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

GB/T 5072-2023

**Refractory products - Determination of cold compressive
strength**

耐火材料 常温耐压强度试验方法

(English Translation)

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Foreword

This document was drafted in accordance with the rules provided in GB/T 1.1-2020 Directives for Standardization - Part 1.Rules for the Structure and Drafting of Standardizing Documents.

This document serves as a replacement of GB/T 5072-2008 Refractory Products - Determination of Cold Compressive Strength. In comparison with GB/T 5072-2008, apart from structural adjustments and editorial modifications, the main technical changes are as follows.

- a) The Scope is modified (see Chapter 1; Chapter 1 of Version 2008);
- b) In the Principle chapter, "until it is broken or compressed to 90% of the former height" is modified to "until it is broken or compressed to 90% of the original height"; "average cross-sectional area under pressure" is modified to "average pressure surface area" (see Chapter 4; Chapter 4 of Version 2008);
- c) Some requirements for the pressure plate are modified, and the content of the note is modified to the main text (see 5.1; 5.1 of Version 2008);
- d) Technical requirements for the micrometer, triangular plate, feeler gauge and steel ruler are added, and requirements for the hardened filter paper are also added (see 5.2, 5.4, 5.5, 5.8, 5.9);
- e) The sampling and preparation contents of the test sample for the test without packing are added (see 6.1.1, 6.1.2);

- f) The content of the note is modified to the main text (see 6.1.4; 6.1.2 of Version 2008);
- g) The requirements for the range of the testing machine during the test are deleted (see 6.2 and 7.3.3 of Version 2008);
- h) The test contents of the amorphous test sample are deleted (see Chapters 7 and 8 of Version 2008);
- i) The sampling and preparation requirements of the test sample for the test with packing are modified (see 7.2.1 and 7.2.2; 7.2.1 of Version 2008);
- j) The size of half a standard brick is added [see 7.2.3 d)];
- k) "The test sample shall be cut or drilled from the product, and the pressure surface of the test sample shall be as parallel as possible and as perpendicular to the pressure direction as possible." is deleted (see 7.2.4 of Version 2008);
- l) The area size of the packing plate is modified (see 7.3.2; 7.3.2 of Version 2008);
- m) The content of the note is modified to the main text (see 8.1.2; 8.1.2 of Version 2008);
- n) The provisions for test sample size are modified (see 8.1.3; 8.1.3 of Version 2008);
- o) The regulations on the number of digits to be retained in the result are modified (see Chapter 9; Chapter 9 of Version 2008).

This document modifies and adopts ISO 8895.2004 Shaped Insulating Refractory Products -

Determination of Cold Crushing Strength, ISO 10059-1.1992 Dense, Shaped Refractory Products - Determination of Cold Compressive Strength - Part 1. Referee Test without Packing, and ISO 10059-2.2003 Dense, Shaped Refractory Products - Determination of Cold Compressive Strength - Part 2. Test with Packing.

In comparison with ISO 8895.2004, ISO 10059-1.1992 and ISO 10059-2.2003, this document has many structural adjustments. A table of structure number changes among the

four documents is shown in Appendix A.

In comparison with ISO 8895.2004, ISO 10059-1.1992 and ISO 10059-2.2003, this

document contains many technical differences, which are indicated by a single vertical line (|)

in the outer margin of the clauses involved. A list of these technical differences and causes thereof is given in Appendix B.

This document makes the following editorial modifications.

--- NOTE 4 of Chapter 8 and NOTE 5 of Chapter 9 in ISO 10059-1:1992 are deleted;

--- NOTE 1 and NOTE 2 of Chapter 5 and NOTES of 7.1 and 8.4 in ISO 10059-2:2003 are deleted.

Please be noted that certain content of this document may involve patents. The institution issuing this document does not undertake the responsibility of identifying these patents.

This document was proposed by and shall be under the jurisdiction of National Technical Committee 193 on Refractories of Standardization Administration of China (SAC/TC 193).

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1 Scope

This document specifies the principle, instruments and equipment, test samples, test steps, result calculation and test report of the determination of cold compressive strength for refractories.

2 Normative References

The contents of the following documents constitute indispensable clauses of this document through the normative references in the text. In terms of references with a specified date, only versions with a specified date are applicable to this document. In terms of references without a specified date, the latest version (including all the modifications) is applicable to this document.

3 Terms and Definitions

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

A refractory product with a true porosity of less than 45% and a certain size.

A shaped refractory with a true porosity of not less than 45%.

4 Principle

Under specified conditions, a load is applied to a test sample of known size at a constant pressure rate until it is broken or compressed to 90% of the original height, and the maximum load is recorded. The cold compressive strength is calculated based on the maximum load and the average pressure surface area of the test sample.

5 Instruments and Equipment

The pressure plate shall be replaceable for mechanical reprocessing so that its surface meets

the above requirements.

6 Method 1. Compressive Strength of Dense Shaped Refractory Products - Referee Test without Packing

(Arbitration method)

Measure the two perpendicular diameters of the two pressure surfaces of the test sample to an accuracy of 0.1 mm. According to the arithmetic mean of the four diameters, calculate the average pressure surface area A_0 .

7 Method 2. Compressive Strength of Dense Shaped Refractory Products - Test with Packing

Use a vernier caliper to measure the two mutually perpendicular diameters or midlines of the two pressure surfaces of the test sample, and accurate to 0.1 mm. According to the average of the four diameters or midline measurements of the two pressure surfaces, calculate the average pressure surface area A_0 .