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Solid mineral fuels — Determination of total mercury content of coal

Combustibles minéraux solides — Dosage du mercure total dans le charbon

Reference number
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Contents

Page

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).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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 World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

The committee responsible for this document is ISO/TC 27, *Solid mineral fuels*, Subcommittee SC 5, *Methods of analysis*.

This second edition cancels and replaces the first edition (ISO 15237:2003), which has been technically revised. This document incorporates changes related to dated references and other minor items following its systematic review.

Introduction

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

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

Quantitive 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 content are available. If such a method is to be used, it is important to demonstrate that the method is free from bias, when compared with this reference method and will give levels of repeatability and reproducibility which are the same, or better than, those quoted for the reference method (see Clause 10).

Solid mineral fuels — Determination of total mercury content of coal

1 Scope

This document specifies a procedure for the determination of the total mercury content 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 1170, *Coal and coke — Calculation of analyses to different bases*

ISO 1928, *Solid mineral fuels — Determination of gross calorific value by the bomb calorimetric method and calculation of net calorific value*

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

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

ISO 5069-2, *Brown coals and lignites — Principles of sampling — Part 2: Sample preparation for determination of moisture content and for general analysis*

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

3 Terms and definition

No terms and definitions are defined in this document.

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

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

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

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 should demonstrate that the performance is equivalent to that using stannous chloride.

5 Reagents

WARNING — Care should be exercised when handling the reagents, many of which are toxic and corrosive.

During the analysis, unless otherwise stated, use only reagents of recognized analytical grade.