
**Solid mineral fuels — Determination of
sulfur by IR spectrometry**

*Combustibles minéraux solides — Détermination du soufre par
spectrométrie infrarouge*



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Foreword

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Introduction

Sulfur is normally present in coal in three forms; inorganic sulfides such as pyrite (FeS_2), inorganic sulfates associated with the mineral matter and organic sulfur in the carbonaceous substance.

This International Standard describes a high-temperature combustion/infrared absorption method of analysis, which is used to determine the total sulfur content of coal.

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Solid mineral fuels — Determination of sulfur by IR spectrometry

1 Scope

This International Standard specifies an alternative method of determining the total sulfur content of hard coal, brown coal, and lignite by high-temperature combustion and infrared (IR) absorption using commercially available instruments.

This method has been shown to be applicable to coal samples having an ash yield of less than 40 %.

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 334, *Solid mineral fuels — Determination of total sulfur — Eschka method*

ISO 351, *Solid mineral fuels — Determination of total sulfur — High temperature combustion method*

ISO 687, *Solid mineral fuels — 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 Principle

The coal sample is combusted at 1 350 °C in a stream of oxygen. Particulates and water vapour are removed from the gas stream by traps of glass wool and magnesium perchlorate. The gas stream then passes through a cell in which the sulfur dioxide is measured by an infrared absorption detector, connected to a microprocessor. The instrument is calibrated with standard reference materials. The percentage of sulfur in the sample is calculated from this prior calibration by the microprocessor.

4 Apparatus

4.1 Instrument, commercially available, consisting of the following:

- a) resistance furnace, capable of maintaining a temperature of approximately 1 350 °C in the combustion zone;
- b) combustion tube, of ceramic material, to contain the sample and combustion gases;