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

Part 2:

**Inductively coupled plasma optical emission spectrometry (ICP/OES) or ion chromatography after burning in an oxygen flow**

*Essais des matières premières pour produits réfractaires — Dosage du soufre dans les matières premières non oxydantes sous forme de poudre et de granulés —*

*Partie 2: Spectrométrie d'émission optique avec plasma induit par haute fréquence (ICP/OES) ou chromatographie ionique après combustion dans un courant d'oxygène*



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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 14720-2 was prepared by Technical Committee ISO/TC 33, *Refractories*.

ISO 14720 consists of the following parts, under the general title *Testing of ceramic raw and basic materials — Determination of sulfur in powders and granules of non-oxidic ceramic raw and basic materials*:

- *Part 1: Infrared measurement methods*
- *Part 2: Inductively coupled plasma optical emission spectrometry (ICP/OES) or ion chromatography after burning in an oxygen flow*

# Testing of ceramic raw and basic materials — Determination of sulfur in powders and granules of non-oxidic ceramic raw and basic materials —

## Part 2: Inductively coupled plasma optical emission spectrometry (ICP/OES) or ion chromatography after burning in an oxygen flow

### 1 Scope

This part of ISO 14720 defines a method for the determination of sulfur in powdered and granular non-oxidic ceramic raw materials and materials, which are completely oxidized at a higher temperature in an oxygen atmosphere, e.g. carbon and graphite materials.

For materials which are not completely oxidizable under these conditions, it is possible to determine sulfur that can be released under these conditions, e.g. the adherent sulfur.

This part of ISO 14720 is applicable for materials with mass fractions of sulfur  $\leq 10\%$  and mass fractions of ash  $< 20\%$ . The defined method is limited for materials with mass fractions of barium  $< 10\text{ mg/kg}$ , because the sulfur bonded in barium sulfate is not detectable with this method.

For the lower detection limit of this method, a mass fraction of sulfur of  $0,5\text{ mg/kg}$  in the case of inductively coupled plasma optical emission spectrometry (ICP/OES) and  $5\text{ mg/kg}$  in the case of ion chromatography (IC) has to be considered as a recommended value.

### 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 11885, *Water quality — Determination of selected elements by inductively coupled plasma optical emission spectrometry (ICP-OES)*

ISO 10304-1, *Water quality — Determination of dissolved anions by liquid chromatography of ions — Part 1: Determination of bromide, chloride, fluoride, nitrate, nitrite, phosphate and sulfate*

### 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

#### 3.1

##### sulfur content

mass fraction of inorganic and organic bound sulfur

### 4 Principle

The dried sample is oxidized in a flow of oxygen at a temperature of  $1\ 100\text{ °C}$  using a porcelain crucible. The resulting sulfur oxides are absorbed in a solution of sodium hydroxide and hydrogen peroxide. The