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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 22459.9-2024

Refractory mortars - Part 9: Determination of shear bonding strength at room temperature

耐火泥浆 第9部分：常温抗剪粘接强度试验方法

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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 is required. This document is Part 9 of GB/T 22459 "Refractory Slurry". GB/T 22459 has published the following parts. Part

1 Scope

GB/T 22459.9-2024 is the Chinese national standard on refractory mortars - part 9: determination of shear bonding strength at room temperature, in the field of glass and ceramics industries. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 29 June 2024 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 January 2025. Classification: ICS 81.080, CCS Q40. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This document specifies the principles, instruments, sample preparation, test steps, and results of the test method for the room temperature shear bond strength of refractory slurries. Calculation and test reports. This document is applicable to the determination of the shear bond strength of refractory slurry at room temperature.

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document. For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies. in this document.

GB/T 8170 Rules for rounding off values and expression and determination of limit values

GB/T 17617 Rules for sampling and inspection of refractory raw materials

GB/T 18930 Terminology of Refractory Materials

GB/T 22459.1 Refractory slurry Part

3 Terms and definitions

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

3.1 Shear bonding strength The maximum shear stress that the bonding surface of refractory bricks bonded with refractory slurry can withstand.

4 Principle

The refractory bricks are bonded with refractory slurry to form test pieces of specified size. After drying or heat treatment, the test pieces are loaded at a specified speed at room temperature. The shear stress is applied to the refractory slurry bonding surface of the specimen at a certain rate until it is destroyed. The maximum shear stress that the refractory slurry bonding surface can withstand is the refractory Shear bond strength of fire mud.

5 Instruments and Equipment

5.1 Testing machine It shall be possible to apply the load at a constant rate and record the peak load. Both platens of the testing machine shall be ground.

5.2 Fixture The fixture consists of a lower base, a locking device and an upper pressure head, which can convert the test machine load into shear stress on the bonding surface of the refractory slurry. The specimen can be fixed and restrained and equipped with a spherical surface to compensate for the slight deviation between the parallelism of the specimen pressure surface and the upper pressure head, as shown in Figure 1.

8 Test method for water seepage; - Part

9.Test method for shear bond strength at room temperature. - Please note that some of the

contents of this document may involve patents. The issuing organization of this document does not assume the responsibility for identifying patents. This document is proposed and coordinated by the National Technical Committee for Standardization of Refractory Materials (SAC/TC 193). This document was drafted by: Wuhan University of Science and Technology, MCC Wuhan Metallurgical Construction Research Institute Co., Ltd., Baowu Equipment Intelligent Technology Co., Ltd. Company, Yangquan Comprehensive Inspection and Testing Center, Zhejiang Rongxing New Material Technology Co., Ltd., Changxing Xingying New Refractory Building Materials Co., Ltd., Wuye Group Shanghai Co., Ltd., Sinosteel Luoyang Refractory Materials Research Institute Co., Ltd., Dongtai Huanghai Refractory Materials Technology Co., Ltd., Hubei Provincial Refractory Product Quality Supervision and Inspection Station (Wuhan University of Science and Technology Refractory Quality Inspection Center). The main drafters of this document are. Yin Yucheng, Zhu Qingyou, Cheng Shuiming, Ruan Guozhi, Li Xiangwei, Han Zangjuan, Li Yiwei, Wu Shujun, Peng Xigao, Shan Guoqiang, Dong Surong, Xia Zhongfeng, Zhai Zhihui, Liu Chengyan, Li Weiping, Wu Pengmin, Wang Qiang, Li Maogang, Ao Ping, Huaiguo Zhai, Luopeng Deng, Jiuchang Lu, Wenxia Wu, Yongchuan Wang, Gao Xu, Zhongjing Bian, Zhiqiang Liu, Shuangqing Zhou, Xiaoli Wang, Xiaogang Tang.

Refractory slurry is generally used as the joint material of refractory masonry to make the masonry form a tight whole to resist the damage of external forces and prevent gas, The intrusion of molten liquid. Masonry joints are usually the weakest link in masonry and in most cases fail before the masonry. Therefore, the quality of refractory slurry is very important. It is closely related to the overall life of the masonry. The room temperature shear bonding strength of refractory slurry is an important indicator to characterize the bonding performance between refractory slurry and refractory bricks, which directly determines the bonding strength of refractory bricks. The overall stability and safety of the refractory masonry will eventually affect the service life and safety of the refractory masonry. The first 6 parts of GB/T 22459 All parts have been modified to adopt ISO 13765.Part 7, Part 8 and Part 9 of GB/T 22459 have no corresponding relationship with ISO 13765. GB/T 22459 "Refractory Slurry" is planned to consist of 9 parts. Part

1.Consistency test method (cone penetration method), aimed at determining the consistency of refractory slurries. Part

2.Consistency test method (jump table method), aimed at determining the consistency of refractory slurries. - Part

3.Bonding time test method, the purpose of which is to determine the time required for the refractory mortar bond joint to stabilize when laying refractory masonry. It takes time. Part

4.Test method for flexural bond strength at room temperature, the purpose is to determine the flexural strength of refractory mortar joints after refractory masonry is built. Folding bonding strength. Part

5.Particle size distribution (sieve analysis) test method for the determination of particle size distribution in refractory slurries. Part

6.Test method for moisture content of pre-mixed mud is intended to determine the moisture content of pre-mixed mud. Part

7.Other performance test methods, aimed at determining the refractoriness of refractory slurry, high temperature flexural bond strength, room temperature flexural Strength, thermal expansion, thermal conductivity, etc. Part

8.Water bleeding test method, the purpose is to determine the water bleeding performance of refractory slurry when it is static or under a certain load. Part

9.Test method for shear bond strength at room temperature. The purpose is to determine the strength of the refractory mortar bonding surface after refractory masonry is built. Maximum shear stress. This document is part 9 and together with the other 8 parts, they are all part of the Refractory Slurry Test Methods, which together constitute the Refractory Slurry Test Methods system. Refractory slurries Part