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INTERNATIONAL STANDARD 3703

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Acid-grade fluorspar — Determination of flotation agents

Spathes fluor pour la fabrication de l'acide fluorhydrique — Détermination des agents de flottation

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[ISO 3703:1976](#)

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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 Committee. 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 3703 was drawn up by Technical Committee ISO/TC 47, *Chemistry*, and was circulated to the Member Bodies in January 1975.

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

| | | |
|---------|----------|-----------------------|
| Belgium | Ireland | South Africa, Rep. of |
| Brazil | Israel | Spain |
| France | Italy | Switzerland |
| Germany | Poland | Turkey |
| Hungary | Portugal | United Kingdom |
| India | Romania | Yugoslavia |

No Member Body expressed disapproval of the document.

Acid-grade fluorspar – Determination of flotation agents

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a gravimetric method for the determination of the amount of flotation agents adhering to acid-grade fluorspar. The method is applicable to materials which have been subjected to a flotation process and which have flotation agent contents equal to or greater than 0,002 % (*m/m*) of the dried material.

2 REFERENCE

ISO 4282, *Acid-grade fluorspar – Determination of loss in mass at 105 °C.*¹⁾

3 PRINCIPLE

Treatment of a test portion with a mixture of dilute hydrochloric acid and an organic solvent. Removal of the insoluble fluorspar by filtration under vacuum. Separation of the organic phase containing the flotation agent, evaporation of the solvent and weighing of the residue.

4 REAGENTS

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

4.1 Hydrochloric acid, ρ approximately 1,19 g/ml, about 38 % (*m/m*) solution.

4.2 Solvent: 1,1,2-trichlorotrifluoroethane, re-distilled.

5 APPARATUS

Ordinary laboratory apparatus and

5.1 Vacuum filtration apparatus, comprising a Büchner

funnel, diameter 120 mm, with suitable filter paper, and a Büchner flask, capacity 1 000 ml.

5.2 Separating funnel, capacity 1 000 ml.

5.3 Mechanical stirrer, powered by an electric motor and fitted with a 40 mm diameter paddle.

6 PROCEDURE

6.1 Test portion

Weigh into a 1 000 ml beaker, to the nearest 0,1 g, 500 g of the laboratory sample, dried according to the method specified for filter cakes in ISO 4282.

6.2 Determination

Add 300 ml of water, 20 ml of the hydrochloric acid solution (4.1) and 200 ml of the solvent (4.2) to the beaker containing the test portion (6.1). Stir vigorously for 30 min using the stirrer (5.3). Filter on the vacuum filtration apparatus (5.1) and wash the residue with a total volume of 100 ml of the solvent (4.2), added in small portions. Transfer the filtrate, which consists of two phases, from the Büchner flask (5.1) to the separating funnel (5.2) and rinse the flask with a small portion of the solvent (4.2). Draw off the lower phase, passing the liquid through a filter paper in order to remove water from the solvent, and collect it in a flat porcelain dish. Place the dish on a steam bath and evaporate the solvent in a fume cupboard to a volume of a few millilitres. Transfer the residue quantitatively to a beaker, capacity about 50 ml, previously dried at about 100 °C, cooled in a desiccator and weighed to the nearest 0,001 g. Rinse the dish carefully with the solvent (4.2), place the beaker on the steam bath, evaporate to dryness, cool in a desiccator and weigh to the nearest 0,001 g.

1) At present at the stage of draft.

7 EXPRESSION OF RESULTS

The content of flotation agents, expressed as a percentage by mass of the dried material, is given by the formula

$$\frac{m_1 \times 100}{m_0}$$

where

m_0 is the mass, in grams, of the test portion (6.1);

m_1 is the mass, in grams, of residue.

8 TEST REPORT

The test report shall include the following particulars:

- a) the reference of the method used;
- b) the results and the method of expression used;
- c) any unusual features noted during the determination;
- d) any operation not included in this International Standard or in the International Standard to which reference is made, or regarded as optional.

ANNEX

ISO PUBLICATIONS RELATING TO ACID-GRADE FLUORSPAR

ISO 3703 – Determination of flotation agents.

ISO 4282 – Determination of loss in mass at 105 °C.

ISO 4283 – Determination of carbonates content.

ISO 4284 – Determination of sulphides content.

ISO 5437 – Determination of barium sulphate content. [ISO 3703:1976](#)

ISO 5438 – Determination of silica content. <https://standards.iteh.ai/catalog/standards/sist/78220a6e-0921-4282-8a95-65a119d95946/iso-3703-1976>

ISO 5439 – Determination of available fluorine content.

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