BRITISH STANDARD

BS 6870-2.2: 1987
ISO 8557:1985

Analysis of aluminium ores —

Part 2: Chemical methods —

Section 2.2 Method for determination of hygroscopic moisture in analytical samples: gravimetric method

[ISO title: Aluminium ores — Determination of hygroscopic moisture in analytical samples — Gravimetric method]

UDC 553.492:543

National foreword

This Section of BS 6870 has been prepared under the direction of the Non-ferrous Metals Standards Committee. It is identical with ISO 8557:1985 "*Aluminium ores — Determination of hygroscopic moisture in analytical samples — Gravimetric method*", published by the International Organization for Standardization (ISO).

Terminology and conventions. The text of the International Standard has been approved as suitable for publication as a British Standard without deviation. Some terminology and certain conventions are not identical with those used in British Standards; attention is drawn especially to the following.

The comma has been used as a decimal marker. In British Standards it is current practice to use a full point on the baseline as the decimal marker.

Wherever the words "International Standard" appear, referring to this standard, they should be read as "Section of BS 6870".

Cross-reference

International Standard	Corresponding British Standard
ISO 8558:1985	BS 6870 *Analysis of aluminium ores* Section 2.1:1987 *Method of preparation of pre-dried test samples* (Identical)

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 and 2, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

This British Standard, having been prepared under the direction of the Non-ferrous Metals Standards Committee, was published under the authority of the Board of BSI and comes into effect on 28 August 1987

The following BSI references relate to the work on this standard:
Committee reference NFM/31
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Amendments issued since publication

Amd. No.	Date of issue	Comments

Contents

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1 Scope and field of application

This International Standard specifies a gravimetric loss of mass method for the determination of hygroscopic moisture in analytical samples of aluminium ores.

The method is applicable to products having hygroscopic moisture contents, expressed as water (H_2O), in the range 0,1 to 5 % (*m*/*m*), and shall be used to correct the results obtained for aluminium and loss of mass at 1 075 °C to a dry basis.

NOTE The hygroscopic moisture can be taken into account for other determinations by using a pre-dried sample prepared in accordance with ISO 8558.

2 Reference

ISO 8558, *Aluminium ores — Preparation of pre-dried test samples.*

3 Principle

Drying of the test portion in air at approximately 105 °C and recording of the loss of mass.

4 Material

4.1 Desiccant: activated alumina, magnesium perchlorate or diphosphorus pentoxide.

NOTE Activated alumina should be freshly activated by heating overnight at 300 ± 10 °C.

5 Apparatus

Ordinary laboratory apparatus and

5.1 *Weighing bottles*, of glass or metal, of diameter approximately 50 mm.

5.2 *Dishes*, flat bottom, for equilibration of samples with the laboratory atmosphere. The bottom of the dishes shall be about 20 cm^2 in area.

5.3 *Laboratory oven*, capable of being controlled at 105 ± 2 °C.

5.4 *Desiccator*

6 Sampling and samples

6.1 Sample

Use an air-dried sample with a particle size of less than 150 μm.

6.2 Preparation of the test sample

Take approximately 10 g of the laboratory sample and transfer to a dish (**5.2**). Spread the sample evenly and allow to equilibrate with the laboratory atmosphere for a minimum of 2 h.

7 Procedure

7.1 Number of determinations

Carry out the determination in duplicate on each aluminium ore.

7.2 Preparation of the weighing bottle

Dry a weighing bottle and lid (**5.1**) by heating for 1 h in the laboratory oven (**5.3**), controlled at 105 ± 2 °C. Transfer bottle and lid to the desiccator (**5.4**), containing a suitable fresh desiccant (**4.1**), and allow to cool. Weigh to the nearest 0,000 1 g after slightly lifting the lid and quickly replacing it. Record the mass (m_1).

NOTE A heat sink introduced into the desiccator and comprising a substantial mass of metal may be used to significantly reduce the cooling time.

7.3 Test portions

Weigh, to the nearest 0,000 1 g, approximately 2 g of pre-equilibrated test sample (**6.2**) directly into the dried and tared weighing bottle (**7.2**). Record the mass (m_2). Also at this stage weigh test portions required for the determination of constituents for which correction of the analytical values to a dry basis is required (e.g. loss of mass at 1 075 °C and aluminium content) and transfer such test portions to the vessels specified.

7.4 Determination

Transfer the uncovered bottle with its lid to the laboratory oven and dry at 105 ± 2 °C for 1 h. Close the bottle, allow to cool in the desiccator for 30 to 45 min and re-weigh after slightly lifting the lid and quickly replacing it.

NOTE Where a heat sink has been used in the desiccator, a 10 min cooling time will be sufficient.

Repeat the drying at 105 °C for 30 min, cooling in a desiccator for 30 to 45 min, and weighing steps for as many times as necessary to achieve constant mass in the test portion, i.e. until the difference between two successive weighings does not exceed 0,02 %. Record the constant mass (m_3).

8 Expression of results

The hygroscopic moisture content H, expressed as a percentage by mass as water (H_2O), is given by the formula

$$\frac{m_2 - m_3}{m_2 - m_1} \times 100$$

where

m_1 is the mass, in grams, of the weighing bottle;

m_2 is the mass, in grams, of the weighing bottle with ore before drying;

m_3 is the mass, in grams, of the weighing bottle with ore after drying.

Take as the final result the mean of the duplicate determinations.

9 Test report

The test report shall include the following information:

a) details necessary for the identification of the sample;

b) reference to this International Standard;

c) results of the analysis;

d) reference number of the results;

e) any characteristics noticed during the determination and any operations not specified in this International Standard or in the International Standard to which reference is made which may have had an influence on the results.

Publication referred to

See national foreword.

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