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Copper sulfide concentrates — Determination of copper content — Titrimetric methods

Concentrés de sulfure de cuivre — Dosage du cuivre — Méthodes titrimétriques

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 183, *Copper, lead, zinc and nickel ores and concentrates*.

This third edition cancels and replaces the second edition (ISO 10258:2015), of which it is a minor revision. Table C.1, Table C.2, Figure C.2 and Figure C.3 have been revised to correct the following editorial errors:

— Table C.1 title, replaced ‘concentrated’ with ‘concentrate’.

— Table C.2 title, replaced ‘silver’ with ‘copper’.

— Table C.2 list at the bottom of the table, replaced ‘silver’ with ‘copper’.

— Figure C.2 title, replaced ‘silver’ with ‘copper’.

— Figure C.3 title, replaced ‘silver’ with ‘copper’.

— Annex A heading changed to ‘informative’.

— Annex B heading changed to ‘normative’.

In addition, the following editorial changes have been made:

— Clause 3, Terms and definitions, inserted.

— 10.4 NOTE changed to body text.

— References added for all formulae.

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Copper sulfide concentrates — Determination of copper content — Titrimetric methods

1 Scope

This document specifies two titrimetric methods for the determination of the copper content of copper sulfide concentrates in the range 15 % (m/m) to 50 % (m/m), using sodium thiosulfate after separation (method 1) or without separation (method 2) of copper from interfering elements.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 385, *Laboratory glassware — Burettes*

ISO 648, *Laboratory glassware — Single-volume pipettes*

ISO 1042, *Laboratory glassware — One-mark volumetric flasks*

ISO 4787, *Laboratory glassware — Volumetric instruments — Methods for testing of capacity and for use*

ISO 9599, *Copper, lead, zinc and nickel sulfide concentrates — Determination of hygroscopic moisture content of the analysis sample — Gravimetric method*

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

4 Principle

4.1 Method 1 (Long iodide method)

A test portion is decomposed in nitric and sulfuric acids, and arsenic, antimony and tin are removed by treatment with hydrobromic acid. Copper is separated from interfering elements by precipitation of copper sulfide with sodium thiosulfate. The precipitate is dissolved in nitric and sulfuric acids, ammonium hydrogen difluoride is added to eliminate interference of residual iron, and excess potassium iodide is also added. Free iodine isolated by reaction between iodide ions and copper(II) ions is titrated with sodium thiosulfate using soluble starch as the indicator.

4.2 Method 2 (Short iodide method)

A test portion is decomposed in nitric and sulfuric acids, and arsenic, antimony and tin are removed by treatment with hydrobromic acid. Ammonium hydrogen difluoride is added to eliminate interference of iron, and excess potassium iodide is also added. Free iodine isolated by reaction between iodide ions and copper(II) ions is titrated with sodium thiosulfate using soluble starch as the indicator.

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