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ICS 77.120.30

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COPPER AND COPPER ALLOYS -

DETERMINATION OF COBALT CONTENT

FAAS METHOD

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EUROPEAN STANDARD

NORME EUROPÉENNE

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EN 14941

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English Version

Copper and copper alloys - Determination of cobalt content - FAAS method

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

Kupfer und Kupferlegierungen - Bestimmung des Cobaltgehaltes - Flammenatomabsorptionsspektrometrisches Verfahren (FAAS)

This European Standard was approved by CEN on 15 May 2006.

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Foreword

This document (EN 14941:2006) 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of an identical text or by endorsement, at the latest by December 2006, and conflicting national standards shall be withdrawn at the latest by December 2006

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 14941, *Copper and copper alloys — Determination of cobalt content — FAAS 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.

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1 Scope

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

The method is applicable to products having cobalt mass fractions between 0,010 % and 3,0 %.

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*

NOTE Informative references to documents used in the preparation of this standard, and cited at the appropriate places in the text, are listed in the Bibliography.

3 Principle

Dissolution of a test portion in hydrochloric-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 240,7 nm line emitted by a cobalt 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 Hydrochloric acid, HCl (ρ = 1,19 g/ml).

4.3 Nitric acid, HNO_3 (ρ = 1,40 g/ml).

4.4 Nitric acid solution, 1 + 1

Dilute 100 ml of nitric acid (4.3), in 100 ml of water.

4.5 Cobalt stock solution, 1,000 g/l Co

Weigh (1 ± 0,001) g of cobalt (Co ≥ 99,9 %) and transfer it into a 250 ml beaker. Add 20 ml of nitric acid solution (4.4), cover and heat gently until the cobalt is completely dissolved. Boil the solution for a few minutes to expel nitrous fumes. Cool to room temperature, transfer the solution quantitatively into a 1 000 ml one-mark volumetric flask, dilute to the mark with water and mix well.

1 ml of this solution contains 1,000 mg of Co.

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