International Standard

ISO 15237

Coal — Determination of total mercury

Charbon — Dosage du mercure total

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Foreword

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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 document 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 of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

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

This third edition cancels and replaces the second edition (ISO 15237:2016), which has been technically revised.

The main changes are as follows:

— Clause 2 has been updated;

— a new Clause 11 specifying direct combustion analysis has been added and subsequent clauses have been renumbered;

— Formula (1) has been modified;

— the reporting requirement for results has been modified.

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Introduction

Mercury occurs naturally in coal. It is an element that can be released during the combustion process.

The determination of the total mercury mass fraction of coal cannot be accomplished satisfactorily by traditional ashing and digestion procedures because of the volatility of the element.

Quantitative recovery can be achieved by strict adherence to the procedure set out in this document.

Instrumental methods for a more rapid determination of total mercury mass fraction are available. If such a method is used, it is important to demonstrate that the method is free from bias, when compared with this reference method, and gives levels of repeatability and reproducibility which are the same, or better than, those quoted for the reference method (see Clause 10).

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Coal — Determination of total mercury

1 Scope

This document specifies a procedure for the determination of the total mercury mass fraction of coal.

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 1928, *Coal and coke — Determination of gross calorific value*

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

ISO 5068-2, *Brown coals and lignites — Determination of moisture — 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*

ISO 13909-4, *Coal and coke — Mechanical sampling — Preparation of test samples of coal*

ISO 18283, *Coal and coke — Manual sampling*

ASTM 6722, *Standard Test Method for Total Mercury in Coal and Coal Combustion Residues by Direct Combustion Analysis*

3 Terms and definition

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

The sample is burned in an oxygen bomb, the mercury species formed during combustion being absorbed in water. The mercury species present in the water are reduced by stannous chloride and quantified by flameless cold vapour atomic absorption spectroscopy.

It is reported that lithium borohydride ($LiBH_4$) and sodium borohydride ($NaBH_4$) are satisfactory for the reduction instead of stannous chloride. Laboratories using these reductants must demonstrate that the performance is equivalent to that using stannous chloride.

Alternately, direct combustion with quantification by atomic absorption spectroscopy.

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