International Standard

ISO 20336

Coal and coke — Determination of total sulfur by Coulomb titration method

Charbon et coke — Détermination de la teneur totale en soufre par la méthode de titrage de Coulomb

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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

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Foreword

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This document was prepared by Technical Committee ISO/TC 27, *Coal and coke,* Subcommittee SC 5, *Methods of analysis*.

This second edition cancels and replaces the first edition (ISO 20336:2017), which has been technically revised.

The main changes are as follows:

— replaced “solid mineral fuels” with “coal and coke” and “content” with “mass fraction”;

— added Figure 2 of a purified air stream supply system;

— added a note to 8.1.4.

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Introduction

The objective of this document is to provide an alternative method for determining the total sulfur mass fraction in coal and coke with high-temperature combustion by Coulomb titration using automated instruments.

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Coal and coke — Determination of total sulfur by Coulomb titration method

1 Scope

This document specifies an alternative method of determining the total sulfur mass fraction of coal and coke by high-temperature combustion by Coulomb titration.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 687, *Coke — Determination of moisture in the general analysis test sample*

ISO 5068-2, *Brown coals and lignites — Determination of moisture content — Part 2: Indirect gravimetric method for moisture in the analysis sample*

ISO 11722, *Solid mineral fuels — Hard coal — Determination of moisture in the general analysis test sample by drying in nitrogen*

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

4 Principle

In the presence of the catalyst, a sample of known mass is combusted at 1 150 °C in a stream of purified air. The sulfur oxides are formed and dissolved in the electrolytic solution. The sulfur dioxides are titrated by the iodine and bromine librated from the electrolysis of the potassium iodide and potassium bromide solution. The quantity of the electricity consumed by electrolysis is integrated and used to calculate the mass fraction of sulfur dioxides. The instrument is calibrated with certified reference materials. The percentage of total sulfur in the sample is calculated according to the sulfur dioxides mass fraction and the prior calibration.

5 Reagent and materials

During the analysis, unless otherwise stated, use only reagents of recognized analytical grade and only distilled water or water of equivalent purity.

5.1 Potassium iodide.

5.2 Potassium bromide.

5.3 Glacial acetic acid.

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