

# DIN EN ISO 17947:2023-06 (E)

## Fine ceramics (advanced ceramics, advanced technical ceramics) - Methods for chemical analysis of fine silicon nitride powders (ISO 17947:2014)

---

<b>Contents</b>		<b>Page</b>
<b>European foreword</b>		<b>4</b>
<b>Foreword</b>		<b>5</b>
<b>Introduction</b>		<b>6</b>
<b>1 Scope</b>		<b>7</b>
<b>2 Normative references</b>		<b>7</b>
<b>3 Analytes and ranges</b>		<b>8</b>
<b>4 Preparation of test sample</b>		<b>8</b>
4.1 Sampling		8
4.2 Drying		8
4.3 Weighing		8
<b>5 Apparatus and reagents</b>		<b>8</b>
<b>6 Blank test</b>		<b>8</b>
<b>7 Determination of total silicon</b>		<b>9</b>
7.1 Classification of determination methods		9
7.2 Fusion-dehydration/insolubilization separation-gravimetry and ICP-OES		9
7.3 XRF using fused cast-bead method		11
<b>8 Determination of total nitrogen</b>		<b>11</b>
8.1 Classification of determination methods		11
8.2 Acid pressure decomposition-distillation separation-acidimetric titration method		11
8.3 Inert gas fusion-thermal conductivity method		16
8.4 Fusion-ammonia separation-acidimetric titration method		19
<b>9 Determination of aluminium, iron, and calcium</b>		<b>19</b>
9.1 Principle		19
9.2 Reagents		19
9.3 Apparatus and instrument		20
9.4 Procedure		20
9.5 Blank test		21
9.6 Drawing calibration curve		21
9.7 Calculation		21
<b>10 Determination of oxygen</b>		<b>22</b>
10.1 Principle		22
10.2 Reagents		22
10.3 Apparatus		22
10.4 Instrument		22
10.5 Procedure		22
10.6 Blank test		22
10.7 Calculation of calibration coefficient		22
10.8 Calculation		23
<b>11 Determination of carbon</b>		<b>23</b>
11.1 Classification of determination methods		23
11.2 Combustion (RF furnace)-IR absorption spectrometry		23
11.3 Combustion (resistance furnace)-coulometry		26

11.4	Combustion (resistance furnace)-gravimetry .....	26
11.5	Combustion (resistance furnace)-conductometry .....	26
<b>12</b>	<b>Determination of fluorine and chlorine .....</b>	<b>26</b>
12.1	Principle .....	26
12.2	Reagents .....	26
12.3	Apparatus and instruments .....	27
12.4	Procedure .....	27
12.5	Blank test .....	28
12.6	Drawing calibration curve .....	28
12.7	Calculation .....	28
<b>13</b>	<b>Reporting analytical values .....</b>	<b>29</b>
13.1	Number of analyses .....	29
13.2	Evaluation of analytical values .....	29
13.3	Expression of analytical values .....	29
<b>14</b>	<b>Test report .....</b>	<b>30</b>
<b>Annex A (informative) List of commercial certified reference materials .....</b>		<b>31</b>
<b>Annex B (informative) Analytical results obtained from a round robin test .....</b>		<b>32</b>
<b>Annex C (informative) Spectral lines for ICP-OES .....</b>		<b>37</b>
<b>Bibliography .....</b>		<b>38</b>