

ISO 21068-2:2008-08 (E)

Chemical analysis of silicon-carbide-containing raw materials and refractory products - Part 2: Determination of loss on ignition, total carbon, free carbon and silicon carbide, total and free silica and total and free silicon

Contents		Page
Foreword		v
Introduction		vi
1	Scope	1
2	Normative references	1
3	Terms and definitions	1
4	Determination of change in mass	2
4.1	General	2
4.2	Determination of the loss on drying at 250 °C (LOD250) gravimetric method	2
4.3	Determination of the loss on calcination in argon (LOI _{Ar})	3
4.4	Determination of the change in mass by heat pretreatment in air	5
4.5	Determination of the change in mass at 750 °C (LOI ₇₅₀)	6
4.6	Determination of loss on ignition at 850 °C (LOI ₈₅₀)	7
4.7	Determination of loss on ignition at 1 050 °C (LOI _{1 050})	7
5	Determination of the total carbon content	8
5.1	General	8
5.2	Combustion techniques	9
5.3	Detection techniques	12
5.4	Detection methods	17
6	Determination of free carbon content	24
6.1	General	24
6.2	Sample decomposition by combustion	24
6.3	Detection techniques	24
6.4	Direct detection methods	24
6.5	Indirect detection methods	29
6.6	Direct determination of free carbon by wet oxidation	33
7	Determination of silicon carbide content, SiC	33
7.1	General	33
7.2	Determination of silicon carbide, SiC, by indirect quantitative method	34
7.3	Determination of silicon carbide, SiC, by direct quantitative method	34
7.4	Determination of silicon carbide SiC by ignition method at 750 °C	35
7.5	Determination of silicon carbide, SiC, by chemical method	36
8	Determination of total silicon content via silica	38
8.1	Principle	38
8.2	Reagents	38
8.3	Apparatus	38
8.4	Procedure	39
8.5	Blank test	39
8.6	Calculation	40
9	Determination of free silicon content	40

9.1	Principle	40
9.2	Pretreatment with hydrochloric acid	40
9.3	Silicon determination by hydrogen evolution	40
9.4	Silicon determination by silver displacement	43
10	Determination of silica content, SiO ₂	45
10.1	General	45
10.2	Determination of free and/or combined silica content, SiO ₂	45
10.3	Determination of free silica, SiO ₂	46
10.4	Determination of surface silicon dioxide, SiO ₂	46
11	Expression of results	46
12	Test report	46
Annex A (informative) Examples of CRMs for calibration of carbon analyser		47
Bibliography		48