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COPPER, LEAD AND ZINC SULPHIDE CONCENTRATES— DETERMINATION OF MOISTURE IN BULK MATERIAL

STANDARDS ASSOCIATION
OF AUSTRALIA

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AUSTRALIAN STANDARD

**COPPER, LEAD AND ZINC
SULPHIDE CONCENTRATES—
DETERMINATION OF
MOISTURE IN BULK
MATERIAL**

AS 2863—1986

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PREFACE

This standard was prepared by the Association's Committee on Copper, Lead and Zinc Ores and Concentrates under the direction of the Minerals Standards Board. It has been prepared to enable the moisture content of a consignment to be determined so that the mass of the concentrate in the consignment can be corrected to a dry basis.

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STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard

for

COPPER, LEAD AND ZINC SULPHIDE CONCENTRATES—
DETERMINATION OF MOISTURE IN BULK MATERIAL

1 SCOPE. This standard sets out a method for the determination of moisture content of a lot, stockpile or large quantity of copper, lead or zinc sulphide concentrates.

2 APPLICATION. The method is applicable to most of the normal range of copper, lead and zinc sulphide concentrates free from volatile organic flotation reagents, e.g. kerosene. It may not be applicable to sulphide concentrates which are susceptible to oxidation or decomposition. In such cases it may be necessary to use a lower temperature and/or an inert atmosphere or vacuum during the drying stage.

The method cannot be used for the determination of moisture in bulk concentrates containing free-standing water until the water has been removed and accounted for.

3 REFERENCED DOCUMENTS. The following standards are referred to in this standard:

AS 2862 Copper, Lead and Zinc Sulphide Concentrates—Sampling

AS 2862.1 Sampling from Moving Streams*

AS 2862.2 Sampling from Stationary Situations*

AS 2862.3 Preparation of Samples.

4 PRINCIPLE. The sample is dried in air at 105 °C to 110 °C until constant mass is obtained and the moisture content determined as the percentage mass loss on drying.

NOTE: Prolonged drying in air at 105 °C can cause oxidation or decomposition of some sulphide concentrates. In these cases, the method may be modified as agreed by all parties concerned; e.g. by drying at a lower temperature. Appendix A provides a procedure by which it can be determined whether or not a concentrate is susceptible to oxidation.

5 PREPARATION OF SAMPLES. Samples for moisture determination shall be taken in accordance with AS 2862.1 or AS 2862.2 and prepared in accordance with AS 2862.3.

6 APPARATUS. The following apparatus is required:

6.1 Drying oven. Ventilated oven with forced circulation of air, regulated at a temperature of 105 °C to 110 °C.

6.2 Top-loading balance. With a sensitivity of 0.1 g.

NOTE: The weighing platform should be protected from heat transfer by a suitable insulating material, e.g. a 13 mm layer of polystyrene.

6.3 Drying trays. With dimensions which permit the sample to be spread to a thickness of less than 30 mm. The trays should be made of corrosion-resistant and heat-resistant material such as stainless steel, glass or enamel plate.

7 SAMPLES FOR MOISTURE DETERMINATION.

7.1 General. Samples for moisture determination should be taken as soon as possible after the mass of the material to be represented by this moisture determination has been established. Samples should then be subjected to moisture determination without delay.

7.2 From one gross sample. When one gross sample is obtained from a lot, four moisture samples of not less than 1 kg shall be taken and two of these shall be submitted initially for the determination of moisture content. The two reserved samples shall be weighed in accordance with the procedure of Clause 8(a) and (b). Following weighing the reserved samples shall be set aside on a covered tray.

NOTE: It is possible for sulphide concentrates to agglomerate on standing. If such agglomeration occurs, the minimum mass of the test portion may have to be increased significantly.

7.3 From subsamples. When subsamples from a lot are not combined into one gross sample, four moisture samples of not less than 1 kg shall be taken from each subsample, and two of these shall be submitted for the determination of moisture content. The two reserved samples shall be weighed in accordance with the procedure of Clause 8(a) and (b). Following weighing the reserved samples shall be set aside on a covered tray.

When one subsample is prepared from each sampling unit the mass of each sampling unit shall be recorded at the same time for calculation of the moisture content of the lot, while in the case of a number of subsamples being prepared from each sampling unit both the mass of each subsample and the mass of the sampling unit shall be recorded.

NOTE: It is possible for sulphide concentrates to agglomerate on standing. If such agglomeration occurs, the minimum mass of the test portion may have to be increased significantly.

8 PROCEDURE. The procedure shall be as follows:

- Weigh the drying tray and record the mass to the nearest 0.1 g (m_1).
- Transfer the moisture sample (not less than 1 kg) into the drying tray, spread the sample evenly and weigh immediately. Record the mass to the nearest 0.1 g (m_2).
- Place the tray and moisture sample into the preheated drying oven and dry at 105 °C to 110 °C for a specified time.

NOTES:

- The initial drying time has to be determined empirically. Sixteen hours is sufficient for most cases and should be taken as a guide. Some materials containing a large proportion of fines may take longer.
- During the drying of the moisture sample(s) no other wet samples should be placed in the same drying oven.

* In course of preparation.