

Translated English of Chinese Standard: YB/T105-2014

www.ChineseStandard.net → Buy True-PDF → Auto-delivery.

Sales@ChineseStandard.net

YB

FERROUS METALLURGICAL INDUSTRY STANDARD

OF THE PEOPLE'S REPUBLIC OF CHINA

ICS 73.080

D 52

YB/T 105-2014

Replacing YB/T 105-2005

Methods of physical testing for metallurgical lime

冶金石灰物理检查方法

Issued on: May 06, 2014

Implemented on: October 01, 2014

Issued by: Ministry of Industry and Information Technology of PRC

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
Appendix A (Normative) Acceptance procedure flow chart of specimen analysis result	10

Methods of physical testing for metallurgical lime

Warning: Personnel to whom this standard applies shall have practical experience in formal laboratory work. This standard does not address all possible safety issues. Users are responsible for taking appropriate safety and health measures and ensuring compliance with the conditions stipulated in relevant national regulations.

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

YB/T 042 Lime for metallurgical

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 Activity testing methods

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. From the beginning of adding the lime specimen to the end of the test, it must always be carried out at a certain stirring speed AND the isometry point during the neutralization process shall be maintained. Accurately record the consumption of hydrochloric acid, at 10 minutes.

4.2 Reagents

4.2.1 Hydrochloric acid (4 mol/L).

4.2.2 Phenolphthalein indicator solution (5 g/L): Weigh 0.5 g of phenolphthalein. Add 50 mL of ethanol to dissolve. Add water to dilute it to 100 mL.

4.3 Test equipment and tools

4.3.1 Jaw crusher 60 mm × 100 mm.

4.3.2 Sampling sieve: 1 mm and 5 mm round hole sieve.

4.3.3 Ground mouth bottle: 500 mL.

4.3.4 Flat brown brush: The width is 20 mm.

4.3.5 Balance: The maximum weighing capacity is not less than 100 g; the weighing sensitivity is not more than 0.1 g.

4.3.6 Specimen shovel: The length and width are not less than 30 mm; the side height is not less than 10 mm.

4.3.7 Watch glass: The diameter is 120 mm.

4.3.8 Dryer: The diameter is 250 mm.

4.3.9 Beaker: 3000 mL.

4.3.10 Graduated cylinder: 2000 mL.

4.3.11 Burette: 500 mL, minimum scale not larger than 1 mL.

4.3.12 Thermometer: The maximum temperature is 100 °C; the scale is not greater than 1 °C.

4.3.13 Dropper bottle: 50 mL.

beaker. Start the stirrer. Use a thermometer to measure the water temperature.

4.5.1.3 When the water temperature drops to $40\text{ }^{\circ}\text{C} \pm 1\text{ }^{\circ}\text{C}$. Add 8 ~ 10 drops of phenolphthalein indicator solution (4.2.2). Pour the specimen into water for digestion at one time. Start timekeeping at the same time.

4.5.1.4 When the digestion begins to turn red, use hydrochloric acid (4.2.1) for digestion. Titrate and maintain the solution until the red color just disappears. When red color appears again, continue to add hydrochloric acid dropwise. Keep titrating the solution throughout the process, until the red color just disappears. Record the number of milliliters of hydrochloric acid (4.2.1), which is consumed at the 10th minute. If necessary, it may also record the number of milliliters of hydrochloric acid (4.2.1), which is consumed at any time.

Note: In the later stage of titration, if the color change is not obvious, it may supplementally add 2 ~ 4 drops of phenolphthalein indicator solution appropriately.

4.5.2 Automatic hydrochloric acid titration method

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 .

4.5.2.3 Accurately weigh 50.0 g of the specimen, which has a particle size of 1 mm ~ 5 mm. Pour it into a beaker for testing. The instrument will automatically titrate. When the pH value is greater than 7.1, the instrument will add hydrochloric acid (4.2.1). When the pH value is less than 6.9, stop adding hydrochloric acid (4.2.1). The instrument will automatically complete the test; record the number of milliliters of hydrochloric acid (4.2.1), which is consumed at the 10th minute.

4.6 Calculation of results

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 Particle size test method

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 Test equipment and tools

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 × 600 mm; the height of the sieve frame is approximately 120 mm; handles are installed at both ends of the sieve frame.

5.2.2 Sample container: It is made of metal or other materials, that do not absorb moisture.

5.2.3 Weighing instrument: The weighing sensitivity shall not exceed 10 g.

5.2.4 Specimen shovel, plate, brush, broom, etc.

5.3 Specimens

Follow the provisions of YB/T 042.

5.4 Screening steps

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.

5.4.2 For specimens which have a maximum particle size greater than 50 mm, the amount of material to be screened each time shall not exceed 20 kg. For specimens, which have a maximum particle size less than or equal to 50 mm, the feeding amount for each screening shall not exceed 10 kg.

5.4.3 When feeding, spread the specimen evenly on the sieve, which has the largest hole size, in the series of sieves. Pick out the lime blocks, that are significantly larger than the sieve aperture; place them in a spare specimen tray.

5.4.4 Shake the sieve in the horizontal direction, at a shaking frequency of about 30 times per minute. The shaking distance does not exceed 200 mm; no impact force is generated.

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.

This is an excerpt of the PDF (Some pages are marked off intentionally)

Full-copy PDF can be purchased from 1 of 2 websites:

1. <https://www.ChineseStandard.us>

- SEARCH the standard ID, such as GB 4943.1-2022.
- Select your country (currency), for example: USA (USD); Germany (Euro).
- Full-copy of PDF (text-editable, true-PDF) can be downloaded in 9 seconds.
- Tax invoice can be downloaded in 9 seconds.
- Receiving emails in 9 seconds (with download links).

2. <https://www.ChineseStandard.net>

- SEARCH the standard ID, such as GB 4943.1-2022.
- Add to cart. Only accept USD (other currencies - <https://www.ChineseStandard.us>).
- Full-copy of PDF (text-editable, true-PDF) can be downloaded in 9 seconds.
- Receiving emails in 9 seconds (with PDFs attached, invoice and download links).

Translated by: Field Test Asia Pte. Ltd. (Incorporated & taxed in Singapore. Tax ID: 201302277C)

About Us (Goodwill, Policies, Fair Trading...): <https://www.chinesestandard.net/AboutUs.aspx>

Contact: Wayne Zheng, Sales@ChineseStandard.net

Linkin: <https://www.linkedin.com/in/waynezhengwenrui/>

----- The End -----