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**BUILDING MATERIALS INDUSTRY STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

JC/T 848.1-2010

Alumina grinding ball

耐磨氧化铝球

(English Translation)

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1 Scope

This Standard specifies the terms and definitions, classification, specifications, requirements, test methods, inspection rules, as well as marking, packaging, transportation, and storage for alumina grinding balls.

This Standard applies to alumina grinding balls with an alumina content of no less than 70%.

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.

GB/T 2997-2000 Test Method for Bulk Density, Apparent Porosity and True Porosity of Dense Shaped Refractory Products

GB/T 6900.9-2006 Chemical Analysis of Alumina-silica Refractories - Determination of Alumina

GB/T 6900.10-2006 Chemical Analysis of Alumina-silica Refractories - Determination of Iron Oxide

GB/T 8488.5-2001 Acid-resistant bricks - Test methods - Water absorption test

EN 101-1991 Ceramic tiles - Determination of scratch hardness of surface according to

Mohs

3 Terms and Definitions

For the purposes of this Document, the following terms and definitions apply.

3.1 Pressing model ball

Alumina grinding ball that is formed by cold isostatic pressing.

3.2 Rolling ball

Alumina grinding ball that is formed by rolling.

3.3 Hat edge

The forming marks on the surface of the alumina grinding ball during cold isostatic pressing.

3.4 Radial size

The maximum diameter of the ball measured parallel to the ball cap of the pressing model ball.

3.5 Latitudinal size

The maximum diameter of the ball measured perpendicular to the ball cap of the pressing model ball.

3.6 Ball degree

The ratio of the difference between the radial size and the latitudinal size of the pressing model ball to the specification size.

3.7 Wear and tear

The mass loss of alumina grinding ball after grinding with water in a polyurethane tank for a certain period of time.

4.1 Classification

Alumina grinding ball is classified according to the following method.

4.1.1

It can be classified into pressing model ball and rolling ball according to the forming method.

4.1.2

The alumina content is classified into 70 series, 90 series, 92 series, 95 series, 99 series; it can also generate other series as per the agreement.

4.1.3

It can be classified into large ball $\phi \geq 20\text{mm}$ and small ball $\phi < 20\text{mm}$ according to the specification size.

4.2 Specification

The common specification of the alumina grinding ball is as follows:

4.2.1

Pressing model ball

ϕ 20mm, ϕ 25mm, ϕ 30mm, ϕ 35mm, ϕ 40mm, ϕ 45mm, ϕ 50mm, ϕ 60mm, ϕ 70mm, ϕ 80mm; it can also generate other specifications as per the agreement.

4.2.2

Rolling ball

ϕ 2mm, ϕ 6mm, ϕ 8mm, ϕ 10mm, ϕ 13mm, ϕ 20mm, ϕ 25mm, ϕ 30mm, ϕ 40mm, ϕ 50mm, ϕ 60mm; it can also generate other specifications as per the agreement.

5.1 Apparent quality

The apparent quality of the alumina grinding ball shall comply with the provisions of Table 1.

5.2 Apparent size and deviation

5.2.1

The apparent size and deviation of pressing model ball shall conform to the provisions of Table 2.

5.2.2

The apparent size and deviation of rolling ball shall conform to the provisions of Table 3.

Table 3 - Apparent size and deviation of rolling ball Unit: mm

5.2.3

The ball degree requirements for pressing model ball shall comply with the provisions of Table 4.

6.1 Appearance quality inspection

For appearance quality inspection, randomly select 10 balls from a 25 kg of sample and inspect them using a vernier caliper with an accuracy of 0.02 mm.

6.2 Appearance size and deviation inspection

For appearance size inspection, take 10 balls that have passed the appearance quality inspection and measure them using a vernier caliper with an accuracy of 0.02 mm. For rolling balls, measure their diameters in two perpendicular directions. For pressing model balls, measure their radial size and latitudinal size; and take the arithmetic mean of the diameters. The appearance size and deviation shall comply with the provisions of Tables 2 and 3.

6.3 Ball degree inspection

10 pressing model balls that have passed the appearance quality inspection and size deviation inspection shall be measured using a vernier caliper with an accuracy of 0.02 mm. Each ball shall measure its radial size and latitudinal size, as well as the ratio of the difference between the radial and latitudinal sizes to the specification size.

6.4 Determination of water absorption

Take balls that have passed the appearance quality inspection, size deviation inspection, and ball degree inspection. Take 3 large balls or 3 groups of large balls (each group weighing approximately 100 g); and 3 groups of small balls (each group weighing approximately 100 g).

Test water absorption according to the test methods specified in Clause 5 of GB/T 8488-2001.

6.5 Determination of bulk density

Take balls that have passed the appearance quality inspection, size deviation inspection, and ball degree inspection. Take 3 large balls or 3 groups of large balls (each group weighing approximately 100 g), and 3 groups of small balls (each group weighing approximately 100 g).

Test bulk density according to the method specified in GB/T 2997-2000.

6.6 Determination of alumina content

Conduct the test in accordance with Clause 9, "Determination of Alumina", of GB/T 6900-2006