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

GB/T 5989-2023

Replacing GB/T 5989-2008

**Refractory products - Determination of refractoriness under
load(differential method with rising temperature)**

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foreword

This document is in accordance with the provisions of GB/T 1:1-2020 "Guidelines for Standardization Work Part 1: Structure and Drafting Rules for Standardization Documents"

drafting:

This document replaces GB/T 5989-2008 "Test method for softening temperature of refractory materials under load with differential temperature rise method", and is in line with

Compared with GB/T 5989-2008, except for structural adjustment and editorial changes, the main technical changes are as follows:

- a) The scope has been changed (see Chapter 1, Chapter 1 of the:2008 edition);
- b) Delete the description of the measurement device on the upper part of the experimental furnace and Figure 3 (see 5:1:1, 5:2, 5:3:3 of the:2008 edition);
- c) Changed the regulations on thermocouples (see 5:4:2, 5:4:2 of the:2008 edition);
- d) Changed the division value of the vernier caliper (see 5:5, 5:5 of the:2008 edition);
- e) Increased the sampling and preparation of samples (see 6:1, 6:2);
- f) Changed the description of the result representation (see 8:2, 8:4, 8:5, 8:2, 8:4, 8:5 of the:2008 edition);
- g) The "direction" in "sampling position and direction of the sample on the original brick" is deleted [see Chapter 9 c) of the:2008 edition]:

This document is modified to adopt ISO 1893:2007 "Test method for softening temperature of refractory products under load by differential temperature rise method":

Compared with ISO 1893:2007, this document has more structural adjustments: For a list of structural number changes between the two documents, see

Appendix A:

Compared with ISO 1893:2007, there are more technical differences in this document, and vertical single

The lines (I) are marked, and a list of these technical differences and their reasons is shown in Appendix B:

Please note that some contents of this document may refer to patents: The issuing agency of this document assumes no responsibility for identifying patents:

1 Scope

This document describes the principle of the test method for measuring the softening temperature under load of dense shaped refractory products and shaped heat insulation products

Equipment, samples, test procedures, result calculation and test report:

This document is applicable to the determination of the softening temperature under load by the differential heating method for dense shaped refractory products and shaped heat insulation products:

The maximum temperature of this test can be carried out to 1700°C:

2 Normative references

The contents of the following documents constitute the essential provisions of this document through normative references in the text: Among them, dated references

For documents, only the version corresponding to the date is applicable to this document; for undated reference documents, the latest version (including all amendments) is applicable to

this document:

GB/T 1214:2 Vernier Caliper Vernier Caliper

GB/T 7321 Sample preparation method for shaped refractory products

GB/T 10325 Acceptance Sampling Inspection Rules for Shaped Refractory Products (GB/T 10325-2012, ISO 5022:1979, NEQ)

GB/T 16839:1 Thermocouple Part 1: Electromotive force specification and tolerance (GB/T 16839:1-2018, IEC 60584-1:

2013, IDT)

GB/T 18930 Terminology for refractory materials (GB/T 18930-2020, ISO 836:2001, MOD)

3 Terms and Definitions

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

4 principles

The sample is heated under a specified constant load and heating rate, and the deformation of the sample during the heating process is measured until it produces a specified compression shape:

Change, record the temperature when the specified deformation is produced:

5 devices

5:1 Loading device

5:1:1 General

The loading device should be able to apply pressure vertically along the common axis of the pressure rod, sample and support rod during the whole test process:

See 5:1:2~5:1:4 for specific composition:

A constant load is applied vertically downward to the specimen placed on a fixed support rod, and the deformation of the specimen is measured by the measurement through the center of the support rod:

device to measure: