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

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

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Contents

Page

Foreword ... **iv**
Introduction ... **v**
1 Scope ... **1**
2 Normative references ... **1**
3 Terms and definitions ... **1**
4 Principle ... **1**
5 Reagents ... **2**
6 Apparatus ... **2**
7 Sampling and samples ... **3**
7.1 Laboratory sample ... 3
7.2 Preparation of predried test samples ... 3
8 Procedure ... **4**
8.1 Number of determinations ... 4
8.2 Test portion ... 4
8.3 Blank test and check test ... 4
8.4 Determination ... 4
8.4.1 Decomposition of the test portion ... 4
8.4.2 Removal of iron ... 5
8.4.3 Treatment of the residue ... 5
8.4.4 Preparation of the calibration solutions ... 5
8.4.5 Adjustment of the atomic absorption spectrometer ... 6
8.4.6 Atomic absorption measurements ... 6
9 Expression of results ... **6**
9.1 Calculation of nickel content ... 6
9.2 General treatment of results ... 7
9.2.1 Repeatability and permissible tolerance ... 7
9.2.2 Determination of analytical result ... 7
9.2.3 Between-laboratories precision ... 7
9.2.4 Check for trueness ... 8
9.2.5 Calculation of final result ... 9
9.3 Oxide factor ... 9
10 Test report ... **9**
Annex A (normative) **Flowsheet of the procedure for the acceptance of analytical values for test samples** ... **11**
Annex B (informative) **Derivation of repeatability and permissible tolerance formulae** ... **12**
Annex C (informative) **Precision data obtained by international analytical trial** ... **13**
Bibliography ... **14**

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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 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 02, *Chemical analysis*.

This third edition cancels and replaces the second edition (ISO 15633:2015), of which it constitutes a minor revision with the following changes:

— in Clause 1 "0,1 %" has been replaced by "0,10 %";

— in 7.1 "<160 μm" has been replaced by "–160 μm";

— in 8.2 a new sentence has been included to make reference to ISO 2596;

— in the titles of 9.1, Table B.1 and Figure C.1 "sulfur" has been replaced by "nickel";

— in 9.2.4 Formula (8) and the relevant descriptions have been modified to harmonize this subclause across all documents for which ISO/TC 102/SC 2 is responsible.

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Introduction

The objective of a proposed revision of ISO 9685:1991 was to extend the lower limit for a flame atomic absorption spectrometric method determination of both chromium and nickel in iron ores down to 0,001 %. However, due to bias, the method for nickel could not be approved for referee purposes.

The 22nd meeting of ISO/TC 102/SC 2 decided to progress this document as a non-referee method.

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Iron ores — Determination of nickel — 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 prior to use.

1 Scope

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

This method is applicable to mass fractions of nickel between 0,001 % and 0,10 % in natural iron ores, iron ore concentrates and agglomerates including sinter products.

This method is not appropriate for referee purposes.

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 of iron ore is decomposed by treatment with hydrochloric and nitric acids.

The major portion of iron in the filtrate is removed by extraction with 4-methylpentan-2-one.

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