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

*Boulettes de minerais de fer pour charges utilisées dans les procédés
par réduction directe — Détermination du pouvoir collant*



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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 11256 was prepared by Technical Committee ISO/TC 102, *Iron ore and direct reduced iron*, Subcommittee SC 3, *Physical testing*.

This second edition cancels and replaces the first edition (ISO 11256:1998), which has been revised to homogenise with other physical test standards.

Introduction

This International Standard concerns one of a number of physical test methods that have been developed to measure various physical parameters and to evaluate the behaviour of iron ores, including reducibility, disintegration, crushing strength, apparent density, etc. This method was developed to provide a uniform procedure, validated by collaborative testing, to facilitate comparisons of tests made in different laboratories.

The results of this test should be considered in conjunction with other tests used to evaluate the quality of iron ores as feedstocks for direct-reduction processes.

This International Standard may be used to provide test results as part of a production quality control system, as a basis of a contract, or as part of a research project.

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CAUTION — This International Standard may involve hazardous materials, operations and equipment. This standard does not purport to address all of the safety issues associated with its use. It is the responsibility of the user of this International Standard to establish appropriate safety and health practices and to determine the applicability of regulatory limitations prior to its use.

1 Scope

This International Standard specifies a method to provide a relative measure for evaluating the formation of clusters of iron ore pellets when reduced under conditions resembling those prevailing in shaft direct-reduction processes.

This International Standard is applicable to hot-bonded pellets.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 2597-1:2006, *Iron ores — Determination of total iron content — Part 1: Titrimetric method after tin(II) chloride reduction*

ISO 3082:2000¹⁾, *Iron ores — Sampling and sample preparation procedures*

ISO 9035:1989, *Iron ores — Determination of acid-soluble iron(II) content — Titrimetric method*

ISO 9507:1990, *Iron ores — Determination of total iron content — Titanium(III) chloride reduction methods*

ISO 11323:2002, *Iron ore and direct reduced iron — Vocabulary*

3 Terms and definitions

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

4 Principle

The test portion is isothermally reduced in a fixed bed, at 850 °C, under static load, using a reducing gas consisting of H₂, CO, CO₂ and N₂, until a degree of reduction of 95 %. The reduced test portion (cluster) is disaggregated by tumbling, using a specific tumble drum. The clustering index is calculated as the mass of clustered material accumulated after specified disaggregation operations.

1) Under revision to incorporate ISO 10836, *Iron ores — Method of sampling and sample preparation for physical testing*.