Irish Standard
I.S. EN 24938:1991

Steel and iron - Determination of nickel content - Gravimetric or titrimetric method (ISO 4938:1988)

I.S. EN 24938:1991

Incorporating amendments/corrigenda issued since publication:
EN 24938:1990/AC:1991

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EUROPEAN STANDARD
NORME EUROPEENNE
EUROPÄISCHE NORM

EN 24938
AC : 1991

September 1991
Septembre 1991
September 1991

English version
Version française
Deutsche fassung

Amends EN 24938, march 1990
Amende EN 24938, mars 1990
Änderung zur EN 24938, März 1990

Steel and iron - Determination of nickel content - Gravimetric or titrimetric method (ISO 4938:1986)

Aciers et fonte - Détermination de la teneur en nickel - Méthode gravimétrique ou titrimétrique (ISO 4938:1986)

Eisen und Stahl - Bestimmung des Nickelgehalts - Gravimetrisches oder titrimetrisches Verfahren

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

Rue de Stassart 36, B 1050 Bruxelles

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Page 2
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EN 24938 AC:1991

On front page of the 3 versions, replace the three first words of the german title

Sur la page de garde des 3 versions, remplacer les trois premiers mots du titre allemand :

Ersetze die ersten drei Wörter des deutschen Titels der Titelseiten der drei Sprachenfassungen

Eisen und Stahl

By

Par

Durch

Stahl und Eisen

EUROPEAN STANDARD EN 24 938

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English version

Steel and iron - Determination of nickel content - Gravimetric or titrimetric method (ISO 4938:1988)

Aciers et fontes - Détermination de la teneur en nickel - Méthode gravimétrique ou titrimétrique (ISO 4938:1988)

Eisen und Stahl - Bestimmung des Nickelgehalts - Gravimetrisches oder titrimetrisches Verfahren (ISO 4938:1988)

This European Standard was accepted by CEN on 1989-11-27 and is identical to the ISO standard as referred to.
CEN members are bound to comply with the requirements of the CEN/CENELEC Common Rules 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 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

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

Central Secretariat: rue Bréderode 2, B-1000 Brussels

Ref. No. EN 24938:1990 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 4938 - 1988 Steel and iron -- Determination of nickel content -- Gravimetric or titrimetric 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 4938, edition 1, 1988 was approved by CEN as a European Standard without any modification.

INTERNATIONAL STANDARD

ISO 4938

First edition
1988-12-01

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

Steel and iron — Determination of nickel content — Gravimetric or titrimetric method

Aciers et fontes — Dosage du nickel — Méthode gravimétrique ou titrimétrique

Reference number
ISO 4938 : 1988 (E)

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.

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 4938 was prepared by Technical Committee ISO/TC 17, *Steel.*

Annexes A and B of this International Standard are for information only.

INTERNATIONAL STANDARD ISO 4938 : 1988 (E)

Steel and iron — Determination of nickel content — Gravimetric or titrimetric method

1 Scope

This International Standard specifies a method for the determination of nickel in steel and iron, using either a gravimetric or titrimetric finish.

The method is applicable to nickel contents from 0,5 % (m/m) to 30 % (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 4793 : 1980, *Laboratory sintered (fritted) filters — Porosity grading, classification and designation.*

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

3 Principle

Dissolution of a test portion with appropriate acids.

Precipitation of the nickel as nickel dimethylglyoxime.

— Cobalt, if present, is oxidized by potassium hexacyanoferrate(III).

— Copper, if present with cobalt, preferably is removed by controlled-potential electrolysis.

Acid dissolution of the precipitate and filtration of the solution, followed by a second precipitation of the nickel as nickel dimethylglyoxime.

In the case of the gravimetric finish, weighing of the dried nickel dimethylglyoxime precipitate.

In the case of the titrimetric finish, acid dissolution of the precipitate, addition of excess EDTA.Na_2 solution and back titration of the excess EDTA.Na_2 by zinc solution using xylenol orange as an 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.

4.1 Sodium hydrogen sulfate ($NaHSO_4$).

4.2 Ethanol, 95 % (V/V).

4.3 Acetic acid, glacial, ϱ approximately 1,05 g/ml.

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

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

4.6 Perchloric acid, ϱ approximately 1,54 g/ml.

4.7 Sulfuric acid, ϱ approximately 1,84 g/ml.

4.8 Ammonia solution, ϱ approximately 0,90 g/ml.

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

4.10 Hydrochloric acid, ϱ approximately 1,19 g/ml, diluted 1 + 99.

4.11 Nitric acid, ϱ approximately 1,40 g/ml, diluted 2 + 3.

4.12 Perchloric acid, ϱ approximately 1,54 g/ml, diluted 1 + 49.