

# Copper and copper alloys — Determination of zinc content —

## Part 2: Flame atomic absorption spectrometry method (FAAS)

The European Standard EN 15024-2:2006 has the status of a British Standard

ICS 77.120.30

## National foreword

This British Standard was published by BSI. It is the UK implementation of EN 15024-2:2006.

The UK participation in its preparation was entrusted to Technical Committee NFE/34, Copper and copper alloys.

A list of organizations represented on NFE/34 can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

**Compliance with a British Standard cannot confer immunity from legal obligations.**

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 30 March 2007

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ISBN 978 0 580 50309 2

### Amendments issued since publication

| Amd. No. | Date | Comments |
|----------|------|----------|
|          |      |          |
|          |      |          |
|          |      |          |
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English Version

## Copper and copper alloys - Determination of zinc content - Part 2: Flame atomic absorption spectrometry method (FAAS)

Cuivre et alliages de cuivre - Dosage du zinc - Partie 2 :  
Méthode par spectrométrie d'absorption atomique dans la  
flamme (SAAF)

Kupfer und Kupferlegierungen - Bestimmung des  
Zinkgehaltes - Teil 2:  
Flammenatomabsorptionsspektrometrisches Verfahren  
(FAAS)

This European Standard was approved by CEN on 18 September 2006.

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.

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 Central Secretariat has the same status as the official versions.

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

| Contents           |                              | Page |
|--------------------|------------------------------|------|
| Foreword.....      |                              | 3    |
| 1                  | Scope .....                  | 4    |
| 2                  | Normative references .....   | 4    |
| 3                  | Principle .....              | 4    |
| 4                  | Reagents and materials ..... | 4    |
| 5                  | Apparatus .....              | 5    |
| 6                  | Sampling .....               | 5    |
| 7                  | Procedure .....              | 6    |
| 8                  | Expression of results .....  | 11   |
| 9                  | Precision .....              | 12   |
| 10                 | Test report .....            | 13   |
| Bibliography ..... |                              | 14   |

## Foreword

This document (EN 15024-2:2006) has been prepared by Technical Committee CEN/TC 133 "Copper and copper alloys", the secretariat of which is held by DIN.

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 May 2007, and conflicting national standards shall be withdrawn at the latest by May 2007.

Within its programme of work, Technical Committee CEN/TC 133 requested CEN/TC 133/WG 10 "Methods of analysis" to prepare the following standard:

EN 15024-2, *Copper and copper alloys — Determination of zinc content — Part 2: Flame atomic absorption spectrometry method (FAAS)*

This is one of two parts of the standard for the determination of zinc content in copper and copper alloys. The other part is:

prEN 15024-1, *Copper and copper alloys — Determination of zinc content — Part 1: Titrimetric method*

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

## 1 Scope

This part of this European Standard specifies a flame atomic absorption spectrometric method (FAAS) for the determination of the zinc content of copper and copper alloys in the form of unwrought, wrought and cast products.

The method is applicable to products having zinc mass fractions between 0,000 5 % and 6,0 %.

## 2 Normative references

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

ISO 1811-1, *Copper and copper alloys — Selection and preparation of samples for chemical analysis — Part 1: Sampling of cast unwrought products*

ISO 1811-2, *Copper and copper alloys — Selection and preparation of samples for chemical analysis — Part 2: Sampling of wrought products and castings*

## 3 Principle

Dissolution of a test portion in a fluoroboric-nitric acid mixture followed, after suitable dilution, by aspiration into an air/ acetylene flame of an atomic absorption spectrometer. Measurement of the absorption of the 213,8 nm line emitted by a zinc hollow-cathode lamp.

## 4 Reagents and materials

### 4.1 General

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

### 4.2 Fluoroboric-nitric acid mixture

Mix together 300 ml of boric acid,  $\text{H}_3\text{BO}_3$ , 40 g/l solution, 30 ml of hydrofluoric acid, HF, ( $\rho = 1,13 \text{ g/l}$ ), 500 ml of nitric acid,  $\text{HNO}_3$  ( $\rho = 1,40 \text{ g/ml}$ ) and 150 ml of water.

### 4.3 Nitric acid, $\text{HNO}_3$ ( $\rho = 1,40 \text{ g/ml}$ )

### 4.4 Nitric acid solution, 1 + 1

Dilute 1 000 ml of nitric acid (4.3) in 1 000 ml of water

### 4.5 Zinc stock solution, 5 g/l Zn

Weigh  $(2,5 \pm 0,001) \text{ g}$  of zinc ( $\text{Zn} \geq 99,99 \%$ ) and transfer it into a 250 ml tall-form beaker. Add 50 ml of the nitric acid solution (4.4), cover and heat gently until the zinc is completely dissolved. Boil the solution for several minutes to expel the nitrous fumes. Allow it to cool and transfer the solution quantitatively into a 500 ml one-mark volumetric flask. Dilute to the mark with water and mix well.

1 ml of this solution contains 5 mg of Zn.

### 4.6 Zinc standard solution, 0,5 g/l Zn

Transfer 10 ml of the zinc stock solution (4.5) into a 100 ml one-mark volumetric flask. Dilute to the mark with water and mix well.