INTERNATIONAL STANDARD

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Iron ores for blast furnace and direct reduction feedstocks — Determination of the tumble and abrasion indices

Minerais de fer pour charges de hauts fourneaux et pour procédés par réduction directe — Détermination des indices de cohésion et d'abrasion

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Foreword

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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).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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 fifth edition cancels and replaces the fourth edition (ISO 3271:2007), of which it constitutes a minor revision to contemplate the care needed during hand sieving, to introduce the mechanical sieving, and to exclude the reference to ISO 4701.

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 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 ores for blast furnace and direct reduction feedstocks — Determination of the tumble and abrasion indices

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 relative measure for evaluating the resistance of iron ores to size degradation by impact and abrasion. It covers the determination of the tumble and abrasion indices.

This International Standard is applicable to lump ores, sinters, and 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 3310–1, *Test sieves — Technical requirements and testing — Part 1: Test sieves of metal wire cloth*

ISO 3310–2, *Test sieves — Technical requirements and testing — Part 2: Test sieves of perforated metal plate*

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

The test portion is tumbled in a circular drum for a total of 200 revolutions, at 25 r/min. The product material is sieved with test sieves having square openings of 6,30 mm and 500 μm. The tumble index is expressed as the mass percentage of material greater than 6,30 mm and the abrasion index as the mass percentage of material less than 500 μm.

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 −40,0 mm + 6,30 mm.

The size range for sinters and lump ores shall be −40,0 mm + 10,0 mm.

A test sample of at least 60 kg, on a dry basis, of the sized material shall be obtained.