Australian Standard®

Copper, lead, zinc and nickel concentrates—Sampling

Part 3: Experimental methods for checking the bias of sampling

This Australian Standard® was prepared by Committee MN-005, Copper, Lead, Zinc and Nickel Ores and Concentrates. It was approved on behalf of the Council of Standards Australia on 24 January 2008.
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The following are represented on Committee MN-005:

- CSIRO Minerals
- Minerals Council of Australia

Additional Interests:

- Minerals Industry Analytical Laboratories

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Standards Australia wishes to acknowledge the participation of the expert individuals that contributed to the development of this Standard through their representation on the Committee and through the public comment period.

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PREFACE

This Standard was prepared by the Standards Australia Committee MN-005, Copper, Lead, Zinc and Nickel Ores and Concentrates, to supersede AS 2862.3—1999, *Copper, lead and zinc sulfide concentrates—Sampling*, Part 3: *Experimental methods for checking the bias of sampling.*

The objective of this Standard is to provide those involved in the sampling of sulfide concentrates with standardized procedures for checking the bias of sampling.

The objective of this revision is to adopt the latest edition of the corresponding International Standard.

This Standard is identical with, and has been reproduced from ISO 13292:2006, *Copper, lead, zinc and nickel concentrates— Experimental methods for checking the bias of sampling*.

As this Standard is reproduced from an International Standard, the following applies:

(a) Its number appears on the cover and title page while the International Standard number appears only on the cover.

(b) In the source text ‘this International Standard’ should read ‘this Australian Standard’.

(c) A full point substitutes for a comma when referring to a decimal marker.

References to International Standards should be replaced by references to Australian Standards, as follows:

Reference to International Standard		*Australian Standard*	
ISO		AS	
12743	Copper, lead, zinc and nickel concentrates—Sampling procedures for determination of metal and moisture content	2862 2862.1	Copper, lead, zinc and nickel concentrates—Sampling, Part 1: Sampling procedures for determination of metal and moisture content

The term ‘informative’ has been used in this Standard to define the application of the annex to which it applies. An ‘informative’ annex is only for information and guidance.

CONTENTS

Page

AUSTRALIAN STANDARD

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Part 3:

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.