



**International
Standard**

ISO 14720-1

**Testing of ceramic materials —
Determination of sulfur in non-
oxidic ceramic raw materials and
ceramic materials —**

**Part 1:
Infrared measurement methods**

*Analyse des matériaux céramiques — Dosage du soufre dans les
produits et les matières premières céramiques non oxydes —*

Partie 1: Méthodes d'essai par infrarouge

**Second edition
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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.

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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This document was prepared by Technical Committee ISO/TC 33, *Refractories*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 187, *Refractory products and materials*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 14720-1:2013), which has been technically revised.

The main changes are as follows:

- title of this document has been revised to better describe its field of application;
- [Clause 1](#) adapted to the new title;
- [Clauses 2](#) and [3](#) added, noting that neither add any normative references or terms and definitions to the document;
- ultraviolet absorption cell was added to [Clause 4](#) and [5.1](#);
- resistance furnace removed from [5.1](#);
- storage of pre-cleaned crucibles in a desiccator added to [9.1](#);
- [subclause 9.3](#) adds more detail about the use of combustion accelerators.

A list of all parts in the ISO 14720 series can be found on the ISO website.

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.

Testing of ceramic materials — Determination of sulfur in non-oxidic ceramic raw materials and ceramic materials —

Part 1: Infrared measurement methods

1 Scope

This document specifies a method for the determination of sulfur in non-oxidic ceramic raw materials and ceramic materials, such as silicon carbides, silicon nitrides, graphites, carbon blacks, cokes, carbon powders. If demonstrated by the recovery rate, this document can also be applied for other non-metallic powdered and granular materials, e.g. silicon dioxide.

This document is applicable for materials with mass fractions of sulfur from 0,005 % to 2 %.

This document can also be applied for materials with higher mass fractions of sulfur after verification of the particular case.

2 Normative references

There are no normative references in this document.

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

The sample and added combustion accelerators (mostly tungsten-, tin- or iron-granules) are heated in an inductive furnace under oxygen atmosphere. The high-frequency field of the furnace couples with electrically conductive components of sample and combustion accelerators. The sample is heated to temperatures above 1 800 °C and the total sulfur content of the sample is released as sulfur dioxide. The reaction gas is transferred to the infrared or ultraviolet absorption cell of the analyser. The molecular absorption of sulfur dioxide is measured by using a narrow-band optical filter which is translucent for the wavelength of the characteristic infrared or ultraviolet absorption of sulfur dioxide. The mass fraction of sulfur dioxide in the reaction gas is proportional to peak-height and peak-area, respectively, of the transient absorption signal. The mass fraction of sulfur in the sample is calculated by using a calibration function established by suitable calibration samples measured under comparable conditions.