National Standards Authority of Ireland

IRISH STANDARD

I.S. CEN/TS 15025:2006

ICS 77.120.30

COPPER AND COPPER ALLOYS - DETERMINATION OF MAGNESIUM CONTENT - FLAME ATOMIC ABSORPTION SPECTROMETRY METHOD (FAAS)

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This Irish Standard was published under the authority of the National Standards Authority of Ireland and comes into effect on:
22 January 2007

Price Code F

Údarás um Chaighdeáin Náisiúnta na hÉireann

TECHNICAL SPECIFICATION

SPÉCIFICATION TECHNIQUE

TECHNISCHE SPEZIFIKATION

CEN/TS 15025

November 2006

ICS 77.120.30

English Version

Copper and copper alloys - Determination of magnesium content - Flame atomic absorption spectrometry method (FAAS)

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

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

This Technical Specification (CEN/TS) was approved by CEN on 12 September 2006 for provisional application.

The period of validity of this CEN/TS is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the CEN/TS can be converted into a European Standard.

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Ref. No. CEN/TS 15025:2006: E

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Foreword

This document (CEN/TS 15025:2006) has been prepared by Technical Committee CEN/TC 133 “Copper and copper alloys”, the secretariat of which is held by DIN.

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

CEN/TS 15025, *Copper and copper alloys — Determination of magnesium content — Flame atomic absorption spectrometry method (FAAS)*

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this Technical Specification: 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 the United Kingdom.

1 Scope

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

The method is applicable to products having magnesium mass fractions between 0,001 % and 0,20 %.

2 Normative references

The following referenced documents are indispensable for the application of this Technical Specification. 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 hydrochloric-nitric acid mixture followed, after suitable dilution, by aspiration into an air/acetylene flame of an atomic absorption spectrometer. Determination of the magnesium content by measuring the absorption of the 285,2 nm line emitted by a magnesium 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 Magnesium stock solution, 0,5 g/l Mg

Weigh (0,5 ± 0,001) g of magnesium (Mg ≥ 99,9 %) and transfer it into a 250 ml beaker. Add 20 ml of the nitric acid solution (4.4) in small amounts. Cover with a watch glass and heat gently until the magnesium is completely dissolved. Boil the solution until nitrous fumes have been expelled. 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 0,5 mg of Mg.