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

GB/T 27979-2011

Alumina ceramic wear-resistant composite lining boards

氧化铝耐磨陶瓷复合衬板

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Foreword

This Standard was drafted as per the rules specified in GB/T 1.1-2009 Directives for Standardization - Part

1. Structure and Drafting of Standards. This Standard was proposed by China Building Material Federation. This Standard shall be under the jurisdiction of National Technical Committee for Standardization of Industrial Ceramic (SAC/TC 194). Drafting organizations of this Standard. Hunan Jingcheng Special Ceramic Co., Ltd.; Hebei Kunpeng Wear-Resistant Technology Co., Ltd.; Fujian Johnson Mining Co., Ltd.; Beijing Zhongdian Lianzhong Power Technology Co., Ltd.; and Beijing Tianlilai Technology Development Co., Ltd. Chief drafting staffs of this Standard. Yang Changgui, and Chen Xiaomin. This Standard was the first-time formulated. Alumina Ceramic Wear-Resistant Composite Lining Board

1 Scope

China's national standard for alumina ceramic wear-resistant composite lining boards. It

specifies the definitions, the technical requirements, the inspection methods, the inspection rules and the marking, packaging, transport and storage of the composite panels used to line chutes, hoppers, pipes and mill casings against abrasion. The lining board is a sandwich: alumina ceramic tiles on the wearing face, a rubber layer behind them, and a steel backing plate, bonded together. Each layer answers a problem the others create. Alumina ceramic is extremely hard and resists abrasion far better than any steel, which is why it is on the face - but it is brittle, and a ceramic tile struck by a lump of ore shatters. The rubber layer behind absorbs that impact and spreads it, so the ceramic survives blows that would break it if it were bonded rigidly. And the steel backing carries the panel, takes the fixings, and lets it be bolted or welded into place as a unit rather than tiled in position. The combination gives a lining that lasts several times as long as a steel one in abrasive service, in coal handling, mineral processing, cement plants and power stations, and that can be replaced as panels during a shutdown. What the standard has to control is the ceramic, the bond and the assembly, in that order of importance - and it carries two normative annexes for the properties that decide the product: a volume wear test for the alumina, and an adhesive strength test between the rubber and the ceramic. Issued on 30 December 2011 and in force since 1 October 2012, and formulated for the first time.

This Standard specifies the definitions, technical requirements, inspection methods, inspection rules, marking, package, transportation and storage of alumina ceramic wear-resistant composite lining board (hereinafter referred to as "lining board"). This Standard is applicable to the wear-resistant ceramic composite lining board with alumina content no less than 92%, and consisting of ceramics.

2 Normative References

The following documents are essential to the application of 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) are applicable to this document.

GB/T 230.1 Metallic Materials - Rockwell Hardness Test - Part

3 Definitions

For the purposes of this document, the following definitions apply.

3.1 Alumina ceramic wear-resistant composite lining board It is made of alumina wear-resistant ceramic sheet, rubber, adhesive, etc.; its structure is shown in Figure 1.

3.2 Volume wear Place the alumina ceramic wear-resistant lining board in the sand-blast equipment; spray (see Appendix A) the lining board with special specification by the specified condition;

3.3 Adhesive strength The interfacial bonding strength between the alumina wear-resistant

ceramic sheet and the rubber is called the adhesive strength, expressed in A.

4 Technical Requirements

4.1 Appearance The appearance of the lining board shall meet the requirements of Table 1.

4.2 Size requirements

4.2.1 The size and specification of lining board shall be determined by each company situation and the user's special requirements.

4.3 Material requirements

4.3.1 The performance of alumina wear-resistant ceramic sheet shall meet the requirements of Table 2.

5.1 Appearance inspection

5.1.1 Appearance inspection of the ceramic layer in lining board The appearance, color of surface shall be visually examined or use the Vernier caliper with accuracy no less than 0.02mm to inspect.

5.1.3 Bending test Hold the opposite sides or opposite angles of the lining board with two hands; place it onto a die body with length 700mm, height 450mm, and bending radius 75mm; so that the lining board is in close contact with the die body; bending the radius for 150mm~200mm, repeat for 10 times; then observe the results.

5.2 Size inspection Use a ruler to measure the side length of the lining board. The spacing between the alumina wear-resistant ceramic sheets, and the thickness of lining board shall be measured by Vernier caliper with accuracy of no less than 0.02mm.

5.3.2 Performance inspection of rubber in lining board

5.3.2.1 Tensile strength. test as per the method specified in GB/T 528.

5.3.3 Adhesive strength between rubber and ceramic Sampling and testing as per the method specified in GB/T 532 (see Appendix B).

6.1 Inspection classification

6.1.1 Exit-factory inspection The exit-factory inspection items include appearance, size, volume wear, volume density, Rockwell hardness, adhesive strength between rubber and ceramic.

6.2 Sampling

6.2.1 Group batching 500m² lining boards with the same category and the same

color-number as one batch; for the lining boards less than 500m² shall be calculated as one batch or determined through the negotiation between the supplier and the purchaser. Randomly take 2m² (the number of lining board is no less than 30 blocks) from each batch.

6.3 Judgment rules

6.3.1 Appearance. if the number of the unqualified products is less than or equal to 3 blocks, then the index for such batch of products shall be judged to be qualified.

6.3.2 Size. if the number of the unqualified products is less than or equal to 3 blocks, then the index for such batch of products shall be judged to be qualified. If the number of unqualified products in the first inspection exceeds 3 blocks, then double the samples for reinspection

6.3.3 If one of the other indexes specified in Clause 5 of this Standard is unqualified, then such batch shall be judged to be unqualified.

7 Marking, Package, Transportation and Storage

7.1 Marking The package shall have the markings such as product name, category, enterprise name, address, production date, specification, quantity, ant-corrosion, throwing-prohibited, execution standard, etc.