml of this standard solution contains 0,05 mg of Al.

3.7 Aluminium, 0,012 5 g/l standard solution.

Transfer 50,0 ml of standard aluminium solution (3.6) to a 200 ml volumetric flask, make up to volume and mix.

1 ml of this standard solution contains 0,012 5 mg of Al.

Prepare this solution at the moment of use.

4 APPARATUS

Ordinary laboratory apparatus, and

4.1 Spectrophotometer, or

4.2 Photoelectric absorptiometer, fitted with filters guaranteeing maximum absorption between 535 and 555 nm.

5 SAMPLING

5.1 Laboratory sample¹⁾

5.2 Test sample

Chips not more than 1 mm thick obtained by milling or drilling.

1) The sampling of magnesium and magnesium alloys will form the subject of a future International Standard.