

ICS 73.060.10
CCS D 31



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

GB/T 24237-2025

Replacing GB/T 24237-2009

**Iron ore pellets for shaft direct-reduction feedstocks -
Determination of the clustering index**

直接还原炉料用铁矿球团 成团指数的测定方法

(English Translation)

Issued on: June 30, 2025

Implemented on: January 1, 2026

**Issued by: State Administration for Market Regulation, China National
Standardization Administration**

Table of Contents

Preface
1 Scope
2 Normative references
3 Terms and Definitions
4 Principle
5 Sampling, sample preparation and test sample preparation
5.1 Sampling and sample preparation
5.2 Preparation of test samples
6 Devices
6.1 General Principles
6.2 Reduction reaction tube
6.3 Loading device
6.4 Porcelain Ball
6.5 Heating furnace
6.6 Balance
6.7 Gas supply system
6.8 Drum
6.9 Drum power equipment
6.10 Weighing equipment
7 Test conditions
7.1 General Conditions
7.2 Reducing gas
7.3 Heating and cooling gases
7.4 Test sample temperature
7.5 Test sample load
8 Test Step
8.1 Number of test measurements
8.2 Chemical analysis
8.3 Restore
8.4 Dispersion Operation
9 Results Presentation
9.1 Calculation of the Agglomeration Index (CI)

9.2 Repeatability and acceptability of test results

10 Test Report

11 Check

Appendix A (Normative) Test Result Acceptance Flowchart

Appendix B (Informative) Clustering Index Calculation Example

Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting.

This document replaces GB/T 24237-2009 "Determination of agglomeration properties of iron ore pellets for direct reduction furnace charge" and is in line with GB/T 24237-Compared with 2009, in addition to structural adjustments and editorial changes, the main technical changes are as follows.

- a) The scope has been changed (see Chapter 1, Chapter 1 of the 2009 edition);
- b) Part of the statement of the principle has been changed (see Chapter 4, Chapter 4 of the 2009 edition);
- c) The requirements for heating furnaces have been changed (see 6.5, 6.5 of the 2009 edition);
- d) The requirements for rotating drums have been changed (see 6.8, 6.8 of the 2009 edition);
- e) The requirements for drum power equipment have been changed (see 6.9, 6.9 of the 2009 edition);
- f) Change "GB/T 6730.5 Determination of total iron content (w2)" to "ISO 2597-2 Determination of total iron content (w2)" (see 8.2 and 8.3, 8.2 and 8.3 of the 2009 edition);
- g) Added the test step of "tare the balance and start the timer" (see 8.3);
- h) Added the record requirements for test results (see 9.1).

This document is equivalent to ISO 11256:2015 "Iron ore pellets for direct reduction furnace charge - Determination of agglomeration index".

1 Scope

This document specifies the relative measurement of agglomeration formation of iron ore pellets during the reduction process under conditions simulating the shaft furnace direct

reduction process.

Determine the method.

This document applies to thermally bonded pellets.

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document.

For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to this document.

ISO 2597-1 Iron ores - Determination of total iron content - Part 1: Tin dichloride reduction titration method Note. GB/T 6730.70-2013 Iron ore - Determination of total iron content - Stannous chloride reduction titration method (ISO 2597-1:2006, MOD) ISO 2597-2 Iron ores - Determination of total iron content - Part 2: Titanium trichloride reduction titration method Note. GB/T 6730.5-2022 Iron ore-Determination of total iron content-Titanium trichloride reduction titration method (ISO 2597-2:2019, MOD) Note. GB/T 10322.1-2023 Iron ore sampling and sample preparation methods (ISO 3082:2017, IDT) ISO 9035 Iron ores - Determination of acid-soluble iron content - Titration (II)content-Titrimetricmethod] Note. GB/T 6730.71-2014 Iron ore-Determination of ferrous iron content-Acid-soluble titrimetric method (ISO 9035:1989, MOD) Note. GB/T 20565-2022 Terminology for iron ore and direct reduced iron (ISO 11323:2010, IDT)

3 Terms and Definitions

For the purposes of this document, the terms and definitions given in ISO 11323 apply.

4 Principles

In a fixed bed at 850°C, a reducing gas consisting of hydrogen (H₂), carbon monoxide (CO), carbon dioxide (CO₂) and nitrogen (N₂) is used.

The body is subjected to isothermal reduction test under static load until the reduction degree reaches 95%. The clumped test sample is dispersed by rotating the drum.

After the prescribed dispersion operation is completed, the agglomeration index is calculated from the cumulative mass of the pellets that are still agglomerated.