Steel and iron - Determination of total carbon content - Infrared absorption method after combustion in an induction furnace

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EESTI STANDARDI EESSÕNA **NATIONAL FOREWORD**

Käesolev Eesti standard EVS-EN ISO 9556:2003 sisaldab Euroopa standardi EN ISO 9556:2001 ingliskeelset teksti. Käesolev dokument on jõustatud 18.02.2003 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes. Standard on kättesaadav Eesti standardiorganisatsioonist.	This Estonian standard EVS-EN ISO 9556:2003 consists of the English text of the European standard EN ISO 9556:2001. This document is endorsed on 18.02.2003 with the notification being published in the official publication of the Estonian national standardisation organisation. The standard is available from Estonian standardisation organisation.

Käsitlusala: This International Standard specifies an infrared absorption method after combustion in an induction furnace for the determination of the total carbon content in steel and iron	**Scope:** This International Standard specifies an infrared absorption method after combustion in an induction furnace for the determination of the total carbon content in steel and iron

ICS 77.040.30

Võtmesõnad: absorption spectra, carbon, chemical analysis and testing, chemical analysis and testing, determination of content, infrared spectra, iron, steels, testing

EUROPEAN STANDARD
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English version

Steel and iron – Determination of total carbon content

Infrared absorption method after combustion in an induction furnace
(ISO 9556 : 1989)

Aciers et fontes – Dosage du carbone total – Méthode par absorption dans l'infrarouge après combustion dans un four à induction (ISO 9556 : 1989)

Stahl und Eisen – Bestimmung des Gesamtkohlenstoffgehalts – Verfahren mit Infrarotabsorption nach Verbrennung im Induktionsofen (ISO 9556 : 1989)

This European Standard was approved by CEN on 2001-05-11.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Management Centre or to any CEN member.

The European Standards exist in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Management Centre has the same status as the official versions.

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Management Centre: rue de Stassart 36, B-1050 Brussels

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Foreword

International Standard

ISO 9556 : 1989 Steel and iron – Determination of total carbon content – Infrared absorption method after combustion in an induction furnace,

which was prepared by ISO/TC 17 'Steel' of the International Organization for Standardization, has been adopted by Technical Committee ECISS/TC 20 'Methods of chemical analysis of ferrous products', the Secretariat of which is held by SIS, as a European Standard.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, and conflicting national standards withdrawn, by December 2001 at the latest.

In accordance with the CEN/CENELEC Internal Regulations, the national Standards Organizations of the following countries are bound to implement this European Standard:

Austria, Belgium, the Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom.

Endorsement notice

The text of the International Standard ISO 9556 : 1989 was approved by CEN as a European Standard without any modification.

NOTE: Normative references to international publications are listed in Annex ZA (normative.)

1 Scope

This International Standard specifies an infrared absorption method after combustion in an induction furnace for the determination of the total carbon content in steel and iron.

The method is applicable to carbon contents between 0,003 % (m/m) and 4,5 % (m/m).

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards listed below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 377 : 1985, *Wrought steel — Selection and preparation of samples and test pieces.*

ISO 385-1 : 1984, *Laboratory glassware — Burettes — Part 1: General requirements.*

ISO 648 : 1977, *Laboratory glassware — One-mark pipettes.*

ISO 1042 : 1983, *Laboratory glassware — One-mark volumetric flasks.*

ISO 5725 : 1986, *Precision of test methods — Determination of repeatability and reproducibility for a standard test method by inter-laboratory tests.*

3 Principle

Combustion of a test portion with accelerator at a high temperature in a high-frequency induction furnace in a current of pure oxygen. Transformation of carbon into carbon dioxide and/or carbon monoxide.

Measurement by infrared absorption of the carbon dioxide and/or carbon monoxide carried by a current of oxygen.

4 Reagents

During the analysis, unless otherwise stated, use only reagents of recognized analytical grade and only distilled water or water of equivalent purity.

4.1 Water, free from carbon dioxide.

Boil water for 30 min, cool to room temperature and bubble with oxygen (4.2) for 15 min. Prepare just before use.

4.2 Oxygen, 99,5 % (m/m) minimum.

An oxidation catalyst [copper(II) oxide or platinum] tube heated to a temperature above 450 °C must be used prior to a purifying unit (see annex C), when the presence of organic contaminants is suspected in the oxygen.

4.3 Pure iron, of known low carbon content less than 0,001 0 % (m/m).

4.4 Suitable solvent, appropriate for washing greasy or dirty test samples, for example, acetone.

4.5 Magnesium perchlorate [$Mg(ClO_4)_2$], particle size: from 0,7 mm to 1,2 mm.

4.6 Barium carbonate

Dry barium carbonate (minimum assay: 99,5 %) at 105 °C to 110 °C for 3 h and cool in a desiccator before use.

4.7 Sodium carbonate

Dry anhydrous sodium carbonate (minimum assay: 99,9 %) at 285 °C for 2 h and cool in a desiccator before use.

4.8 Accelerator: copper, tungsten-tin mixture or tungsten of known low carbon content less than 0,001 0 % (m/m).

4.9 Sucrose, standard solution, corresponding to 25 g of C per litre.

Weigh, to the nearest 1 mg, 14,843 g of sucrose ($C_{12}H_{22}O_{11}$) (analytical standards grade) previously dried at 100 °C to 105 °C for 2,5 h and cooled in a desiccator.