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Fluorspar — Determination of moisture content of a lot

Spaths fluor — Détermination de l'humidité d'un lot

Reference number
ISO 8875 : 1988 (E)

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 approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 8875 was prepared by Technical Committee ISO/TC 175, *Fluorspar*.

Fluorspar — Determination of moisture content of a lot

1 Scope

This International Standard specifies a method of determining the mean value of the moisture content of a lot of fluorspar.

This method is applicable to all grades of fluorspar, i.e. acid-grade, ceramic-grade and the three metallurgical-grades (concentrate, briquettes and gravel).

2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 8868 : —[1], *Fluorspar — Sampling and sample preparation.*

3 Definitions

For the purposes of this International Standard, the following definitions apply.

3.1 moisture sample: Sample taken for the determination of the moisture content of the lot.

3.2 test sample: Sample ready for moisture determination, which is prepared in accordance with the applicable method specified in ISO 8868.

NOTE — If the entire quantity of test sample is subjected to moisture measurement, the test sample may also be called the "test portion".

3.3 test portion: Representative part of a test sample which is actually subjected to moisture measurement.

4 Principle

Drying of a test portion in air at 105 °C ± 5 °C to constant mass.

5 Apparatus

5.1 Drying pan, having a smooth surface, free from impurities and capable of accommodating 1 kg or more of sample in a layer not thicker than 10 mm.

5.2 Drying oven, equipped with a temperature indicator and a control apparatus capable of regulating the temperature at any point in the oven to 105 °C ± 5 °C, and designed to maintain this temperature. In addition, to ensure efficient drying, the oven is fitted with a fan which circulates air through the oven at such a rate that the total volume of air in the oven is changed at least three times per hour, without causing any loss of the sample.

5.3 Weighing device, having a sensitivity of 1 g or better, and an accuracy which will ensure repeatability at the precision required.

The weighing device shall be protected from the effects of the hot drying pan by using a suitable insulating material.

6 Test samples

Test samples shall be taken and prepared in accordance with ISO 8868. Two or more test samples shall be prepared per lot. The entire quantity of each test sample shall be used as the test portion for each moisture measurement. The mass of the test portion shall be 1 kg or larger, and the nominal top size shall be − 10 mm.

7 Procedure

7.1 Number of measurements

One moisture measurement shall be carried out on each test portion.

7.2 Measurement

Weigh the drying pan (5.1) to the nearest 1 g.

Spread the test portion in the drying pan, in a layer not thicker than 10 mm and weigh immediately to the nearest 1 g. Record

1) To be published.

the mass of the drying pan and the total mass of the drying pan plus test portion. Calculate and record the initial mass of the test portion.

Place the drying pan containing the test portion in the drying oven (5.2) set at 105 °C ± 5 °C and maintain this temperature for not less than 2 h. In the case of filter cakes, maintain this temperature for 5 h. Remove the drying pan containing the test portion from the drying oven and weigh it immediately while it is still hot to minimize reabsorption of atmospheric moisture. Alternatively, the test portion may be weighed after cooling in a desiccator having a close-fitting, air-tight lid. In each case, report the weighing method. Again place the drying pan containing the test portion in the drying oven, heat for a further 1 h and repeat the weighing procedure. Repeat the operations described above until the difference in mass between subsequent measurements is 0,1 % or less of the initial mass of the test portion.

NOTE — In the case of a series of moisture measurements carried out on the same type of fluorspar, the required heating time of the test portion may be determined by check tests conducted beforehand.

8 Calculation and expression of results

8.1 Moisture content of each test portion

The moisture content, M_i, expressed as a percentage by mass, shall be calculated from equation (1) and reported to the second decimal place:

$$M_i = \frac{m_1 - m_2}{m_1} \times 100 \qquad \ldots (1)$$

where

M_i is the moisture content, as a percentage by mass, of each test portion i;

m_1 is the initial mass, in grams, of the test portion;

m_2 is the mass, in grams, of the test portion after drying.

8.2 Moisture content of a lot

The moisture content of a lot shall be calculated using one of the following equations, as appropriate, and reported to the first decimal place.

8.2.1 When mass-basis sampling has been performed and moisture determination is conducted on each partial sample, the weighted mean of the results from all the partial samples, with account taken of the number of increments for each partial sample, shall be the moisture content of the lot given by equation (2):

$$M = \frac{\sum_{i=1}^{k} N_i M_i}{\sum_{i=1}^{k} N_i} \qquad \ldots (2)$$

where

M is the moisture content, as a percentage by mass, of a lot;

k is the number of partial samples;

N_i is the number of increments in the ith partial sample;

M_i is the result of the moisture determination, as a percentage by mass, on the ith partial sample.

If it is impracticable to sample the lot as a whole or if it is advantageous to sample a lot in separate parts of equal mass, as in the case of time-basis sampling, the moisture content of each part shall be determined independently and the weighted mean of the moisture content of the lot shall be calculated from the individual results using equation (3):

$$M = \frac{\sum_{i=1}^{k} m_i M_i}{\sum_{i=1}^{k} m_i} \qquad \ldots (3)$$

where

M is the moisture content, as a percentage by mass, of a lot;

k is the number of parts in the lot;

m_i is the mass of the ith part;

M_i is the result of the moisture determination, as a percentage by mass, on the ith part.

8.2.2 When the moisture determination is conducted on each increment (test portion), the arithmetic mean of the results for all increments obtained according to 8.1 shall be the moisture content of the lot given by equation (4):

$$M = \frac{\sum_{i=1}^{N} M_i}{N} \qquad \ldots (4)$$

where

M is the moisture content, as a percentage by mass, of the lot;

N is the number of increments, each of which is representative of an equal proportion of the lot;

M_i is the result of the moisture determination, as a percentage by mass, on the ith increment.

9 Test report

The test report shall include the following particulars:

a) an identification of the sample;

b) the reference of the method used;

c) the results and the method of expression used;

d) the reference number of the result;

e) any unusual features noted during the determination;

f) any operation not included in this International Standard or in the International Standard to which reference is made, or regarded as optional.