

SVENSK STANDARD

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Kemiska analysmetoder för järn och stål – Bestämning av manganhalt i järn och stål – Elektrometrisk titreringsmetod

Chemical analysis of ferrous materials – Determination of manganese in steels and irons – Electrometric titration method

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Denna standard ersätter SS-EN 10071, utgåva 1.

The European Standard EN 10071:2012 has the status of a Swedish Standard. This document contains the official version of EN 10071:2012.

This standard supersedes the Swedish Standard SS-EN 10071, edition 1.

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Denna standard är framtagen av kommittén för Kemiska analysmetoder för metaller, SIS/TK 122.

Har du synpunkter på innehållet i den här standarden, vill du delta i ett kommande revideringsarbete eller vara med och ta fram andra standarder inom området? Gå in på www.sis.se - där hittar du mer information.

EUROPEAN STANDARD

EN 10071

NORME EUROPÉENNE

EUROPÄISCHE NORM

October 2012

ICS 77.040.30

Supersedes EN 10071:1989

English Version

Chemical analysis of ferrous materials - Determination of manganese in steels and irons - Electrometric titration method

Analyse chimique des matériaux ferreux - Détermination du manganèse dans les aciers et les fontes - Méthode par titrage électrométrique

Chemische Analyse von Eisenwerkstoffen - Bestimmung von Mangan in Stahl und Eisen - Elektrometrisches Titrierverfahren

This European Standard was approved by CEN on 17 August 2012.

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 CEN-CENELEC Management Centre 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 the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (EN 10071:2012) has been prepared by Technical Committee ECISS/TC 102 “Methods of analysis for iron and steel”, the secretariat of which is held by SIS.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by April 2013, and conflicting national standards shall be withdrawn at the latest by April 2013.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 10071:1989.

In comparison with EN 10071:1989, the following significant technical change was made:

- Clause 3, Principle, rewording of the third sentence in order to correct the erroneous mention of “pyrophosphoric irons”.

According to the CEN/CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

SS-EN 10071:2012 (E)

1 Scope

This European Standard specifies an electrometric titration method for the determination of manganese in steels and irons.

The method is applicable to unalloyed, low alloy or alloyed steels and to irons with manganese contents greater than or equal to 0,5 % (m/m).

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN ISO 648, *Laboratory glassware — Single-volume pipettes (ISO 648)*

EN ISO 1042, *Laboratory glassware — One-mark volumetric flasks (ISO 1042)*

EN ISO 14284, *Steel and iron — Sampling and preparation of samples for the determination of chemical composition (ISO 14284)*

3 Principle

Dissolution of the test portion with appropriate acids, followed by a partial neutralisation of the acids with sodium hydrogen carbonate.

Precipitation of the interfering cations with zinc oxide.

Titration of Mn (II) with a potassium permanganate solution, in a pyrophosphoric medium at a pH of about 6,5.

The oxidation-reduction reaction [oxidation of Mn (II) to Mn (III)] is controlled by an electrometric measurement.

4 Reagents

During the analysis, use only reagents of recognised analytical grade.

4.1 Water, free from reducing compounds.

For each 1 000 ml of water add 6 ml of sulphuric acid ($\rho_{20} = 1,84$ g/ml) and boil. Add a few crystals of sodium periodate and maintain the boiling for about 10 min. Cool and transfer into an appropriate vessel.

4.2 Zinc oxide, free from compounds which can reduce the permanganate ions.

4.3 Nitric acid solution, 1 + 1.

Add 500 ml of nitric acid ($\rho_{20} = 1,40$ g/ml) to 500 ml of water (4.1).

4.4 Hydrochloric acid solution, 1 + 1.

Add 500 ml of hydrochloric acid ($\rho_{20} = 1,19$ g/ml) to 500 ml of water (4.1).