INTERNATIONAL STANDARD

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Iron ores — Determination of calcium — Flame atomic absorption spectrometric method

Minerais de fer — Dosage du calcium — Méthode par spectrométrie d'absorption atomique dans la flamme

Reference number
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ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

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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).

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For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 102, *Iron ore and direct reduced iron*, Subcommittee SC 2, *Chemical analysis*.

This fourth edition cancels and replaces the third edition (ISO 10203:2015), of which it constitutes a minor revision with the following changes:

— in 5.11, minor editorial/grammatical amendments have been incorporated;

— in 6.1, "with a lid" has been inserted after "crucible";

— in 6.3 b), "the ratio between" has been inserted before "the slope" and minor editorial/grammatical amendments have been incorporated;

— in 7.2, reference to ISO 2596 has been incorporated and 7.2 has been rearranged in a more appropriate layout/format;

— in 8.2, reference to ISO 2596 has been incorporated;

— "predried" has been deleted where it is inappropriate in 8.1, 8.2, and 8.3.2;

— some references to the reagents in 8.4.2, 8.4.3, and Table 2 have been corrected;

— in the last line of 9.2.3, the formula has been corrected from $\left|\mu_1 - A_c\right| \leq P$ to $\left|\mu_1 - \mu_2\right| \leq P$;

— in 9.2.4, Formula (7) and the relevant descriptions have been modified to harmonize this subclause across all International Standards for which ISO/TC 102/SC 2 is responsible.

Iron ores — Determination of calcium — Flame atomic absorption spectrometric method

WARNING — This document might involve hazardous materials, operations, and equipment. This document does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of this document to establish appropriate health and safety practices and determine the applicability of regulatory limitations prior to use.

1 Scope

This document specifies a flame atomic absorption spectrometric method for the determination of the mass fraction of calcium in iron ores.

This method is applicable to mass fractions of calcium between 0,010 % and 8,00 % in natural iron ores, iron ore concentrates, and agglomerates, including sinter products.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 648, *Laboratory glassware — Single-volume pipettes*

ISO 1042, *Laboratory glassware — One-mark volumetric flasks*

ISO 2596, *Iron ores — Determination of hygroscopic moisture in analytical samples — Gravimetric, Karl Fischer and mass-loss methods*

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

ISO 3696, *Water for analytical laboratory use — Specification and test methods*

ISO 7764, *Iron ores — Preparation of predried test samples for chemical analysis*

ISO 80000-1:2009, *Quantities and units — Part 1: General*

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at http://www.iso.org/obp

4 Principle

The test portion is decomposed by the treatment with hydrochloric acid and a small amount of nitric acid, and then evaporated to dehydrate silica, followed by dilution and filtration.

The residue is ignited and silica is removed by evaporation with hydrofluoric and sulfuric acids. The residue is fused with sodium carbonate and the cooled melt is dissolved in the filtrate.