AS 2879.12—2004
ISO 902:1976

Australian Standard™

Alumina

Part 12: Determination of the angle of repose

STANDARDS AUSTRALIA

This Australian Standard was prepared by Committee MN-009, Alumina and Materials used in Aluminium Production. It was approved on behalf of the Council of Standards Australia on 27 November 2003 and published on 30 January 2004.

The following are represented on Committee MN-009:

Australasian Institute of Mining and Metallurgy

Australian Aluminium Council

Minerals Council of Australia

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PREFACE

This Standard was prepared by the Standards Australia Committee MN-009, Alumina and Materials used in Aluminium Production, as a part of the series of test methods for the analysis of alumina.

The objective of this Standard is to provide producers of alumina and manufacturers of aluminium with a method for determining the angle of repose of a sample of alumina after falling through a fixed distance from a defined funnel onto a horizontal base plate.

This Standard is identical with and has been reproduced from ISO 902:1976, *Aluminium oxide primarily used for the production of aluminium—Measurement of the angle of repose.*

Statements expressed in mandatory terms are deemed to be requirements of this Standard, however, the source document (ISO 902) does not contain any Precision Data.

As this Standard is reproduced from an international Standard, the following applies:

(a) Its number appears on the cover and title page while the International Standard number appears only on the cover.

(b) A full point substitutes for a comma when referring to a decimal marker.

(c) The words ‘this Australian Standard’ should replace the words ‘this International Standard’ wherever they appear.

References to International Standards should be replaced by references to Australian Standards as follows:

Reference to International Standard		*Australian Standard*	
ISO		AS	
802	Aluminium oxide primarily used for the production of aluminium–Preparation and storage of test samples	4538 4538.2	Guide to the sampling of alumina Part 2: Preparation of samples
2927	Aluminium oxide primarily used for the production of aluminium – Sampling	4538 4538.1	Guide to the sampling of alumina Part 1: Sampling procedures

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AUSTRALIAN STANDARD

Alumina

Part 12: Determination of the angle of repose

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a conventional method for the measurement of the angle of repose of aluminium oxide primarily used for the production of aluminium.

2 REFERENCES

ISO 802, *Aluminium oxide primarily used for the production of aluminium — Preparation and storage of test samples.*

ISO 2927, *Aluminium oxide primarily used for the production of aluminium — Sampling.*

3 PRINCIPLE

Measurement of the angle at the base of the cone of aluminium oxide obtained by allowing a sample to fall through a fixed distance from a defined funnel onto a horizontal base plate.

4 APPARATUS

Only the dimensions given in the text are mandatory.

The apparatus (see the figure) consists of the following items :

4.1 Funnel, of stainless steel, having a nozzle of internal diameter 6 mm, fitted with a sieve of 1 mm mesh aperture held in position between two retaining plates. The funnel is screwed into its support (4.3).

4.2 Base-plate, of minimum length 270 mm and minimum width 200 mm. It shall be perfectly rigid and made of marble, stainless steel or other corrosion-resistant metal. On the polished surface of the base-plate, four straight lines are engraved at angles of 45° to each other; at their intersection is a locating pin to which the height block (4.4) can be fixed. It is provided with three adjustable levelling feet.

4.3 Funnel support, made in stainless steel and of substantial construction. It is designed so that the axis of the funnel is vertically over the central locating pin.

4.4 Height block, consisting of a metal cylinder with polished faces of height 40,0 mm. The base has a recess to engage the central locating pin of the base-plate.

5 PROCEDURE

5.1 Sample

Use the crude sample (see 3.2 of ISO 802), at a temperature of 22 ± 4 °C.

5.2 Determination

5.2.1 Level the base-plate (4.2) by means of the adjustable feet.

5.2.2 Put the height block (4.4) in position and adjust the funnel (4.1) until the nozzle is just in contact with the block. Secure the funnel in position and remove the height block.

5.2.3 Feed the aluminium oxide to the centre of the funnel from a height of about 40 mm, taking care not to vibrate the apparatus. Adjust the powder flow to between 20 and 60 g/min.

If the sieve is clogged, use a brush to clear it, taking care not to vibrate the apparatus. When the top of the cone reaches the nozzle of the funnel, cease feeding the aluminium oxide.

Using a pencil, mark the circumference of the base of the cone on the eight radii engraved on the base-plate.

Remove the aluminium oxide and measure the four marked diameters.