

**Zink och zinklegeringar – Kemisk analys –**  
Del 4: Bestämning av järn i zinklegeringar –  
Spektrofotometrisk metod

**Zinc and zinc alloys – Chemical analysis –**  
Part 4: Determination of iron in zinc alloys –  
Spectrophotometric method

Europastandarden EN 12441-4:2003 gäller som svensk standard. Detta dokument innehåller den officiella engelska versionen av EN 12441-4:2003.

The European Standard EN 12441-4:2003 has the status of a Swedish Standard. This document contains the official English version of EN 12441-4:2003.

Dokumentet består av 9 sidor.

Upplysningar om **sakinnehållet** i standarden lämnas av SIS, Swedish Standards Institute, tel 08 - 555 520 00.

Standarder kan beställas hos SIS Förlag AB som även lämnar **allmänna upplysningar** om svensk och utländsk standard.

*Postadress:* SIS Förlag AB, 118 80 STOCKHOLM  
*Telefon:* 08 - 555 523 10. *Telefax:* 08 - 555 523 11  
*E-post:* [sis.sales@sis.se](mailto:sis.sales@sis.se). *Internet:* [www.sis.se](http://www.sis.se)

EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 12441-4**

March 2003

ICS 77.040.30; 77.120.60

English version

## Zinc and zinc alloys - Chemical analysis - Part 4: Determination of iron in zinc alloys - Spectrophotometric method

Zinc et alliages de zinc - Analyse chimique - Partie 4:  
Dosage du fer dans les alliages de zinc - Méthode  
spectrophotométrique

Zink und Zinklegierungen - Chemische Analyse - Teil 4:  
Bestimmung von Eisen in Zinklegierungen -  
Spektrophotometrisches Verfahren

This European Standard was approved by CEN on 21 November 2002.

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.

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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom.



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

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

## Contents

	<b>page</b>
Foreword.....	3
1 <b>Scope</b> .....	4
2 <b>Normative references</b> .....	4
3 <b>Terms and definitions</b> .....	4
4 <b>Principle</b> .....	4
5 <b>Reagents</b> .....	4
6 <b>Apparatus</b> .....	5
7 <b>Sampling</b> .....	5
8 <b>Procedure</b> .....	5
9 <b>Calculation and expression of results</b> .....	7
10 <b>Test report</b> .....	7

## Foreword

This document (EN 12441-4:2003) has been prepared by Technical Committee CEN/TC 209 "Zinc and zinc alloys", the secretariat of which is held by AFNOR.

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 September 2003, and conflicting national standards shall be withdrawn at the latest by September 2003.

Within its programme of work, Technical Committee CEN/TC 209 entrusted CEN/TC 209/WG 6 "Methods of analysis and testing" with the preparation of the following document:

- EN 12441-4, *Zinc and zinc alloys – Chemical analysis – Part 4: Determination of iron in zinc alloys – Spectrophotometric method.*

This standard is part of a series of eleven standards. The other standards are:

- EN 12441-1, *Zinc and zinc alloys – Chemical analysis – Part 1: Determination of aluminium in zinc alloys – Titrimetric method;*
- EN 12441-2, *Zinc and zinc alloys – Chemical analysis – Part 2: Determination of magnesium in zinc alloys – Flame atomic absorption spectrometric method;*
- EN 12441-3, *Zinc and zinc alloys – Chemical analysis – Part 3: Determination of lead, cadmium and copper – Flame atomic absorption spectrometric method;*
- EN 12441-5, *Zinc and zinc alloys – Chemical analysis – Part 5: Determination of iron in primary zinc – Spectrophotometric method;*
- EN 12441-6, *Zinc and zinc alloys – Chemical analysis – Part 6: Determination of aluminium and iron – Flame atomic absorption spectrometric method;*
- prEN 12441-7, *Zinc and zinc alloys – Chemical analysis – Part 7: Determination of tin – Flame atomic absorption spectrometric method after extraction;*
- prEN 12441-8, *Zinc and zinc alloys – Chemical analysis – Part 8: Determination of tin in secondary zinc – Flame atomic absorption spectrometric method;*
- prEN 12441-9, *Zinc and zinc alloys – Chemical analysis – Part 9: Determination of nickel in zinc alloys – Flame atomic absorption spectrometric method;*
- prEN 12441-10, *Zinc and zinc alloys – Chemical analysis – Part 10: Determination of chromium and titanium in zinc alloys – Spectrophotometric method;*
- prEN 12441-11, *Zinc and zinc alloys – Chemical analysis – Part 11: Determination of silicon in zinc alloys – Spectrophotometric method;*

According to the CEN/CENELEC Internal Regulations, the national standards organisations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

## EN 12441-4:2003 (E)

### 1 Scope

This European Standard specifies a spectrophotometric method for the determination of iron in zinc alloys. It is applicable to the products specified in EN 1774 and EN 12844.

It is suitable for the determination of iron contents (mass fractions) between 0,01 % and 0,1 %.

### 2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 1774, *Zinc and zinc alloys – Alloys for foundry purposes – Ingot and liquid.*

EN 12060:1997, *Zinc and zinc alloys – Method of sampling – Specifications.*

EN 12844, *Zinc and zinc alloys – Castings – Specifications.*

### 3 Terms and definitions

For the purposes of this European Standard, the terms and definitions given in EN 12060:1997 apply.

### 4 Principle

Formation of a sulfosalicylic acid ferric complex in an ammoniacal medium, after separation of the copper. Spectrophotometric measurement of the yellow colour of the complex thus formed.

### 5 Reagents

#### 5.1 General

During the test, use only reagents of known analytical grade and distilled or demineralised water.

**5.2 Pure granulated cadmium**, free from iron

**5.3 Hydrochloric acid**,  $\rho = 1,19$  g/ml

**5.4 Hydrochloric acid (1 + 1)**

Mix 1 volume of hydrochloric acid (5.3) with 1 volume of water

**5.5 Hydrogen peroxide**, 30 % (mass fraction)

**5.6 Sulfosalicylic acid**, 800 g/l solution

**5.7 Ammonia solution**,  $\rho = 0,91$  g/ml