
**Iron ore pellets for blast furnace
and direct reduction feedstocks —
Determination of the crushing strength**

*Boulettes de minerais de fer pour charges de hauts fourneaux et
réduction directe — Détermination de la résistance à l'écrasement*



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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#)

The committee responsible for this document is ISO/TC 102, *Iron ore and direct reduced iron*, Subcommittee SC 3, *Physical testing*.

This fourth edition cancels and replaces the third edition (ISO 4700:2007) which has been technically revised to provide clarification in [7.2](#) when using automatic equipment.

Introduction

This International Standard concerns one of a number of physical test methods that have been developed to measure various physical parameters and characteristics 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 have to be considered in conjunction with other tests used to evaluate the quality of iron ores as feedstocks for blast furnace and direct reduction processes.

This International Standard can 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.

Iron ore pellets for blast furnace and direct reduction feedstocks — Determination of the crushing strength

CAUTION — This International Standard may involve hazardous operations and equipment. This International 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 determine the applicability of regulatory limitations prior to its use.

1 Scope

This International Standard specifies a method to provide a measure of the compressive load attained to cause breakage of pellets.

This International Standard is applicable to hot bonded pellets.

2 Normative references

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

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

ISO 11323, *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

A single pellet of a specific size range is compressed at a specific speed. The procedure is repeated on all pellets in the test portion. The crushing strength is calculated as the arithmetic mean of all the measurements obtained.

5 Sampling, sample preparation and preparation of test portions

5.1 Sampling and sample preparation

Sampling of a lot and preparation of a test sample shall be in accordance with ISO 3082.

The size range for pellets shall be $-12,5 \text{ mm} +10,0 \text{ mm}$.

A test sample of at least 1 kg, on a dry basis, of sized pellets shall be obtained.

Oven-dry the test sample to constant mass at $105 \text{ }^{\circ}\text{C} \pm 5 \text{ }^{\circ}\text{C}$ and cool it to room temperature before testing.

NOTE Constant mass is achieved when the difference in mass between two subsequent measurements becomes less than 0,05 % of the initial mass of the test sample.