INTERNATIONAL STANDARD

ISO 8008

Second edition
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Aluminium oxide primarily used for the production of aluminium — Determination of specific surface area by nitrogen adsorption

Oxyde d'aluminium principalement utilisé pour la production de l'aluminium — Détermination de la surface spécifique par adsorption d'azote

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

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.

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

ISO 8008 was prepared by Technical Committee ISO/TC 226, *Materials for the production of primary aluminium*.

This second edition cancels and replaces the first edition (ISO 8008:1986), which has been technically revised.

Introduction

This International Standard is based on Australian Standard AS 2879.4-2003, *Alumina — Determination of specific surface area by nitrogen adsorption*.

Aluminium oxide primarily used for the production of aluminium — Determination of specific surface area by nitrogen adsorption

WARNING — Persons using this International Standard should be familiar with normal laboratory practice. This International Standard does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the user to establish appropriate safety and health practices and to ensure compliance with any national regulatory conditions.

1 Scope

This International Standard specifies an instrumental method for the determination of specific surface area (SSA) of smelter-grade alumina (SGA) by nitrogen adsorption by a single- or multi-point method. A multi-point method is recommended due to the higher accuracy obtained; if a single-point method is used, a lower result will be obtained.

NOTE Annex A provides an explanation of the difference between single- and multi-point determined BET SSA.

This International Standard is applicable to aluminas having a surface area between 50 m^2/g and 90 m^2/g.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

AS 2850-1986, *Chemical analysis — Interlaboratory test programs — For determining precision of analytical method(s) — Guide to the planning and conduct*

3 Principle

The method is based on the ability of a material to adsorb nitrogen molecules on its surface at the boiling point of liquid nitrogen. The instrument determines the quantity of nitrogen gas necessary to form a monolayer of gas molecules on the sample surface. The surface area can then be calculated using the basic theory developed by Brunauer-Emmett-Teller[1)]. A test sample is degassed at 150 °C. The degassing process can be carried out using either vacuum or a flowing nitrogen stream. After degassing, the sample is weighed. This mass, and the monolayer volume determined by the instrument, is used to calculate the specific surface area.

4 Reagents

Use only reagents of recognized analytical grade and only distilled water or water of equivalent purity.

1) S. Brunauer, P.H. Emmett and E. Teller, *J. Am Chem. Soc*. 60, p.309 (1938).