

**Mustmetallide keemiline analüüs.
Fosforisisalduse määramine terases ja
rauas. Spektrofotomeetriline meetod**

Chemical analysis of ferrous materials -
Determination of phosphorus in steels and irons -
Spectrophotometric method

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 10184:2000 sisaldab Euroopa standardi EN 10184:1989+AC:1991 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 11.01.2000 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 10184:2000 consists of the English text of the European standard EN 10184:1989+AC:1991.</p> <p>This document is endorsed on 11.01.2000 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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<p>Käsitlusala:</p> <p>Standard esitab spektrofotomeetrilise meetodi fosforisisalduse määramiseks terases ja malmis, mille fosforisisaldus on vahemikus 0,0005 kuni 1,5 massiprotsenti.</p>	<p>Scope:</p>
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Võtmesõnad: fosfor, keemiline analüüs, malm, raud- ja terastooted, sisalduse määramine, spektrofotomeetriline analüüs, terased

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English version

Chemical analysis of ferrous materials
Determination of phosphorus in steels and irons
Spectrophotometric method

Analyse chimique des matériaux sidérurgiques; dosage du phosphore dans les aciers et fontes; méthode spectrophotométrique

Chemische Analyse von Eisenwerkstoffen; Bestimmung von Phosphor in Stählen und Eisen; spektralphotometrisches Verfahren

This European Standard was approved by CEN on 1989-05-15. 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 Central Secretariat or to any CEN member.

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CEN

European Committee for Standardization

Comité Européen de Normalisation

Europäisches Komitee für Normung

Central Secretariat : rue de Stassart 36, B-1050 Brussels

Brief history

This European Standard takes over the content of Euronorm 184-87, Chemical analysis of ferrous materials — Determination of phosphorus in steels and irons — Spectrophotometric method, prepared by ECIS/TC 20, Methods of chemical analysis, the Secretariat of which is allocated to the Dansk Standardiseringsraad (DS).

It has been submitted to the CEN Formal Vote following the decision of the Coordinating Commission (COCOR) of the European Committee for Iron and Steel Standardization on 1987-11-24/25.

It has been adopted and ratified by CEN/BT on 1988-11-05.

According to the CEN/CENELEC Internal Regulations, the following countries are bound to implement this European Standard:

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

Note. In the Foreword and in clauses 1 and 10 of both methods, Euronorm should read European Standard.

Chemical analysis of ferrous materials

Determination of phosphorus in steels and irons

Spectrophotometric method

FOREWORD

This Euronorm specifies two methods for the spectrophotometric determination of phosphorus.

The first method is applicable to steels and irons and corresponds to International Standard ISO 2732-1984.

The second method is applicable to non-alloyed steels and irons.

METHOD 1

Steel and cast iron – Determination of phosphorus content – Phosphovanadomolybdate spectrophotometric method ⁽¹⁾

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1 SCOPE AND FIELD OF APPLICATION

This Euronorm specifies a spectrophotometric method for the determination of phosphorus in steel and cast iron.

The method is applicable to phosphorus contents between 0.005 and 1.5 % (m/m), provided that tungsten, niobium, tantalum and zirconium contents are not higher than 1 % (m/m) for each of these four elements and titanium content is not higher than 2 % (m/m).

2 REFERENCE

Euronorm 18 – Selection and preparation of samples and test pieces for steel and iron and steel products.

3 PRINCIPLE

Dissolution of a test portion in an oxidizing acid mixture.

Conversion of phosphorus to phosphovanadomolybdate in perchloric-nitric acid solution.

Extraction of phosphovanadomolybdate into 4-methyl-2-pentanone with citric acid present to complex arsenic.

Spectrophotometric measurement at a wavelength of about 425 nm.

4 REAGENTS

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

Verify by blank tests that the relevant reagents are free from phosphorus. Whenever necessary, the results shall be corrected accordingly. Grades giving high blank values are unsuitable and should be discarded.

4.1 Pure iron, containing 0.001 % (m/m) or less of phosphorus.

4.2 Hydrochloric acid, ρ about 1.19 g/ml.

4.3 Nitric acid, ρ about 1.40 g/ml.

4.4 Nitric acid, diluted 1 + 4.

4.5 Perchloric acid, ρ about 1.54 g/ml, with known low phosphorus content.

Note: Perchloric acid (ρ about 1.67 g/ml) may also be used. 100 ml of perchloric acid (ρ about 1.54 g/ml) is equivalent to 79 ml of perchloric acid (ρ about 1.67 g/ml).

4.6 Citric acid, solution

Dissolve 500 g of citric acid monohydrate ($\text{H}_8\text{C}_6\text{O}_7 \cdot \text{H}_2\text{O}$) in water, dilute to 1000 ml and mix.

4.7 4-Methyl-2-pentanone (isobutyl methyl ketone).

⁽¹⁾ The text of this Euronorm corresponds with the text of ISO 2732-1984.