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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 16555-2025

Replacing GB/T 16555-2017

**Chemical analysis of refractories containing carbon, silicon
carbide or nitride**

含碳、碳化硅、氮化物耐火材料化学分析方法

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Table of Contents

1	Scope
2	Normative references
3	Terms and Definitions
4	Instruments and Equipment
4.1	Balance. graduation value
5	Sample Preparation
5.2	Preparation
5.2.1	Crush the experimental sample to pass through a
6	General Rules
7	Determination of heat treatment loss
8	Determination of loss on ignition and volatile matter
9	Determination of total carbon content
10	Determination of Free Carbon Content
11	Determination of silicon carbide content
12	Determination of total nitrogen and total oxygen content
13	Determination of silicon nitride content
14	Determination of Free Silicon Content
15	Determination of Free Aluminum Content
16	Determination of iron oxide and aluminum oxide content - EDTA volumetric method (continuous titration of iron and aluminum)
17	Determination of the amount of oxides [silicon dioxide, aluminum oxide, iron oxide, titanium dioxide, calcium oxide, magnesium oxide, potassium oxide, sodium oxide,...] Zirconium oxide (hafnium), hafnium oxide, yttrium oxide, chromium trioxide, manganese monoxide, phosphorus pentoxide]

Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part

1. Structure and Drafting Rules of Standardization Documents". Drafting. This document replaces GB/T 16555-2017 "Chemical Analysis Methods for Carbon-Containing, Silicon Carbide, and Nitride Refractory Materials", and is consistent with GB/T 16555- Compared to.2017, aside from structural adjustments and editorial changes, the main technical changes are as follows:

- a) An electric furnace and a pH meter were added (see 4.5, 4.12);
- b) The regulations for pure water have been changed (see 6.1.1, see 6.1.1 in the.2017 version);
- c) The holding time for determining the loss on ignition at 850°C using the box furnace oxidation method was modified, and the determination of loss on ignition at 1050°C was added. Method (see 8.2);
- d) The reaction equation was modified (see 14.1.1, 15.1.1 in the.2017 version);
- e) Added specifications for the volume of gas measuring tubes and reference tubes (see 14.1.2.10);
- f) The determination of hafnium oxide and yttrium oxide has been added (see Chapter 17);
- g) The analysis items and test personnel in the test report have been added (see Chapter 18). Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents. This document was proposed and is under the jurisdiction of the National Technical Committee on Standardization of Refractory Materials (SAC/TC193). This document was drafted by: China Steel Group Luoyang Refractory Materials Research Institute Co., Ltd., and Shanghai Xintaishan High Temperature Engineering Materials Co., Ltd. Yixing Refractory Materials Co., Ltd., Luoyang Lier Functional Materials Co., Ltd., and Changxing Xingying New Refractory Building Materials Co., Ltd. The main drafters of this document are. Xu Xiaoying, Cao Haijie, Lei Xiaoyu, Li Hongbo, Yuan Biao, Zhao Wei, Xu Gao, Ao Ping, Li Yongwei, Sun Xudong, and Yan Hao. Wang Qiang, Wang Xiaoli, Ma Sikai, Liu Lei. The document replaced by this document has been released in the following versions.

---First published in.1996 as GB/T 16555.1~16555.6-1996;

---First revision in.2008, amending GB/T 16555.1~16555.6-1996, GB/T 13245-1991 and GB/T 13246- Content merged in.1991;

---The second revision in.2017 resulted in GB/T 16555-2017, "Chemical Analysis of Carbon-Containing, Silicon Carbide- and Nitride-Containing Refractory Materials". method";

1 Scope

GB/T 16555-2025 is the Chinese national standard on chemical analysis of refractories containing carbon, silicon carbide or nitride, in the field of glass and ceramics industries. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 29 August 2025 by

the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 March 2026. Classification: ICS 81.080, CCS Q40. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This document describes the heat treatment loss on ignition, volatile matter, total carbon content, free carbon content, and carbon content of carbon-containing, silicon carbide, and nitride refractories. Chemical content of silicon nitride, total nitrogen, total oxygen, silicon nitride, free silicon, free aluminum, iron oxide, aluminum oxide, and other oxides Analytical methods. This document applies to carbon-, silicon carbide-, and silicon nitride-containing refractory materials, such as magnesia-carbon bricks, semi-graphite carbon bricks, alumina-zirconium-carbon bricks, and silicon carbide-containing castables. Chemical analysis of silicon nitride-bonded silicon carbide bricks, etc.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included. For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies. This document.

GB/T 223.69-2008 Determination of Carbon Content in Iron and Steel and Alloys - Volumetric Method of Gas After Combustion in Tubular Furnace

GB/T 4513.2 Unshaped refractories - Part

3 Terms and Definitions

The terms and definitions defined in GB/T 18930 apply to this document.

4.1 Balance. graduation value

0.1 mg and graduation value

0.5 g.

4.2 Double-lid porcelain crucible.

4.3 Platinum or porcelain dishes. 75 mL or more.

4.4 Platinum or porcelain crucible. 30 mL or more.

4.5 Electric furnace. 3000W power, with automatic temperature control.

- 4.6 Forced-air drying oven. A drying oven with a maximum operating temperature of $\geq 300^{\circ}\text{C}$ and automatic temperature control.
- 4.7 Tubular high-temperature furnace. A tubular electric furnace with a maximum operating temperature of $\geq 1300^{\circ}\text{C}$ and automatic temperature control.
- 4.8 Box-type high-temperature furnace. A box-type electric furnace with a maximum operating temperature of $\geq 1100^{\circ}\text{C}$ and automatic temperature control.
- 4.9 Pipettes. Grade A in GB/T 12808.
- 4.10 Burette. Grade A in GB/T 12805.
- 4.11 Volumetric flasks. Grade A in GB/T 12806.
- 4.12 pH meter. accuracy grade 0.1.
- 4.13 Spectrophotometer. Wavelength range 380nm~700nm.

5 Sample Preparation

5.1 Sampling Laboratory samples shall be drawn in accordance with GB/T 10325, GB/T 17617 or GB/T 4513.2.

5.2.1 Crush the experimental sample to pass through a

6.7 mm standard sieve, and reduce it to approximately 200 g using the quartering method. Unless otherwise agreed in the contract or by [the relevant authority]... An exception may be made if a sample size of 200g or more cannot be obtained due to product form limitations. The reduced sample should be pulverized to... For particles smaller than 0.5mm, after further reduction, process them to a particle size suitable for analysis using a tungsten carbide mortar or other appropriate mortar. A 90 μm standard sieve is used. Silicon carbide samples are processed into particles that can pass through a 150 μm sieve using a steel or tungsten carbide mortar, depending on the analytical requirements. The sample was taken from a standard sieve.

5.2.2 Before analysis, the sample was dried in a forced-air drying oven (4.6) at 105°C ~ 110°C for 2 hours, and then cooled to room temperature in a desiccator. It is easily hydrated. Measures should be taken to prevent hydration of the samples.

5.2.3 Wet, amorphous materials containing additives such as resin or asphalt shall first be treated according to Chapter 7, and then handled according to the provisions of

5.2.1 to 5.2.2. Prepare the sample. When the analysis results of the sample require the original sample as a reference, the measurement results shall be corrected and calculated according to 7.4.2.

5.2.4 For dry refractory materials containing additives such as resin or asphalt, determine