BRITISH STANDARD

BS
6043-4.4:2000
ISO/TS
14425:1999

Methods of sampling and test for carbonaceous materials used in aluminium manufacture —

Part 4: Cold ramming pastes—

Section 4.4: Determination of the volatile matter content of unbaked paste

ICS 71.100.10

National foreword

This British Standard reproduces verbatim ISO/TS 14425:1999 and implements it as the UK national standard. It supersedes BS 6043-4.4:1991 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee CII/24, Raw materials for the aluminium industry, which has the responsibility to:

— aid enquirers to understand the text;

— present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;

— monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this committee can be obtained on request to its secretary.

Cross-references

The British Standards which implement international or European publications referred to in this document may be found in the BSI Standards Catalogue under the section entitled "International Standards Correspondence Index", or by using the "Find" facility of the BSI Standards Electronic Catalogue.

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.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, the ISO/TS title page, pages ii to iv, pages 1 to 3 and a back cover.

The BSI copyright notice displayed in this document indicates when the document was last issued.

This British Standard, having been prepared under the direction of the Sector Committee for Materials and Chemicals, was published under the authority of the Standards Committee and comes into effect on 15 January 2000

ISBN 0 580 35778 3

Amendments issued since publication

Amd. No.	Date	Comments

TECHNICAL SPECIFICATION

ISO/TS 14425

First edition
1999-10-01

Carbonaceous materials used in the production of aluminium — Cold-ramming pastes — Determination of volatile-matter content of unbaked pastes

Produits carbonés utilisés pour la production de l'aluminium — Pâtes de brasquage à froid — Détermination de la teneur en matières volatiles des pâtes crues

Reference number
ISO/TS 14425:1999(E)

blank

Contents

Page

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

The main task of technical committees is to prepare International Standards. 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.

In other circumstances, particularly when there is an urgent market requirement for such documents, a technical committee may decide to publish other types of normative document:

— an ISO Publicly Available Specification (ISO/PAS) represents an agreement between technical experts in an ISO working group and is accepted for publication if it is approved by more than 50 % of the members of the parent committee casting a vote;

— an ISO Technical Specification (ISO/TS) represents an agreement between the members of a technical committee and is accepted for publication if it is approved by 2/3 of the members of the committee casting a vote.

An ISO/PAS or ISO/TS is reviewed every three years with a view to deciding whether it can be transformed into an International Standard.

Attention is drawn to the possibility that some of the elements of ISO/TS 14425 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO/TS 14425 was prepared by Technical Committee ISO/TC 47, *Chemistry*, Subcommittee SC 7, *Aluminium oxide, cryolite, aluminium fluoride, sodium fluoride, carbonaceous products for the aluminium industry*.

Carbonaceous materials used in the production of aluminium — Cold-ramming pastes — Determination of volatile-matter content of unbaked pastes

1 Scope

This Technical Specification describes a method for the determination of the volatile-matter content of unbaked cold-ramming pastes used in aluminium manufacture.

2 Normative reference

The following normative document contains provisions which, through reference in this text, constitute provisions of this Technical Specification. For dated references, subsequent amendments to, or revisions of, this publication do not apply. However, parties to agreements based on this Technical Specification are encouraged to investigate the possibility of applying the most recent edition of the normative document indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 14422:1999, *Carbonaceous materials used in the production of aluminium — Cold-ramming pastes — Sampling*.

3 Principle

A test portion of the cold-ramming paste contained in a lidded crucible is heated for 15 min in a furnace at 925 °C and the loss in mass is measured. The result, expressed as a percentage of the test portion mass, is the volatile-matter content.

4 Apparatus

Ordinary laboratory apparatus and the following:

4.1 Two silica crucibles, squat form, with lids, capacity approximately 50 ml, prepared for the determination by being heated in the electric furnace (4.2) at 925 °C ± 5 °C for a minimum period of 30 min, then placed in a desiccator to cool to ambient temperature and stored in the desiccator until required for use.

4.2 Electric furnace, capable of being maintained at 925 °C ± 5 °C and recovering the set temperature within 2 min of insertion of the crucibles (4.1) containing the test portions.

5 Sampling

Prepare a representative laboratory sample of cold-ramming paste in accordance with ISO 14422.

6 Preparation of test portions

Take two test portions, each of 10 g ± 0,1 g, from the laboratory sample (see clause 5) in accordance with 6.5.3 of ISO 14422:1999.

7 Procedure

Weigh a prepared crucible and lid (4.1) to the nearest 0,001 g. Transfer one test portion (see clause 6) to the crucible, replace the lid, then reweigh to the nearest 0,001 g.

Weigh a second prepared crucible and lid, transfer the second test portion to it, replace the lid and reweigh to the nearest 0,001 g.

Place the lidded crucibles with their contents in the electric furnace (4.2), maintained at 925 °C ± 5 °C, for 15 min. Remove the lidded crucibles and contents from the furnace and place them in a desiccator to cool to ambient temperature. Weigh the lidded crucibles and contents to the nearest 0,001 g.

8 Calculation and expression of results

Calculate the volatile-matter content V of each sample, as a percentage by mass, from the following equation:

$$V = \frac{100(M_2 - M_3)}{M_2 - M_1}$$

where

M_1 is the mass of the prepared crucible and lid, in grams;

M_2 is the mass of the same prepared crucible and lid but containing the test portion before heating, in grams;

M_3 is the mass of the same crucible and lid containing the test portion after heating, in grams.

Calculate the volatile-matter content of the cold-ramming paste as the arithmetic mean of the results of the two determinations calculated as above, expressed to one decimal place.

If the results of the two individual determinations differ by more than 0,5 % by mass, reject the results and repeat the procedure given in clause 7 with fresh test portions.

9 Precision

9.1 Repeatability

The means of the results of duplicate determinations carried out in the same laboratory by the same operator with the same apparatus but at different times on representative test portions taken from the same laboratory sample should not differ by more than 0,4 % absolute.

9.2 Reproducibility

The means of the results of duplicate determinations carried out in each of two laboratories on representative test portions taken from the same laboratory sample in each laboratory should not differ by more than 0,9 % absolute.

10 Test report

The test report shall include the following information:

a) all details necessary for complete identification of the test portion;

b) a reference to this Technical Specification, i.e. ISO/TS 14425:1999;

c) the result for the percentage content of volatile matter of the unbaked paste, calculated in accordance with clause 8 and expressed to one decimal place;

d) any unusual features noted during the determination;

e) any operation not included in this Technical Specification or regarded as optional.

BSI — British Standards Institution

BSI is the independent national body responsible for preparing British Standards. It presents the UK view on standards in Europe and at the international level. It is incorporated by Royal Charter.

Revisions

British Standards are updated by amendment or revision. Users of British Standards should make sure that they possess the latest amendments or editions.

It is the constant aim of BSI to improve the quality of our products and services. We would be grateful if anyone finding an inaccuracy or ambiguity while using this British Standard would inform the Secretary of the technical committee responsible, the identity of which can be found on the inside front cover. Tel: 020 8996 9000. Fax: 020 8996 7400.

BSI offers members an individual updating service called PLUS which ensures that subscribers automatically receive the latest editions of standards.

Buying standards

Orders for all BSI, international and foreign standards publications should be addressed to Customer Services. Tel: 020 8996 9001. Fax: 020 8996 7001.

In response to orders for international standards, it is BSI policy to supply the BSI implementation of those that have been published as British Standards, unless otherwise requested.

Information on standards

BSI provides a wide range of information on national, European and international standards through its Library and its Technical Help to Exporters Service. Various BSI electronic information services are also available which give details on all its products and services. Contact the Information Centre. Tel: 020 8996 7111. Fax: 020 8996 7048.

Subscribing members of BSI are kept up to date with standards developments and receive substantial discounts on the purchase price of standards. For details of these and other benefits contact Membership Administration. Tel: 020 8996 7002. Fax: 020 8996 7001.

Copyright

BSI
389 Chiswick High Road
London
W4 4AL