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

GB/T 30873-2014

**Refractory materials - Determination of thermal shock
resistance**

耐火材料 抗热震性试验方法

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Foreword

This standard was drafted in accordance with GB/T 1.1-2009 given rules. This standard by the National Standardization Technical Committee Refractories (SAC/TC193) and focal points. This standard was drafted. Sinosteel Luoyang Institute of Refractories Co., Ltd., Zhengzhou, the Nike Industrial Co., Ltd., Anhui Ruitai new Material Technology Co., Ltd. Xinmi Chint Refractories Co., Ltd. Zhengzhou Zhendong. The main drafters of this standard. Xiu-Fang Wang, Fu - North Korea, Zhang Jinlong, Wang Jianjun, Hou Huifeng, Sun Dragon, Wang Jun Chao, Dong Hongqin, Zhangzhou Ming, Chen Wei, Zhang Yi, Caohai Jie, Jiang Dongmei. Test method for thermal shock resistance of refractories

1 Scope

China's national test method for the thermal shock resistance of refractory materials. It specifies the terms and definitions, the principle, the apparatus, the test pieces, the test procedure, the expression and processing of results and the test report, and it applies to the determination of thermal shock resistance in refractories generally. Thermal shock is the way most refractory linings actually fail. A refractory is a ceramic: strong in compression, weak in tension, and with essentially no ability to yield. When one face is heated or cooled far faster than the body behind it, the surface tries to expand or contract against material that has not yet changed temperature, and the resulting tensile stress cracks it. Nothing has been overheated, nothing has been chemically attacked, and the material is still within its temperature rating - it has simply been asked to change temperature quickly. Every furnace start-up, every shutdown, every ladle filled with molten steel and every charge of cold scrap does this, and the number of cycles a lining survives is what determines its campaign life. The standard gives four methods, differing in how the heated specimen is cooled: water quenching of a straight brick, water quenching of a small specimen, quenching in

compressed air at 0.1 MPa, and natural air cooling. Water quenching is the most severe and gives the sharpest discrimination between materials; air quenching and natural cooling are gentler and closer to what many linings actually experience. Having four methods rather than one is a deliberate recognition that thermal shock resistance is not a material constant but a response to a particular severity of shock. Issued on 24 July 2014 and in force since 1 April 2015.

This standard specifies the terms and definitions, principles, equipment, samples, test procedures refractories thermal shock resistance test method and results are expressed Processing and test report. This standard applies to the determination of the thermal shock resistance of refractories.

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version suitable for use herein Member. For undated references, the latest edition (including any amendments) applies to this document.

GB/T 7321 sample preparation method shaped refractory products

GB/T 8170 repair value expressed about the rules and limit values judgment

GB/T 10325, shaped refractory products acceptance sampling inspection rules

GB/T 17617 refractory raw materials and monolithic refractories sampling

GB/T 18930 refractory term YB/T 5116 clay and high alumina refractory plastic can sample preparation method YB/T 5202.1 monolithic refractories sample preparation methods - Part 1. refractory castable

3 Terms and Definitions

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

3.1 Water quenching waterquenching After the specimen is subjected to acute heat, water 5 °C ~ 35 °C as a cooling medium flowing rapidly cooling method.

3.2 Air quenching compressedairquenching After the specimen is subjected to acute heat to room temperature 0.1MPa compressed air as a cooling medium rapidly cooling method.

3.3 Natural air cooling method airquenching After the specimen is subjected to acute heat to its natural state as a cooling medium air cooling method. Principle

4 At the test temperature and the cooling medium specified conditions, the sample must shape and size, after being subjected to rapid thermal quench temperature mutation root According to determine the extent of damage to the refractory thermal shock resistance.