Australian Standard™

Alumina

Part 1: Determination of loss of mass at 300°C and 1000°C

Standards Australia

This Australian Standard was prepared by Committee MN/9, Alumina and Materials Used in Aluminium Production. It was approved on behalf of the Council of Standards Australia on 29 February 2000 and published on 26 April 2000.

The following interests are represented on Committee MN/9:

Australasian Institute of Mining and Metallurgy

Australian Aluminium Council

CSIRO Minerals

Minerals Council of Australia

The Royal Australian Chemical Institute

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PREFACE

This Standard was prepared by the Standards Australia Committee MN/9, Alumina and Materials used in Aluminium Production, as a revision of AS 2879—1986, *Alumina—Determination of loss of mass at 300°C and 1000°C.*

The objective of this revision is to incorporate sample preparation procedures, improve the description of the method and to provide a method for determination of loss of mass by automatic procedures.

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

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1 SCOPE

This Standard sets out a method for the determination of loss of mass on heating of aluminium oxide at 300°C and further loss of mass on ignition at 1000°C. By industry convention, these mass losses are often referred to as 'moisture' (MOI) and 'loss on ignition' (LOI) respectively.

This method is suitable for calcined alumina in the range 0.2% to 5% loss of mass at 300°C and 0.1% to 2% loss of mass at 1000°C.

This method provides for samples to be treated on an 'as-received' basis for determination of actual MOI and LOI in alumina samples. To improve precision of analysis in cases where 'as-received' results are not required, samples can be 'air-equilibrated' prior to analysis. 'Air-equilibration' can greatly affect MOI results and significantly alter LOI results. The 'air-equilibration' procedure and its affects are discussed in Appendix A.

Instrumental methods are also discussed.

2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS

2243 Safety in laboratories (series)

2850 Chemical analysis—Inter-laboratory test programs—For determining precision of analytical method(s)—Guide to the planning and conduct

3 PRINCIPLE

The test portion of aluminium oxide is dried at 300°C for 2 h and the loss of mass is determined by mass difference. The test portion is then ignited at 1000°C for 2 h and the further loss of mass is determined.

4 SAFETY

For information on laboratory safety, reference should be made to the relevant parts of AS 2243.

5 DESICCANTS

One of the following desiccants shall be used:

(a) Phosphorus pentoxide.

(b) Activated alumina.

(c) Magnesium perchlorate.