
**Copper, lead, zinc and nickel
concentrates — Experimental methods
for checking the bias of sampling**

*Concentrés de cuivre, de plomb, de zinc et de nickel — Méthodes
expérimentales de contrôle de l'erreur systématique d'échantillonnage*



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This document is a part of the ISO 13292 series.

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 13292 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 13292:1997), which has been technically revised.

Copper, lead, zinc and nickel concentrates — Experimental methods for checking the bias of sampling

WARNING — This International Standard may involve hazardous materials, operations and equipment. It is the responsibility of the user of this International Standard to establish appropriate health and safety practices and determine the applicability of regulatory limitations prior to use.

1 Scope

This International Standard specifies methods for checking whether there is any bias in the sampling of copper, lead, zinc and nickel concentrates, where the sampling is carried out in accordance with the methods specified in ISO 12743. These methods can also be used for comparing alternative sampling regimes, checking whether there is any bias in sample processing and for checking possible significant differences in sampling at different places, e.g. at loading and discharge points, or the analysis of exchange samples. Numerical examples are given in Annex A.

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

3 General requirements and recommendations

The procedures specified in this International Standard are applicable to paired data only. The results obtained from the method to be checked for bias (referred to as Method B) are compared with the results for a reference method (referred to as Method A), which is considered to produce unbiased results from technical and empirical viewpoints. If there is no significant difference between the results obtained using Method B and Method A, then Method B may be adopted as a routine method.

While the procedures specified in Clause 5 are principally designed for checking bias against a reference method, separate measurements of quality characteristics, e.g. using different sampling regimes, sampling at loading (Method A) and discharge (Method B), or analyses of exchange samples, may also be compared to check whether there is a statistically significant difference between the results.

Mechanical sampling systems, or manual sampling methods, are tested for bias by comparing the test results for final system or manually collected samples (Method B) with the test results for reference increments collected from a stopped conveyor belt (Method A). Analytical methods or test procedures are checked against certified reference materials.

The standard method of taking reference increments from a stopped conveyor belt presents operational difficulties, even if the handling system is capable of being restarted with a fully loaded belt. The main problems are losses in production tonnage and the difficulty experienced in the sequence of starting the handling system. During a ship's loading or unloading operation, this can cause delays in the turnaround time of the ship.