SLOVENSKI STANDARD
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Baker in bakrove zlitine - Določ evanje bizmuta - 2. del: Metoda s plamensko atomsko absorpcijsko spektrometrijo (FAAS)

Copper and copper alloys - Determination of bismuth content - Part 2: Flame atomic absorption spectrometric method (FAAS)

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

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

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Copper and copper alloys - Determination of bismuth content - Part 2: Flame atomic absorption spectrometric method (FAAS)

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

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

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Foreword

This document (prEN 14938-2:2009) has been prepared by Technical Committee CEN/TC 133 “Copper and copper alloys”, the secretariat of which is held by DIN.

This document is currently submitted to the CEN Enquiry.

This document will supersede CEN/TS 14938-2:2006.

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

CEN/TS 14938-2:2006, *Copper and copper alloys — Determination of bismuth content — Part 2: FAAS method*

In comparison with the first edition of CEN/TS 14938-2:2006, the following significant technical changes were made:

— Revision from a Technical Specification to a European Standard;

— Subclause 7.4.1.1 - text added.

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

EN 14938-1, *Copper and copper alloys — Determination of bismuth content — Part 1: Spectrophotometric method*

Part 1 will be the subject of future work.

1 Scope

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

The method is applicable to products having bismuth mass fractions between 0,01 % and 0,25 %.

2 Normative references

The following referenced documents are indispensable for the application of this European Standard. 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 a mixture of hydrochloric acid/hydrogen peroxide and nitric acid solutions followed, after suitable dilution, by aspiration into an air/acetylene flame of an atomic absorption spectrometer. Measurement of the absorption of the 223,1 nm line emitted by a bismuth hollow-cathode or electrodeless discharge 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 Hydrogen peroxide, H_2O_2 30 % (mass fraction) solution

4.5 Bismuth stock solution, 1,000 g/l Bi

Weigh (0,25 ± 0,001) g of bismuth (Bi ≥ 99,9999 %) and transfer it into a 250 ml beaker. Add 50 ml of nitric acid (4.3) and cover with a watch glass. Heat gently until the bismuth is dissolved and then bring to the boiling point until the nitrous fumes have been expelled. Cool and transfer the solution quantitatively into a 250 ml one-mark volumetric flask, dilute to the mark with water and mix well.

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