INTERNATIONAL STANDARD

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Magnesites and dolomites — Chemical analysis

Produits de magnésie et de dolomie — Analyse chimique

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Contents

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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 preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established 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. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 10058 was prepared by Technical Committee ISO/TC 33, *Refractories*, Sub-Committee SC 2, *Methods of testing*.

Annex A forms an integral part of this International Standard.

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Magnesites and dolomites — Chemical analysis

1 Scope

This International Standard specifies methods for the determination of silica, alumina, titania, iron oxide and oxides of manganese, chromium, calcium, magnesium, sodium, potassium and lithium. It also specifies methods for determining the loss on ignition of magnesite and dolomite, and of refractories based on these raw materials.

Annex A describes a method for the determination of the boron content of magnesites only.

NOTE 1 Physical methods are used increasingly for chemical analysis. At present, it is not possible to describe a standardized test method, because the type of apparatus used is important.

2 Dissolution and determination of silica

2.1 Principle

Decompose the sample with hydrochloric acid and separate the silica by coagulation with a polyethylene oxide solution. Filter, wash the residue, heat and weigh it, and submit it to a treatment with hydrofluoric and sulfuric acids. After this treatment, weigh the remaining residue again and fuse it in sodium carbonate and boric acid. It is then dissolved in the filtrate from the silica, and the solution is diluted to a standard volume to obtain the stock solution (A) of the sample.

In an aliquot, the small quantity of silica not separated by coagulation is subsequently determined by a spectrophotometric method based on the formation of molybdenum blue, using alternatively iron(II) sulfate or tin(II) chloride as a reducing agent. The absorbance maximum of the reduced silicomolybdate complex lies at a wavelength of 810 nm.

2.2 Reagents

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

2.2.1 Sodium carbonate, anhydrous.

2.2.2 Boric acid, powdered.

2.2.3 Polyethylene oxide solution, 2,5 g/l.

Add 0,5 g of polyethylene oxide to 200 ml of water while stirring slowly, preferably with a mechanical stirrer, until dissolved. Discard after 2 weeks.

2.2.4 Accelerator granules, ashless, of mass about 1 g.

2.2.5 Hydrochloric acid, concentrated, $\rho = 1{,}19$ g/ml.

2.2.6 Hydrochloric acid, diluted 1 + 19.

Add 1 volume of hydrochloric acid (2.2.5) to 19 volumes of water.

2.2.7 Sulfuric acid, concentrated, $\rho = 1{,}84$ g/ml.

2.2.8 Hydrofluoric acid, 40 % (m/m).

2.3 Apparatus

Usual laboratory apparatus and the following.

2.3.1 Sand bath or **hot plate**.

2.3.2 Muffle furnace, capable of being controlled at 1 180 °C to 1 200 °C.

2.3.3 Platinum crucible.