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BSI Standards Publication

Carbonaceous materials for the production of aluminium — Calcined coke for electrodes — Determination of the electrical resistivity of granules

This British Standard is the UK implementation of ISO 10143:2014. It supersedes BS 6043-2.10:1996 which is withdrawn.

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

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

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ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 226, *Materials for the production of primary aluminium*.

This second edition cancels and replaces the first edition (ISO 10143:1995), which has been technically revised.

Carbonaceous materials for the production of aluminium — Calcined coke for electrodes — Determination of the electrical resistivity of granules

1 Scope

This International Standard specifies a method for the determination of the electrical resistivity of granular carbon (calcined or graphitized) used in the manufacture of carbon electrodes for the production of aluminium.

The measurement of electrical resistivity assists in assessing the extent of coke calcination. The electrical resistivity of the coke aggregate will influence that of the coke electrodes made from it.

In general, a more highly calcined coke will have a lower electrical resistivity if other factors, such as grain size, are similar.

2 Normative references

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

ISO 6375, *Carbonaceous materials for the production of aluminium — Coke for electrodes — Sampling*

ISO 6997, *Carbonaceous materials for the production of aluminium — Calcined coke — Determination of apparent oil content — Heating method*

ISO 8723, *Carbonaceous materials for the production of aluminium — Calcined coke — Determination of oil content — Method by solvent extraction*

ISO 11412, *Carbonaceous materials for the production of aluminium — Calcined coke — Determination of water content*

3 Principle

A test portion of the granular carbon is placed in a cylindrical holder which has electrical contacts at the top and bottom. A fixed pressure is applied to the test portion to ensure good electrical contact and a fixed, constant direct current is applied. The voltage drop and the height of the column of granules are measured and the electrical resistivity is calculated.

4 Apparatus

Ordinary laboratory apparatus, plus the following:

4.1 Sample holder and plunger, with removable base for cleaning as shown in Figure 1.

4.2 Length-measuring device, capable of measuring the movement of the compression plunger to ± 0,02 mm.

4.3 Brass reference cylinder, having a height of 20 mm ± 0,01 mm and a diameter of 29 mm, used for calibrating the length-measuring device (4.2).