

# ISO 21068-3:2024-06 (E)

## 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

---

<b>Contents</b>		<b>Page</b>
Foreword		v
Introduction		vi
<b>1</b>	<b>Scope</b>	<b>1</b>
<b>2</b>	<b>Normative references</b>	<b>1</b>
<b>3</b>	<b>Terms and definitions</b>	<b>2</b>
<b>4</b>	<b>Determination of nitrogen and oxygen</b>	<b>2</b>
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
4.2.1	Principle	2
4.2.2	Reagents	3
4.2.3	Apparatus	3
4.2.4	Nickel pre-treatment	3
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	5
4.3.5	Sample preparation	6
4.3.6	Procedure	6
4.3.7	Calculation and expression of results	7
4.3.8	Precision	8
4.4	Determination of total nitrogen content by Kjeldahl distillation	8
4.4.1	Principle	8
4.4.2	Reagents	8
4.4.3	Apparatus	9
4.4.4	Sample preparation	9
4.4.5	Procedure	9
4.4.6	Calculation and expression of results	10
4.4.7	Precision	10
4.5	Calculation of Si <sub>3</sub> N <sub>4</sub> content using total nitrogen content	10
4.5.1	Calculation	10
<b>5</b>	<b>Determination of soluble iron by extraction with hydrochloric acid followed by inductively coupled plasma-optical emission spectrometry (ICP-OES)</b>	<b>10</b>
5.1	General	10
5.2	Principle	11
5.3	Apparatus	11
5.4	Reagents	11
5.5	Sample preparation	11
5.6	Procedure	11
5.7	Measurement	11
5.8	Calculation	12
<b>6</b>	<b>Determination of metallic (free) aluminium by the hydrogen generating method</b>	<b>12</b>

6.1	Principle .....	12
6.2	Reagents .....	12
6.3	Apparatus .....	12
6.4	Sample preparation .....	13
6.5	Procedure .....	13
6.6	Calculation and expression of results .....	13
<b>7</b>	<b>Determination of acid soluble aluminium and magnesium .....</b>	<b>14</b>
7.1	General .....	14
7.2	Reagents .....	14
7.3	Procedure .....	14
7.4	Measurement .....	14
7.5	Precision .....	14
<b>8</b>	<b>Determination of elemental impurities in SiC raw materials .....</b>	<b>14</b>
8.1	General .....	15
	8.1.1 Alkaline melt fusion .....	15
	8.1.2 Acid pressure decomposition .....	16
8.2	Determination of impurities by XRF (fused bead method) .....	18
8.3	Determination of impurities by DCArc-OES (direct solid sampling method) .....	18
<b>9</b>	<b>Expression of results .....</b>	<b>18</b>
<b>10</b>	<b>Test report .....</b>	<b>18</b>
	<b>Annex A (informative) Precision data .....</b>	<b>19</b>
	<b>Bibliography .....</b>	<b>24</b>