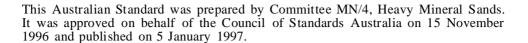
Australian Standard®

Heavy mineral sand concentrates— Sampling

Part 4: Determination of precision and bias



The following interests are represented on Committee MN/4:

Chamber of Mines of W.A. CSIRO, Division of Minerals University of Queensland

Additional interests participating in preparation of Standard:

Mineral sands producer companies Superintending companies

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# Australian Standard®

Heavy mineral sand concentrates— Sampling

Part 4: Determination of precision and bias

#### **PREFACE**

This Standard was prepared by the Standards Australia Committee on Heavy Mineral Sands. It is one of a series of Standards prepared for the sampling of heavy mineral sands.

Other parts of this Standard are as follows:

Part 1: Sampling from moving streams
Part 2: Sampling from stationary situations

Part 3: Preparation of samples

The objective of this Standard is to provide those responsible for sampling heavy mineral sands with means for checking and adjusting the precision and bias of sampling.

The term 'normative' is used in this Standard to define the application of the Appendix to which it applies. A 'normative' appendix is an integral part of a Standard.

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## STANDARDS AUSTRALIA

### **Australian Standard**

## Heavy mineral sand concentrates—Sampling

# Part 4: Determination of precision and bias

1 SCOPE This Standard sets out methods for checking and adjusting the precision of sampling, checking the precision of sample preparation and testing, and testing for bias in the sampling of heavy mineral sands.

The procedures described in this Standard apply to sampling from both moving streams and stationary situations, and to the subsequent sample preparation.

Experiments to check for precision and bias should be carried out for all sampling programs, whether manual or employing mechanical elements, implemented on a regular basis. Procedures should be repeated whenever significant change in the character of materials being sampled, especially in nominal top size or particle size distribution, has occurred.

When a mechanical installation is commissioned or when principal parts are modified, check experiments for precision and bias should be carried out for the installation as a whole. The material to be used for the bias tests should be the most variable material that is likely to be sampled. Various parameters can be used as measures of the variability of the material.

Where a bias higher than the maximum acceptable bias is detected, checks of individual elements of the system should be made, to determine which part or parts of the installation may require modification.

The preferred method of testing for bias (see Clause 8) is by comparison with 'stopped-belt' sampling and using the critical properties in the operation of the sampling system.

Design criteria of primary samplers for avoiding bias in a mechanical sampling system are given in AS 2884.1 and AS 2884.2. Reference is made to the geometry of cutter opening design and aperture, cutting speeds, measures for prevention of sample change and contamination, and procedures for examination of the performance of mechanical sampling equipment.

- **2 REFERENCED DOCUMENTS** The following documents are referred to in this Standard:
- 1152 Specification for test sieves
- 2884 Heavy mineral sand concentrates—Sampling
- 2884.1 Part 1: Sampling from moving streams
- 2884.2 Part 2: Sampling from stationary situations
- 2884.3 Part 3: Preparation of samples

ISO

- 3534 Statistics—Vocabulary and symbols
- **3 DEFINITIONS** For the purpose of this Standard, the definitions below apply.
- **3.1** Bias—the tendency to obtain a value that is either persistently higher or persistently lower than the reference value. Alternatively, the difference between the reference value and the average result obtained from a large number of determinations using a biased method.