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Carbonaceous materials for the production of aluminium — Petroleum coke — Determination of trace metals by inductively coupled plasma atomic emission spectrometry

Produits carbonés pour la production de l'aluminium — Coke de pétrole — Détermination des métaux à l'état de trace par spectrométrie d'émission atomique avec plasma induit par haute fréquence

Reference number
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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 14435 was prepared by Technical Committee ISO/TC 226, *Materials for the production of primary aluminium*.

Introduction

The presence and concentration of various metallic elements in a petroleum coke are major factors in determining the suitability of the coke for various end-uses. Users of petroleum coke require a standard procedure to determine the concentrations of these metallic elements in a coke sample. This International Standard describes such a procedure.

This International Standard is based on ASTM method D5600-98, published under the jurisdiction of ASTM Committee D2 on Petroleum Products and Lubricants and Subcommittee DO2.05.01 on Petroleum Coke Sampling and Procedures.

The repeatability and reproducibility information is based on an interlaboratory trial, which is reported in Research Report D02-1007 available from ASTM Headquarters.

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WARNING — This International Standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

1 Scope

This International Standard applies to carbonaceous materials for the production of aluminium.

This International Standard describes a test method which covers the analysis for commonly determined trace metals in test specimens of raw and calcined petroleum coke by inductively coupled plasma atomic emission spectroscopy. It can also be applied to other heat-treated carbonaceous materials e.g. coal-tar pitch coke, anthracite.

Elements to which this test method applies are listed in Table 1. Detection limits, sensitivity, and optimum ranges of the metals will vary with the matrices and model of spectrometer.

This test method is applicable only to samples containing less than a mass fraction of 1 % ash.

Elements present at concentrations above the upper limit of the working ranges can be determined with additional, appropriate dilutions.

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.

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

ISO 3696:1987, *Water for analytical laboratory use — Specification and test methods*

ISO 3310-1, *Test sieves — Technical requirements and testing — Part 1: Test sieves of metal wire cloth*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
petroleum coke
solid, carbonaceous residue produced by thermal decomposition of heavy petroleum fractions and cracked stocks