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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 25138-2024

Replacing GB/T 25138-2010

Standard silica sand for checking foundry binder

检定铸造粘结剂用标准硅砂

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Standardization Administration of the PRC

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1 Scope

The document sets out the designation, the technical requirements, the test methods, the inspection rules and the packaging, marking, transport and storage of standard silica sand for checking foundry binder, called standard foundry silica sand for short.

It applies to the production and inspection of standard silica sand for checking foundry binder.

2 Normative references

The documents cited are GB/T 2684 (test methods for foundry sand and sand mixtures), GB/T 5071 (refractories, test method for true density), GB/T 5611 (foundry terminology), GB/T 6003.1 (test sieves, technical requirements and testing, part 1: woven wire cloth test sieves), GB/T 7143 (methods of chemical analysis of foundry silica sand) and GB/T 9442 (foundry silica sand).

Dated references apply only in the edition quoted; undated references apply in their latest edition, including all amendments.

3 Terms and definitions

The terms and definitions of GB/T 5611 apply, together with the following.

3.1 Standard silica sand for foundry - a silica sand of defined chemical composition and defined technical performance, dedicated to checking the strength and other properties of foundry binders.

The 2010 edition also defined acid demand value and fines content; both definitions were removed in this edition.

4 Designation

The designation of standard foundry silica sand is written in the form ZBS90-53A-1.20. ZBS stands for standard foundry silica sand, from the first letters of the Chinese pinyin for cast, standard and sand. The figure 90 means a silicon dioxide content of 90 % to 93 %. The figure 53 means an average fineness of 53. The letter A means that the deviation grade of the average fineness is grade A. The figure 1.20 means an angularity factor of 1.15 to 1.20.

5 Technical requirements

5.1 Chemical composition, given in Table 1 as mass fraction in per cent. Silicon dioxide 90 to 93. Impurities: aluminium oxide less than 4.50; iron oxide less than 0.30; calcium oxide plus magnesium oxide less than 0.40; potassium oxide less than 2.00; sodium oxide less than 1.00.

5.2 Grain size distribution and average fineness. The average fineness is 53 and the deviation grade is grade A, grade A meaning an average fineness deviation of +/-2. Table 2 gives the grain size distribution, matching the basic sieve aperture, the sieve number and the mass fraction retained: aperture 3.350 mm to 0.600 mm, sieve numbers 6 to 30, retained less than 2 %; 0.425 mm, sieve number 40, less than 13 %; 0.300 mm, sieve number 50, 18 % to 23 %; 0.212 mm, sieve number 70, 40 % to 46 %; 0.150 mm, sieve number 100, 13 % to 17 %; 0.106 mm, sieve number 140, less than 8 %; 0.075 mm, sieve number 200, less than 1.5 %; 0.053 mm down to the pan, sieve number 270 down to the pan, less than 0.1 %, this last figure being the fines content.

5.3 Other performance indicators, given in Table 3. Clay content, mass fraction 0.27 % to 0.30 %. Moisture content, mass fraction not more than 0.20 %. Acid demand value 4.00 mL to 5.00 mL. Loss on ignition, mass fraction not more than 0.45 %. Angularity factor 1.15 to 1.20. True density 2.50 g/cm3 to 2.70 g/cm3. pH value 6.50 to 7.50. Bulk density 1.50 g/cm3 to 1.70 g/cm3. Electrical conductivity not more than 55 μS/cm.

6 Test methods

6.1 Silicon dioxide and impurity contents are determined as in GB/T 7143.

6.2 Grain size distribution, clay content, moisture content, acid demand value and loss on ignition are determined as in GB/T 2684. Fines content is determined by the same method as grain size distribution. Test sieves shall meet GB/T 6003.1, the sieve numbers and their basic apertures being those of Table 2.

6.3 to 6.5 The angularity factor is determined and the average fineness calculated as in GB/T 9442. True density is determined as in GB/T 5071. The pH value, the bulk density and the electrical conductivity are determined as in GB/T 9442.

7 Inspection rules

7.1 Sampling. Standard foundry silica sand is batched in lots of 100 bags, a part lot counting as one lot. An average sample of not less than 1 kg is taken from each of any three bags of the same lot, and the test portion is selected from the sample by quartering. The note explains quartering as the operation of taking a sample from the whole, dividing a cone into four equal parts, taking any two opposite parts and discarding the rest, so reducing the quantity of sample.

7.2 Delivery inspection. Each lot shall be passed by the supplier's quality department before it leaves the works. Grain size distribution, clay content, moisture content, acid demand value and loss on ignition are compulsory items.

7.3 Retesting. On the supplier's side, where one item fails, a double quantity of sample shall be taken again and retested; if the retest still fails, the lot is judged not to conform. On the purchaser's side, where any item fails the inspection made against this document, a double quantity of sample shall be taken again from the same lot and retested; if the retest still fails, the matter shall be settled by agreement between supplier and purchaser or referred to an arbitration body agreed between them.

8 Packaging, marking, transport and storage

8.1 Packaging shall be moisture-proof and leak-proof, each bag holding a net weight of 25 kg.

8.2 The bag shall be marked with the product name, the designation, the production lot number, the production date, the net weight, the place of origin, the producer and the trademark, and shall be accompanied by a product quality certificate.

8.3 During transport the product shall be kept away from dangerous and flammable goods and protected from rain.

8.4 The storage temperature shall not be higher than 50 °C; the product shall be protected from rain and sunlight and shall not be stored mixed with other goods. A storage temperature of 15 °C to 30 °C is recommended so that the sand is ready for use at any time.