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

*Éléments concentrés sulfurés de cuivre, de plomb et de zinc —
Détermination de l'humidité hygroscopique dans l'échantillon pour
analyse — Méthode gravimétrique*

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ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

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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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#)

ISO 9599 was prepared by Technical Committee ISO/TC 183, *Copper, lead, zinc and nickel ores and concentrates*.

This second edition cancels and replaces the first edition (ISO 9599:1991), which has been technically revised.

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

WARNING — Any chemical-reagent waste must be disposed of in an environmentally sound manner that does not injure the health or welfare of the environment, people, animals, vegetation, etc.

1 Scope

This International Standard specifies a gravimetric loss-in-mass method for the determination of the hygroscopic moisture content in analysis samples of copper, lead, zinc, and nickel sulfide concentrates.

The method is applicable to copper, lead, zinc, and nickel sulfide concentrates free from volatile organic flotation reagents, for example kerosene, and with hygroscopic moisture contents between 0,05 % (m/m) and 2 % (m/m). The hygroscopic moisture content is used to correct the analysis results from the equilibrated moisture level to the dry basis.

NOTE The result of the determination of hygroscopic moisture content using this International Standard should not be reported as part of the analysis of a concentrate sample. Whenever the bulk moisture content of a commercial shipment of concentrate is required, ISO 10251 should be used. The determination of hygroscopic moisture content and the determination of bulk moisture content are connected with each other. In both determinations, the same state of dryness has to be achieved, in order to ascertain the correct metal content of a lot.

This method is not applicable to sulfide concentrates that are susceptible to oxidation (see 6.3, note 2). [Annex A](#) sets out a modified procedure, which can be used for sulfide concentrates that are susceptible to oxidation.

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 10251, *Copper, lead, zinc and nickel concentrates — Determination of mass loss of bulk material on drying*

ISO 12743, *Copper, lead, zinc and nickel concentrates — Sampling procedures for determination of metal and moisture content*

3 Principle

Drying of a weighed test portion in air in an oven maintained at $105\text{ °C} \pm 5\text{ °C}$ and calculation of the percentage moisture content from the loss in mass.

4 Reagents

4.1 Desiccant, such as self-indicating silica gel or anhydrous magnesium perchlorate.

5 Apparatus

Ordinary laboratory equipment, and the following.