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NATIONAL STANDARD OF THE

PEOPLE'S REPUBLIC OF CHINA

GB/T 5988-2022

Refractory products - Determination of permanent change in dimensions on heating

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Table of Contents

Foreword... 3
1 Scope... 5
2 Normative References... 5
3 Terms and Definitions... 5
4 Principle... 6
5 Equipment... 6
6 Specimens... 8
7 Test Steps... 8
8 Calculation of Results... 12
9 Allowable Error... 13
10 Test Report... 14

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Foreword

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

This Document replaced GB/T 5988-2007 Refractory Products - Determination of Permanent

Change in Dimension on Heating. Compared with GB/T 5988-2007, the major technical changes of this Document are as follows besides the structural adjustments and editorial modifications.

a) Change the scope (see Clause 1 of this Edition; Clause 1 of the 2007 Edition);

b) Change the name of the test furnace; re-edit the contents of 5.1 to 5.3 of the 2007 Edition;

and add the provisions for the test furnace and thermocouple; (see 5.1 of this Edition; 5.1 to 5.3 of the 2007 Edition);

c) Change the description of the length measuring instrument (see 5.2.1 of this Edition; 5.4.1

of the 2007 Edition);

d) Change the description of sampling (see 6.1 of this Edition; 6.1 of the 2007 Edition);

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e) Change the height of the specimen; and add the provisions for the selection of the test method (see 6.2.1 of this Edition; 6.2.1 of the 2007 Edition);

f) Delete the preparation of the monolithic refractory specimen (see 6.2.3 of the 2007 Edition);

g) Change the names of 7.2.3 and 7.4; and re-edit the contents of 7.4 to 7.8 of the 2007 Edition; delete the gas sampling; and no longer measure the oxygen content in the gas furnace (see Clause 7 of this Edition; Clause 7 of the 2007 Edition);

h) Change Formula (3) (see 8.1 of this Edition; 8.1 of the 2007 Edition);

i) Change the number of digits retained in the test results (see 8.3 of this Edition; 8.3 of the

2007 Edition);

j) Increase the allowable error (see Clause 9 of this Edition);

k) Change the test report (see Clause 10 of this Edition; Clause 9 of the 2007 Edition)

This Document is modified to adopt ISO 2478.1987 Dense Shaped Refractory Products; Determination of Permanent Change in Dimensions on Heating and ISO 2477.2005 Shaped

Insulating Refractory Products - Determination of Permanent Change in Dimension on Heating.

Compared with ISO 2478.1987 and ISO 2477.2005, this Document has many structural adjustments. The comparison table of structural number changes between the two documents

is shown in Appendix A.

Compared with ISO 2478.1987 and ISO 2477.2005, this Document has many technical differences. The outer margins of the involved clauses are marked with a vertical single line (|).

The technical differences and their reasons are shown in Appendix B.

The following editorial changes have been made to this Document.

--- In order to coordinate with the existing standards, the standard name is changed to Refractory Products - Determination of Permanent Change in Dimensions on Heating.

Please note some contents of this Document may involve patents. The issuing agency of

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this

Document shall not assume the responsibility to identify these patents.

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

Drafting organizations of this Document. Sinosteel Luoyang Institute of Refractories Research Co., Ltd.; Yixing Product Quality Supervision and Inspection Institute; Zhejiang Mingde New Materials Technology Co., Ltd.; Luoyang Lier Functional Materials Co., Ltd.; Shanxi Yu County Xixiaoping Refractories Co., Ltd.; Zhejiang Hongfeng Burden Co., Ltd.; Haicheng Lier Magnesia Materials Co., Ltd.; Zhengzhou Ruitai Refractory Materials Technology Co., Ltd.; and Northeastern University.

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The historical editions replaced by this Standard are as follows.

--- GB/T 5988-1986 was first-time published in 1986;

--- It was first-time revised in 2004;

--- When it was second-time revised in 2007, it incorporated into the contents of GB/T 3997.1-1998 Shaped Insulating Refractory Products - Determination of Permanent Change in Dimension on Heating (the historical editions replaced by 3997.1-1998 include GB/T 3997.1-1983);

--- It was the third-time revised hereby.

Refractory Products - Determination of Permanent Change in Dimensions on Heating

1 Scope

This Document specifies the principle, equipment, specimens, test steps, result calculation

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and

test report of the test method for permanent change in dimensions on heating of dense shaped

refractory products and shaped insulating refractory products.

2 Normative References

The provisions in following documents become the essential provisions of this Document

through reference in this Document. For the dated documents, only the versions with the dates

indicated are applicable to this Document; for the undated documents, only the latest version

(including all the amendments) is applicable to this Document.

3 Terms and Definitions

For the purposes of this Document, the terms and definitions given in GB/T 18930 apply.

4 Principle

Place the rectangular or cylindrical specimen with measured length or volume in the test furnace;

heat it to the test temperature at the specified heating rate; and keep it for a certain time. After

cooling to room temperature, measure its length or volume again; and calculate its heating

permanent change rate in dimensions on heating or change rate in volume.

5 Equipment

When used in conjunction with thermocouples, it can continuously control, record and display

the temperature in the furnace.

The measuring instrument comes with a measuring calibration block with a diameter of 50mm

and a height of 60mm. The nominal size accuracy of the calibration block is 0.01mm; and the

material is stainless steel or high-hardness steel that has been quenched and rust-proofed.

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