

ICS 81.080
CCS Q 40



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

GB/T 34218-2025

Replacing GB/T 34218-2017

**Refractory products - Determination of compressive strength at
elevated temperatures**

耐火材料 高温耐压强度试验方法
(English Translation)

Issued on: August 29, 2025

Implemented on: March 1, 2026

Issued by: State Administration for Market Regulation

Table of Contents

- Foreword
- 1 Scope
- 2 Normative references
- 3 Terms and Definitions
- 4 Principles
- 5 Equipment
- 5.1 Heating Furnace

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 34218-2017 "Test Method for High Temperature Compressive Strength of Refractory Materials" and is consistent with GB/T 34218-2017.

Aside from structural adjustments and editorial changes, the main technical changes are as follows.

- a) The terminology and definitions have been changed (see 3.1, 2017 edition);
- b) The principle has been changed (see Chapter 4, Chapter 4 in the 2017 edition);
- c) The temperature deviation requirements have been changed (see 5.1, 2017 version 5.1);
- d) The position requirements for the thermocouple measuring end have been increased (see 5.1);
- e) The specifications for the cross-sectional dimensions of the upper and lower pressure bars have been changed (see 5.2.2 and 5.2.3, 5.2 in the 2017 edition);
- f) The gasket specifications have been changed (see 5.2.4, see 5.2 in the 2017 edition);
- g) The specifications for deformation measuring devices have been changed (see 5.3, 5.6 in the 2017 edition);
- h) The steel ruler has been removed (see 5.9 in the 2017 edition);
- i) The illustrations of carbon paper imprints in Figures 1-4 have been removed (see 6.1 in the 2017 edition);

- j) The measurement of the specimen height was added (see 7.1.2);
- k) A schematic diagram of the installation of the sample, gasket, pressure bar, and thermocouple in Figure 1 has been added (see 7.2);
- l) The test temperature requirements have been changed (see 7.3.1, 2017 version 7.3.1);
- m) The regulations regarding heat preservation time have been changed (see 7.3.3, 2017 version 7.3.3);
- n) The loading test has been changed (see 7.4.1, 7.4.3 in the 2017 version);
- o) "m) Loading rate" has been removed (see Chapter 9 in the 2017 edition).

This document is modified to adopt ISO 22685:2021 "Refractory materials - Test method for high temperature compressive strength".

Compared with ISO 22685:2021, this document has undergone many structural adjustments. A table comparing the changes in structural numbering between the two documents is provided.

See Appendix A.

This document differs significantly from ISO 22685:2021. The relevant clauses are indicated in vertical margins.

Single lines (l) are indicated. A summary of these technical differences and their causes can be found in Appendix B.

The following editorial changes have been made to this document.

---Added "or to be determined by mutual agreement" (see note 6.2).

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).

1 Scope

This document specifies the principles, equipment, specimens, test procedures, result calculation, and test reports for testing the high-temperature compressive strength of refractory materials.

This document applies to the determination of the high-temperature compressive strength of refractory materials.

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 4513.2 Unshaped refractories - Part 2: Sampling (GB/T 4513.2-2017, ISO 1927-2:2012, IDT) GB/T 4513.5 Unshaped refractories - Part 5: Specimen preparation and pretreatment (GB/T 4513.5-2017, ISO 1927-) 5.2012, MOD) GB/T 5072 Test method for compressive strength of refractory materials at room temperature (GB/T 5072-2022, ISO 8895:2004; ISO 10059-1:1992; ISO 10059-2:2003, MOD) GB/T 7321 Method for preparing test specimens of shaped refractory products GB/T 8170 Rules for rounding off numerical values and representation and determination of limiting values GB/T 18930 Terminology for Refractory Materials

3 Terms and Definitions

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

At high temperature and under specified pressure, the sample fails (breaks, or the strain of dense refractory reaches 1%, or the strain of shaped heat-insulating refractory reaches 1%).

The ratio of the maximum load to the pressure area when the strain of the material reaches 10%.

[Source. GB/T 18930-2020, 2.5.77, with modifications]

4 Principles

The specimen is heated to the test temperature at a specified heating rate, and a load is applied to the specimen of known size at a specified pressure rate until failure.

Effective, record the maximum load. Calculate the high-temperature compressive strength based on the maximum load borne by the specimen and the area under pressure.

5.1 Heating Furnace

The heating furnace should be able to heat the sample to the test temperature at a specified heating rate, above 500°C, with a temperature deviation of less than 20°C. (Thermoelectric) the thermocouple end should preferably be installed in the middle of the

sample, and the distance between it and the sample surface should be less than 10 mm. The structure of the heating furnace should ensure that the sample and the pressure bar can be easily...