Australian Standard™

Aluminium ores—Chemical analysis

Part 3: Determination of loss of mass at 1000°C

STANDARDS AUSTRALIA

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Australian Aluminium Council

Royal Australian Chemical Institution

Additional interests participating in the preparation of this Standard:

Aluminium ores industries

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PREFACE

This Standard was prepared by the Standards Australia Committee, MN-003, Aluminium Ores, as part of the AS 2932 series of Standards on the chemical analysis of aluminium ores.

The objective of this Standard is to provide the aluminium ores refining industry with methods for determining the loss of mass on ignition of aluminium ore at 1000°C.

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

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1 SCOPE

This Standard sets out both manual and instrumental methods for the determination of loss of mass on ignition of aluminium ore at 1000°C. By industry convention, this mass loss is often referred to as 'loss on ignition' (LOI).

This Standard is applicable for monohydrate and trihydrate bauxite with LOI from 20 to 30%.

Instrumental methods are also discussed.

2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS	
2243	Safety in laboratories (series)
2806	Aluminium ores—Sampling
2806.3	Part 3: Preparation of samples
2850	Chemical analysis—Interlaboratory test programs—For determining precision of analytical method(s)—Guide to the planning and conduct

3 PRINCIPLE

Aluminium ores when heated undergo a loss of mass. At temperatures up to 110°C the loss is due to hygroscopic moisture. At higher temperatures the loss of mass is due largely to the dissociation of hydroxides and oxyhydroxides of aluminium and iron and also, to a lesser degree, to the dissociation of minor constituents.

The total loss of mass is a function of the temperature and time of heating. There are no conditions at which the loss represents exclusively the water (both hygroscopic and combined) in the sample.

The pre-dried test portion of the aluminium ore is ignited at 1000°C for 2 hours and the LOI determined by mass difference.

The value obtained for loss on ignition is calculated on the basis of a dried sample.

4 SAFETY

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

Reference shall be made to the relevant Material Safety Data Sheets before using desiccants.