



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

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**Methods for sampling and testing the grain size of ferroalloys  
products**

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## Table of Contents

|                                                                                                                                       |    |
|---------------------------------------------------------------------------------------------------------------------------------------|----|
| Foreword .....                                                                                                                        | 4  |
| 1 Scope .....                                                                                                                         | 6  |
| 2 Normative References .....                                                                                                          | 6  |
| 3 Equipment and Tools .....                                                                                                           | 7  |
| 3.1 Forklift or Crane .....                                                                                                           | 7  |
| 3.2 Unpacking Tools .....                                                                                                             | 7  |
| 3.3 Sampling Shovel .....                                                                                                             | 7  |
| 3.4 Sampling Drill .....                                                                                                              | 7  |
| 3.5 Measuring Scales .....                                                                                                            | 8  |
| 3.6 Ruler or Tape Measure .....                                                                                                       | 8  |
| 3.7 Test Sieve .....                                                                                                                  | 8  |
| 3.8 Vibrating Sieving Machine .....                                                                                                   | 9  |
| 4 Specimen Composition .....                                                                                                          | 9  |
| 4.1 Directly Formation of Bulk Sample .....                                                                                           | 9  |
| 4.2 Formation of Bulk Sample from Subsample .....                                                                                     | 9  |
| 5 Sampling .....                                                                                                                      | 10 |
| 5.1 Sampling Shovel .....                                                                                                             | 10 |
| 5.2 Sampling Drill .....                                                                                                              | 12 |
| 5.3 Manual Selection Method .....                                                                                                     | 13 |
| 5.4 Whole Package .....                                                                                                               | 13 |
| 6 Reduction .....                                                                                                                     | 14 |
| 7 Grain Size Testing .....                                                                                                            | 14 |
| 8 Test Results and Expression .....                                                                                                   | 16 |
| 8.1 Calculation of Excessively Large Grain Size .....                                                                                 | 16 |
| 8.2 Calculation of Excessively Small Grain Size .....                                                                                 | 16 |
| 8.3 Calculation of Comprehensive Grain Size .....                                                                                     | 16 |
| 8.4 Determination and Expression of Grain Size Test Results .....                                                                     | 17 |
| 9 Handling of Objections to Screening Results .....                                                                                   | 17 |
| 10 Inspection Report .....                                                                                                            | 17 |
| Appendix A (informative) Comparison of Chapter No. between This Standard and ISO<br>4551:1987 .....                                   | 19 |
| Appendix B (informative) Technical Differences between This Standard and ISO<br>4551:1987, and the Causes for These Differences ..... | 20 |

|                                                                                                                               |    |
|-------------------------------------------------------------------------------------------------------------------------------|----|
| Appendix C (informative) Comprehensive Accuracy of the Determination of Ferroalloy Grain Size .....                           | 21 |
| Appendix D (informative) Relational Graph of the Rated Maximum Grain Size and the Minimum Increment Size of Ferroalloys ..... | 23 |

## 1 Scope

This Standard specifies the equipment and tools, specimen composition, sampling, reduction, grain size testing, test results and expression, handling of objections to screening results and inspection report for grain size inspection of ferroalloy products.

This Standard is applicable to the sampling and testing during grain size acceptance and arbitration of ferroalloy products.

## 2 Normative References

The following documents are indispensable to the application of this document. In terms of references with a specified date, only versions with a specified date are applicable to this document. In terms of references without a specified date, the latest version (including all the modifications) is applicable to this document.

GB/T 4010 Ferroalloys Sampling and Preparation of Samples for Chemical Analysis (GB/T 4010-2015, ISO 4552:1987, MOD)

GB/T 6003.1 Test Sieves - Technical Requirements and Testing - Part 1: Test Sieves of Metal Wire Cloth (GB/T 6003.1-2012, ISO 3310-1:2000, MOD)

GB/T 6003.2 Test Sieves - Technical Requirements and Testing - Part 2: Test Sieves of Metal Wire Cloth (GB/T 6003.2-2012, ISO 3310-2:1999, MOD)

GB/T 8170 Rules of Rounding off for Numerical Values & Expression and Judgement of Limiting Values

GB/T 28369 Ferroalloys - Experimental Methods for the Evaluation of the Quality Variation and Methods for Checking the Precision of Sampling (GB/T 28369-2012, ISO 7087:1984, MOD)

other specifications, use square hole test sieves.

7.5 The testing and screening operation of the grain size of ferroalloys is generally carried out from the largest sieve hole to the smallest sieve hole. The oversize material (excessively large grain size) with the largest sieve hole and the undersize material (excessively small grain size)

with the smallest sieve hole will be respectively weighed.

7.6 During manual screening, the height of the broken bag shall not exceed 300 mm from the ground. If a drainage plate is used, the landing point between the broken packaging bag and the drainage plate shall not be greater than 300 mm, and the included angle between the drainage plate and the sieve mesh shall not be greater than 45°. A fork or other tools may be used first to separate the parts that are significantly larger than the lower screening limit, then, sieve the parts that cannot be separated. The ferroalloy added for each screening shall ensure that the oversize ferroalloy can fully contact the screen surface during the screening operation. Shake the screen back and forth, the moving distance is about one arm length (about 300 mm), and reciprocate once every 1 s ~ 2 s. The amount of feed for each screening and the number of reciprocating screenings shall comply with the stipulations of Table 8.

7.7 During mechanical screening, check that the sieve holes of the vibrating sieving machine are not blocked. Adjust the amplitude and frequency of the vibrating sieving machine to be basically the same as manual screening. Use a forklift or hoisting method to lift the sample to be screen to the feed inlet of the vibrating sieving machine; use a tool to cut the bottom of the package, and the drop point between the broken packaging bag and the drainage plate of the vibrating sieving machine shall not be greater than 300 mm, and the included angle between the drainage plate and the sieve mesh shall not be greater than 45°. The materials shall be fed at a constant speed, so that all samples in the package can pass through the vibration sieving machine.

7.8 Due to the difference brittleness of various ferroalloys, they cannot become regular-shaped particles (blocks) when broken. After screening, the oversize product (excessively large grain size) with the largest sieve hole can be manually sorted. The side length of the ferroalloy particles in one direction does not exceed 1.5 times the maximum limit value. Change its direction or position, and the ferroalloy particles that smoothly pass through the sieve holes are the undersize material with the largest sieve hole.

m<sub>1</sub>---the mass of excessively large grain size, expressed in (kg);

m<sub>2</sub>---the mass of excessively small grain size, expressed in (kg);

m---the total mass of the specimen for grain size testing, expressed in (kg).

#### 8.4 Determination and Expression of Grain Size Test Results

8.4.1 The grain size test of a delivery batch shall be based on the screening test results of one random sampling.

8.4.2 The grain size test results shall be rounded to one decimal place in accordance with GB/T 8170.

8.4.3 See Appendix D (TRANSLATOR NOTE: it should be Appendix C) for the comprehensive accuracy of grain size determination.

## 9 Handling of Objections to Screening Results

9.1 If there is any objection to the screening results, manual screening will be used as the arbitration method for grain size testing.

9.2 During arbitration sampling, representatives of both the supply-side and demand-side must be present. The sampling tools, inspection equipment and inspection site shall be provided by the party where the goods are located, so as to facilitate the work of both parties.

9.3 During the re-inspection or arbitration of the user's site, consider that various ferroalloy products will increase a certain amount of excessively small grain size during the transportation.

For excessively small grain size, an increase of 2% is allowed for medium-carbon ferromanganese, micro-low carbon ferromanganese, silicon-manganese alloy, metallic manganese, ferrotitanium and ferrosilicon, and for other products, an increase of 1% is allowed.

10 Inspection Report The inspection report shall include the following contents:

- a) All information needed to identify the sample, laboratory name, address and test date;
- b) Serial No. of implemented Standard;
- c) Results and their expression;
- d) Necessary detailed description of the specimen itself;
- e) Any abnormal phenomena during the determination process and any operations not specified in this Standard that may affect the specimen determination results;