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Chemical analysis of raw materials and refractory products containing silicon-carbide, silicon-nitride, silicon-oxynitride and sialon

Part 3: Determination of nitrogen, oxygen and metallic and oxidic constituents

Analyse chimique des matières premières et des produits réfractaires contenant du carbure de silicium, du nitrure de silicium, de l'oxynitride de silicium et du sialon

~~Partie 3: Dosage de l'azote, de l'oxygène et des constituants métalliques et oxydiques SiAlON~~

~~Partie 3: Dosage de l'azote, de l'oxygène et des constituants métalliques et oxydés~~

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Contents—Page

Foreword.....	vii
Introduction.....	ix
1 Scope.....	1
2 Normative references.....	1
3 Terms and definitions.....	2
4 Determination of nitrogen and oxygen.....	2
4.1 General.....	2
4.2 Combined determination of nitrogen and oxygen by an analyser with thermal conductivity (TC) and infrared (IR) absorption detection.....	3
4.2.1 Principle.....	3
4.2.2 Reagents.....	3
4.2.3 Apparatus.....	4
4.2.4 Nickel pre-treatment.....	4
4.2.5 Calibration.....	4
4.2.6 Procedure.....	4
4.2.7 Precision.....	5
4.3 Determination of total nitrogen content by fusion decomposition.....	5
4.3.1 General.....	5
4.3.2 Principle.....	5
4.3.3 Reagents.....	5
4.3.4 Apparatus.....	6
4.3.5 Sample preparation.....	8
4.3.6 Procedure.....	8
4.3.7 Calculation and expression of results.....	8
4.3.8 Precision.....	9
4.4 Determination of total nitrogen content by Kjeldahl distillation.....	9
4.4.1 Principle.....	9
4.4.2 Reagents.....	10
4.4.3 Apparatus.....	10
4.4.4 Sample preparation.....	10
4.4.5 Procedure.....	10
4.4.6 Calculation and expression of results.....	11
4.4.7 Precision.....	11
4.5 Calculation of Si ₃ N ₄ content using total nitrogen content.....	12
4.5.1 Calculation.....	12

Restricted

ISO/DIS/IDIS 21068-3:2023(E)2024(en)

5	Determination of soluble iron by extraction with hydrochloric acid followed by inductively coupled plasma-optical emission spectrometry (ICP-OES)	12
5.1	General	12
5.2	Principle	12
5.3	Apparatus	12
5.4	Reagents	13
5.5	Sample preparation	13
5.6	Procedure	13
5.7	Measurement	13
5.8	Calculation	13
6	Determination of metallic (free) aluminium by the hydrogen generating method	14
6.1	Principle	14
6.2	Reagents	14
6.3	Apparatus	14
6.4	Sample preparation	14
6.5	Procedure	14
6.6	Calculation and expression of results	15
7	Determination of acid soluble aluminium and magnesium	15
7.1	General	15
7.2	Reagents	16
7.3	Procedure	16
7.4	Measurement	16
7.5	Precision	16
8	Determination of elemental impurities in SiC raw materials	16
8.1	General	17
8.1.1	Alkaline melt fusion	17
8.1.2	Acid pressure decomposition	19
8.2	Determination of impurities by XRF (fused bead method)	20
8.3	Determination of impurities by DC-Arc-OES (direct solid sampling method)	20
9	Expression of results	20
10	Test report	20
	Annex A (informative) Precision data	21
A.1	Precision data for the determination of total nitrogen and total oxygen by inert-gas fusion (4.2) in a silicon carbide powder sample	21
A.2	Precision data for the determination of total nitrogen by fusion decomposition (4.3) in a silicon nitride powder sample	23
A.3	Precision data for the determination of total nitrogen by Kjeldahl distillation (4.4) in a silicon nitride powder sample	24

Restricted

ISO/DISDIS 21068-3:2023(E)2024(en)

A.4 Precision data for the determination of acid soluble (free) aluminium and acid soluble (free) magnesium by acid decomposition / ICP-OES (Clause 7) in refractories containing carbon 25

Bibliography 27

1 Scope 1

2 Normative references 1

3 Terms and definitions 2

4 Determination of nitrogen and oxygen 2

4.1 General 2

4.2 Combined determination of nitrogen and oxygen by an analyser with thermal conductivity (TC) and infrared (IR) absorption detection 2

4.3 Determination of total nitrogen content by fusion decomposition 7

4.4 Determination of total nitrogen content by Kjeldahl distillation 12

4.5 Calculation of Si₃N₄ content using total nitrogen content 15

5 Determination of soluble iron by extraction with hydrochloric acid followed by inductively coupled plasma-optical emission spectrometry (ICP-OES) 16

5.1 General 16

5.2 Principle 16

5.3 Apparatus 16

5.4 Reagents 16

5.5 Sample preparation 16

5.6 Procedure 17

5.7 Measurement 17

5.8 Calculation 17

6 Determination of metallic (free) aluminium by the hydrogen generating method 17

6.1 Principle 17

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Restricted

ISO/~~DIS~~FDIS 21068-3:2023(E)2024(en)

6.2 Reagents	18
6.3 Apparatus	18
6.4 Sample preparation	18
6.5 Procedure	18
6.6 Calculation and expression of results	18
7 Determination of acid soluble aluminium and magnesium	19
7.1 General	19
7.2 Reagents	19
7.3 Procedure	19
7.4 Measurement	19
8 Determination of elemental impurities in SiC raw materials	20
8.1 General	20
8.2 Determination of impurities by XRF (fused bead method)	23
8.3 Determination of impurities by DCArc-OES (direct method)	23
9 Expression of results	24
10 Test report	24
Annex A Precision data	25

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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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 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 21068-3:2008), which has been ~~editorially and~~ technically revised.

The main changes are as follows:

- ~~The methods described in ISO 12698-1:2007 for the determination of free aluminium, total nitrogen and free alumina were inserted into~~ have been included in this document;
- ~~Methods~~ methods that are no longer used in practice have been removed;
- ~~The list of documents in Normative References has been adjusted;~~
— ~~Bibliography was adjusted to this document;~~
- ~~The entire normative references and bibliography have been updated;~~
- document has been ~~comprehensively~~ editorially revised ~~with respect to~~.

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viii

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viii
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Introduction

The ISO 21068 series has been developed from the combination of EN 12698-1:2007^[1] and EN 12698-2:2007^[2] and ISO 21068-1:2008^[3], ISO 21068-2:2008^[4] and ISO 21068-3:2008^[5]. The latter has been originally developed from the combination of Japanese standard JIS R 2011:2007^[6] and work items developed within CEN. Because there is a wide variety of laboratory equipment in use, the most commonly used methods are described.

ISO 21068-4 is derived from EN 12698-2:2007^[2] describing XRD methods for the determination of mineralogical phases typically apparent in nitride and oxy-nitride bonded silicon carbide refractory products using a Bragg-Brentano diffractometer.

This document is also applicable to the analysis of SiC raw materials.

Except the XRD method specified in ISO 21068-4, all chemical methods specified in this document are only validated for SiC raw materials. For refractory products classified in ISO 10081-1^[7], ISO 10081-2^[8], ISO 10081-3^[9] and ISO 10081-4^[10] (shaped) and ISO 1927-1^[11] (unshaped) and raw materials containing carbon and/or silicon carbide this document applies after appropriate verification for any matrix composition.

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~~Chemical analysis of raw materials and refractory products containing silicon-carbide, silicon-nitride, silicon-oxynitride and sialon —~~

~~Part 3:~~

~~Determination of nitrogen, oxygen and metallic and oxide constituents~~

Chemical analysis of raw materials and refractory products containing silicon-carbide, silicon-nitride, silicon-oxynitride and sialon —

Part 3:

Determination of nitrogen, oxygen and metallic and oxidic constituents

1 Scope

This document specifies analytical techniques for the determination of total nitrogen and nitrogen calculated as silicon nitride, total oxygen, and metallic and oxidic components in silicon carbide raw materials and refractory products.

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 10058-1, *Chemical analysis of magnesite and dolomite refractory products (alternative to the X-ray fluorescence method)* — Part 1: Apparatus, reagents, dissolution and determination of gravimetric silica

ISO 10058-2, *Chemical analysis of magnesite and dolomite refractory products (alternative to the X-ray fluorescence method)* — Part 2: Wet chemical analysis

ISO 10058-3, *Chemical analysis of magnesite and dolomite refractory products (alternative to the X-ray fluorescence method)* — Part 3: Flame atomic absorption spectrophotometry (FAAS) and inductively coupled plasma atomic emission spectrometry (ICP-AES)

ISO 12677, *Chemical analysis of refractory products by X-ray fluorescence (XRF) — Fused cast-bead method*

ISO 16169, *Preparation of silicon carbide and similar materials for analysis by ISO 12677*

ISO 20565-1, *Chemical analysis of chrome-bearing refractory products and chrome-bearing raw materials (alternative to the X-ray fluorescence method)* — Part 1: Apparatus, reagents, dissolution and determination of gravimetric silica

ISO 20565-2, *Chemical analysis of chrome-bearing refractory products and chrome-bearing raw materials (alternative to the X-ray fluorescence method)* — Part 2: Wet chemical analysis