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

GB/T 20973-2020

Replacing GB/T 20973-2007

Bentonite

膨润土

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009. This standard replaces GB/T 20973-2007 "Bentonite". Compared with GB/T 20973-2007, except for editorial modifications, the main technologies The changes are as follows:

- Modified the normative reference document, replacing the standard in the normative reference document with the current effective standard (see Chapter 2, 2007 Chapter 2 of the edition);
- Deleted the description of the classification of bentonite for foundry and bentonite for metallurgical pellets (see 2007 version 4.3);
- Added product specifications, product marks, quality index requirements and factory inspection items for bentonite for civil engineering (see 4.1.3, 4.2.3, Table 4, 7.1.1.4);
- Deleted the expression of product specification level in 4.4.1 (see 4.4.1 of 2007 edition);
- Deleted the description of the product grade in Table 1 (see Table 1 of the 2007 edition);
- Deleted the expression of product grade in Table 2 (see Table 2 of 2007 edition);
- Increase the quality index requirements and measurement of expansion capacity (see Table 2 and 6.7);
- Removed the index requirements and detection methods of the expansion index (see Table 2 and 6.7 of the 2007 edition);
- Removed the yield value/plastic viscosity index requirements and corresponding detection methods (see Table 3 and 6.9 of the 2007 edition);
- Increased the quality index requirements and determination of dynamic plastic ratio (see Table 3 and 6.9);

1 Scope

China's national product standard for bentonite. It specifies the terms and definitions, the classification, the marking, the requirements, the test methods, the inspection rules, and the packaging, transport and storage, and it applies to bentonite for foundry use, for metallurgical pelletising, for drilling mud and for civil engineering. It does not apply to products whose bentonite structure has been altered by treatment with inorganic acids or organic substances. Bentonite is a clay whose properties come almost entirely from one mineral, montmorillonite, and from one behaviour: the layers of that mineral take water between them and the particle swells, many times its dry volume in the sodium form. Everything bentonite is used for follows from that. In a foundry it is the binder that holds green sand together and lets a mould survive being handled and poured. In iron ore pelletising it is what makes the moist pellet strong enough to travel to the furnace without breaking. In a drilling mud it builds the viscosity that carries cuttings up the hole and the filter cake that seals the wall. And in civil engineering it is the sealing layer of a landfill liner or a slurry wall, where a few centimetres of swollen clay provide a permeability that metres of ordinary soil could not. Those four uses want different things, so the standard classifies by application and sets requirements accordingly: the montmorillonite content, the swelling index, the water absorption, the blue absorption value, the moisture and the fineness for all of them, plus the green and dry compressive strength and the thermal stability that a foundry needs, the viscometer and filtrate properties a drilling grade needs, and the fluid loss and permeability a sealing grade needs. Issued on 2 June 2020 and in force since 1 April 2021, it replaces GB/T 20973-2007.

2 Normative references

The following documents are essential for the application of this document. For dated reference documents, only the dated version applies to this article. For the cited documents without date, the latest version (including all amendments) applies to this document.

GB/T 601 standard titration solution for chemical reagents

GB/T 1966 Test method for apparent porosity and bulk density of porous ceramics

GB/T 1967 Test method for pore diameter of porous ceramics

GB/T 2684 Test method for foundry sand and mixture

GB/T 5005 Specification for drilling fluid materials

GB/T 6003.1 Technical requirements and inspection of test sieve Part

GB/T 6682 Analysis of laboratory water specifications and test methods

GB/T 8170 Numerical Rounding Rules and Representation and Judgment of Limit Values

GB/T 25138 Standard sand for testing foundry binders DZ/T 0118 Laboratory sieve shaker technical conditions

3 Terms and definitions

The following terms and definitions apply to this document.

3.1 Cation exchange capacity 100g Bentonite exchangeable cation millimoles.

3.2 Blue absorption methyleneblueindex 100g bentonite is saturated with water and absorbs grams of anhydrous methylene blue.

3.3 Water absorption The ability of bentonite to absorb water naturally at 20°C and 0.1MPa for 2h.

3.4 Swelcapacity The volume of 1g bentonite swelled in hydrochloric acid solution for 24h.