INTERNATIONAL STANDARD

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Second edition
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Direct reduced iron — Determination of apparent density and water absorption of hot briquetted iron (HBI)

Minerais de fer préréduits — Détermination de la masse volumique apparente et de l'absorption d'eau du fer briqueté à chaud

Reference number
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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 second edition cancels and replaces the first edition (ISO 15968:2000), which has been technically revised with the following changes:

— to homogenize its structure and wording with other physical test standards;

— to contemplate the outcomes of the studies on mass definition.

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Introduction

This test method has been developed to determine the apparent density and water absorption of direct reduced iron in the form of hot briquetted iron (HBI).

Results of this test have to be considered in conjunction with other tests used to evaluate the quality of products from 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.

The apparent density measured in this test can be used to certify that the HBI meets the apparent density requirements of the International Maritime Organization (IMO) Code of Safe Practice for Solid Bulk Cargoes.

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Direct reduced iron — Determination of apparent density and water absorption of hot briquetted iron (HBI)

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 of determining the apparent density and water absorption of direct reduced iron by immersion in water.

This International Standard is applicable to hot briquetted iron (HBI).

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 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 10835, *Direct reduced iron and hot briquetted iron — Sampling and sample preparation*

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

Dried briquettes are weighed in air, soaked in water, surface-dried and weighed again: first in air and then in water. The apparent density and water absorption are determined by water absorption method.

5 Sample, sample preparation and preparation of test portions

5.1 Sampling and sample preparation

Sampling of a lot of HBI and sample preparation shall be in accordance with ISO 10835.

A test sample of a sufficient quantity to provide at least 100 briquettes shall be obtained.

Sieve the test sample by hand on a 40 mm test sieve to discard any −40 mm material.

5.2 Preparation of test portions

Spread the test sample on a smooth and flat plate to form a single layer of briquettes, in the shape of a rectangle.

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