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YB

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

YB/T 105-2014

**Methods of physical testing for metallurgical lime
(English Translation)**

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Table of Contents

Foreword...	3
1 Scope...	4
2 Normative references...	4
3 Terms and definitions...	4
4 Activity testing methods...	5
5 Particle size test method...	8

Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard replaces YB/T 105-2005 "Methods of physical testing for metallurgical lime".

Compared with YB/T 105-2005, this standard has the following modifications.

- ADD reactivity potentiometric titration detection;
- MODIFY the definition;
- MODIFY the calculation of inspection results;
- MODIFY the allowable error of inspection results;
- ADD the Appendix A (normative).

This standard was proposed by the China Iron and Steel Industry Association.

This standard shall be under the jurisdiction of the National Steel Standardization Technical Committee (SAC/TC 183).

Drafting organizations of this standard. Shougang Corporation, Metallurgical Industry Information Standards Research Institute, Anshan Kexiang Instrument Co., Ltd., Shaoxing Hongchi Machinery Instrument Manufacturing Co., Ltd.

1 Scope

This standard specifies the terms and definitions, method principles, test methods, calculation of results for the determination of reactivity and particle size composition

of metallurgical lime.

This standard is applicable to the determination of reactivity and particle size composition of metallurgical lime.

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) is applicable to this standard.

GB/T 2007.7 General rules for the sampling and sample preparation of minerals in bulk. The method for determination of size by manual sieving

GB/T 6003.2 Test sieves of perforated metal plate

GB/T 8170 Rules of rounding off for numerical values & expression and judgement of limiting values

3 Terms and definitions

The following terms and definitions apply to this document.

Reactivity

The reaction rate of lime hydration, which is expressed as the number of milliliters of 4 mol/L hydrochloric acid consumed in 10 minutes.

4.1 Principle

Hydrate a certain amount of the specimen. At the same time, use a certain concentration of hydrochloric acid, to neutralize the calcium hydroxide produced during the lime hydration process.

4.4.1 Specimen size

Follow the provisions of YB/T 042.

4.4.2 Specimen preparation method

Crush the sample, until it passes through a 5 mm sieve. Then use a 1 mm sieve to remove

the fine powder. Mix thoroughly and separate out about 500 g using the sample reduction method. Store it in a labeled ground-mouth bottle, for later use.

4.5.2.1 Turn on the hot water heater. (After the temperature reaches the requirement)

automatically inject 2000 mL of $40\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$ hot water, into the 3000 mL beaker.

4.5.2.2 Start the equipment and the stirring paddle will turn on automatically. The system enters the test state. The pH value detector detects the pH value. It controls the pH value to 7.0 ± 0.1 .

4.6.1 If the results of two independent measurements of the same specimen are not

greater than the allowable difference (see 4.6.2), THEN take the arithmetic mean as the test result. If the results of two independent measurements are greater than the allowable difference, increase the number of tests and determine the test results as specified in Appendix A. The test results are rounded to integers, in accordance with GB/T 8170.

4.6.2 Allowable difference

The absolute value of the difference -- between two independent measurement results of the same specimen -- shall not be greater than 4% of the average value.

5.1 Key points of method

The specimens are classified for particle size, according to the prescribed sieve mesh and operating methods. The test results are expressed as the percentage of the quality of each particle size.

5.2.1 Square hole sieve. The sieve hole specifications and size deviations comply with

GB/T 6003. The size of the sieve surface is approximately 800 mm x 600 mm; the height of the sieve frame is approximately 120 mm; handles are installed at both ends of the sieve frame.

5.3 Specimens

Follow the provisions of YB/T 042.

5.4.1 The specimen is screened from large holes to small holes. The height of the sieve

from the ground, steel plate or receiving plate shall not exceed 200 mm.

5.4.5 Combine the material above the sieve into the picked lime blocks. Use the same

method for the lime under sieve, to continue to sieve it on the smaller sieve in the selected series of sieves. The following is same, until the screening is completed.

5.4.6 The screening end point shall be implemented, in accordance with the relevant

provisions of GB/T 2007.7.

5.5 Result calculation

Add up the mass of each level of lime samples. The difference -- between the total mass and the mass of the original specimen -- shall be within 1.5% of the mass of the original specimen. Otherwise, the test will be invalid. Loss of lime is calculated at the smallest level.

5.6 Allowable difference

See Table 1, for allowable differences.

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