



NSAI
Standards

Irish Standard
I.S. EN 24937:1991

Steel and iron - Determination of chromium content - Potentiometric or visual titration method (ISO 4937:1986)

I.S. EN 24937:1991

Incorporating amendments/corrigenda issued since publication:

EN 24937:1990/AC:1991

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I.S. EN 24937:1991

EUROPEAN STANDARD
NORME EUROPEENNE
EUROPÄISCHE NORM

EN 24937
AC : 1991

September 1991

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English version
Version française
Deutsche fassung

ICONE

Amends EN 24937, march 1990
Amende EN 24937, mars 1990
Anderung zur EN 24937, März 1990

Steel and iron - Determination of chromium
content - Potentiometric or visual method
(ISO 4937:1986)

Aciers et fonte - Détermination de la teneur en chrome - Méthode potentiométrique ou visuelle (ISO 4937:1986) Stahl und Eisen - Bestimmung des Chromgehalts - Potentiometrisches oder visuelle Methode

This corrigendum becomes effective on 1991-09-11 for incorporation in the three official language versions of the EN

Ce corrigendum prendra effet le 1991-09-11 pour introduction dans les trois versions officielles de la EN.

Die Berichtigung tritt am 1991-09-11 in Kraft und ist in die drei offiziellen Fassungen einzufügen.

CEN

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

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Page 2
Seite 2
EN 24937 AC:1991

On front page of the three versions,
replace the two last words of the
german title

Sur la page de garde des trois
versions, remplacer les deux derniers
mots du titre allemand :

Ersetze die zwei letzten Wörter des
deutschen Titels der Titelseiten der
drei Sprachfassungen :

visuelle Methode

By

Par :

durch :

visuelles Titrationsverfahren

I.S. EN 24937:1991

EN 24 937

EUROPEAN STANDARD

NORME EUROPEENNE

EUROPAISCHE NORM

March 1990

UDC 669.1:543.257.1:546.76

Key words: Steels, cast iron, chemical analysis, determination of content, chromium, titration, potentiometric methods, macroscopic methods

English version

Steel and iron - Determination of chromium
content - Potentiometric or visual method (ISO 4937:1986)

Aciers et fontes - Détermination de la
teneur en chrome - Méthode potentiométrique
ou visuelle (ISO 4937:1986)

Stahl und Eisen - Bestimmung des
Chromgehalts - Potentiometrische
oder visuelle Methode (ISO 4937:1986)

This European Standard was accepted by CEN on 1989-11-27 and is identical to the ISO standard as referred to.
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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN Central Secretariat or to any CEN member.

This European Standard exists 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 CEN Central Secretariat has the same status as the official versions.

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CEN

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Comité Européen de Normalisation
Europäisches Komitee für Normung

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Ref. No. EN 24937:1990 E

Brief History

On the proposal of the Technical Committee ECISS/TC 20 "Methods of chemical analysis" the Coordinating Commission (COCOR) of the European Committee for Iron and Steel Standardization (ECISS) decided in November 1988 to submit the International Standard

ISO 4937 - 1986 Steel and iron -- Determination of chromium content -- Potentiometric or visual titration method

to the Formal Vote.

This European Standard was adopted by CEN on 1989-11-27

According to the Common CEN/CENELEC Rules, being part of the Internal Regulations of CEN, the following countries are bound to implement this European Standards : Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

Statement

The text of the International Standard ISO 4937, edition 1, 1986 was approved by CEN as a European Standard without any modification.

International Standard



4937

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Steel and iron — Determination of chromium content — Potentiometric or visual titration method

Aciers et fontes — Dosage du chrome — Méthode par titrage potentiométrique ou visuel

First edition — 1986-12-15

UDC 629.13/.14 : 543.24/.25 : 546.76

Ref. No. ISO 4937-1986 (E)

Descriptors : steels, iron, chemical analysis, determination of content, chromium, potentiometric methods, volumetric analysis.

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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 4937 was prepared by Technical Committee ISO/TC 17, *Steel*.

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

Steel and iron — Determination of chromium content — Potentiometric or visual titration method

1 Scope and field of application

This International Standard specifies a method for the determination of chromium in steel and iron by potentiometric or visual titration.

The method is applicable to chromium contents between 0,25 and 35 % (*m/m*).

If vanadium is present, the visual titration is applicable only to test portions containing less than 3 mg of vanadium.

2 References

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

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

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

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

ISO 5725, *Precision of test methods — Determination of repeatability and reproducibility by inter-laboratory tests*.

3 Principle

Dissolution of a test portion with appropriate acids.

Oxidation of chromium in an acid medium to chromium(VI) by ammonium peroxydisulfate in the presence of silver sulfate. Reduction of manganese(VII) by hydrochloric acid.

Reduction of chromium(VI) by ammonium iron(II) sulfate standard solution.

In the case of potentiometric detection, determination of the equivalence point by measurement of the potential variation when the ammonium iron(II) sulfate standard solution is being added.

In the case of visual detection, titration of the excess ammonium iron(II) sulfate by potassium permanganate standard solution which also acts as the indicator.

4 Reagents

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

4.1 Urea.

4.2 Perchloric acid, ρ approximately 1,67 g/ml.

4.3 Hydrofluoric acid, ρ approximately 1,15 g/ml.

4.4 Orthophosphoric acid, ρ approximately 1,70 g/ml.

4.5 Nitric acid, ρ approximately 1,40 g/ml.

4.6 Hydrochloric acid, ρ approximately 1,19 g/ml, diluted 1 + 1.

4.7 Hydrochloric acid, ρ approximately 1,19 g/ml, diluted 1 + 10.

4.8 Sulfuric acid, ρ approximately 1,84 g/ml, diluted 1 + 1.

4.9 Sulfuric acid, ρ approximately 1,84 g/ml, diluted 1 + 5.

4.10 Sulfuric acid, ρ approximately 1,84 g/ml, diluted 1 + 19.

4.11 Silver sulfate, 5 g/l solution.

4.12 Ammonium peroxydisulfate $[(\text{NH}_4)_2\text{S}_2\text{O}_8]$, 500 g/l solution.

Prepare this solution immediately before use.

4.13 Manganese sulfate $[\text{MnSO}_4 \cdot \text{H}_2\text{O}]$, 4 g/l solution.

4.14 Manganese sulfate $[\text{MnSO}_4 \cdot \text{H}_2\text{O}]$, 100 g/l solution.

4.15 Potassium permanganate, 5 g/l solution.

4.16 Sodium nitrite, 3 g/l solution.

Prepare this solution immediately before use.

4.17 Sulfamic acid $(\text{NH}_2\text{SO}_3\text{H})$, 100 g/l solution.

This solution remains stable for one week only.

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