Australian Standard™

Guide to the sampling of particulate materials

Part 4: Checking for bias

Standards Australia

This Australian Standard was prepared by Committee MN-010, Sampling of Minerals. It was approved on behalf of the Council of Standards Australia on 28 February 2001 and published on 15 March 2001.

The following interests are represented on Committee MN-010:

Australasian Institute of Mining and Metallurgy

Bureau of Steel Manufacturers of Australia

Chamber of Minerals and Energy of Western Australia

CSIRO Mathematical and Information Sciences

CSIRO Minerals

Minerals Council of Australia

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PREFACE

This Guide was prepared by Standards Australia Committee MN-010, Sampling of Minerals as a basis for preparing Standards for the sampling of a range of minerals from moving streams and stationary situations.

This Guide is Part 4 of the AS 4433 series for the sampling of particulate materials, to be used for the preparation of sampling Standards for a number of mineral commodities. Other Standards in the series are as follows:

Part 1: Sampling procedures

Part 2: Preparation of samples

Part 3: Estimating sampling precision

Part 5: Sampling of slurries

Part 6: Inspection of mechanical sampling systems

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1 SCOPE

This Guide sets out methods for checking mechanical sampling systems for bias. It covers primary sampling of particulate materials and subsequent sample preparation, whether manual methods or mechanical devices are employed. Bias testing involves an initial system check, comparison of routine sampling with a reference method, and ongoing system checks to confirm conformance. This is referred to as testing 'relative bias' if there is not a strong reason for expecting the alternative set of sampling procedures to be much more reliable than the routine sampling procedures.

2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS
4264 Coal and coke—Sampling
4264.4 Part 4: Determination of precision and bias

4433 Guide to the sampling of particulate materials
4433.1 Part 1: Sampling procedures
4433.2 Part 2: Preparation of samples
4433.6 Part 6: Inspection of mechanical sampling systems

ISO
3086 Iron ores—Experimental methods for checking the bias of sampling

12745 Copper, lead and zinc ores and concentrates—Precision and bias of mass measurement techniques

13292 Copper, lead and zinc sulfide concentrates—Experimental methods for checking the bias of sampling

3 DEFINITIONS

For definitions relevant to this Standard refer to AS 4433.1 and AS 4433.2.

4 FUNDAMENTALS OF BIAS

4.1 Bias

Bias is a tendency for estimates of a characteristic to be persistently higher or persistently lower than a reference value. The persistence of a bias is often not made clear. A bias is likely to remain approximately consistent only while moisture content, particle size distribution, material source or other aspects of the material or sampling system remain approximately constant.