

Australian Standard[®]

Alumina

**Part 2: Determination of particles
passing a 20 μm aperture sieve**

This Australian Standard was prepared by Committee MN/9, Alumina and Materials used in Aluminium Production. It was published on 28 March 1991.

The following interests are represented on Committee MN/9:

Aluminium Development Council
Australian Mining Industry Council
Royal Australian Chemical Institute

Review of Australian Standards. *To keep abreast of progress in industry, Australian Standards are subject to periodic review and are kept up to date by the issue of amendments or new editions as necessary. It is important therefore that Standards users ensure that they are in possession of the latest edition, and any amendments thereto.*

Full details of all Australian Standards and related publications will be found in the Standards Australia Catalogue of Publications; this information is supplemented each month by the magazine 'The Australian Standard', which subscribing members receive, and which gives details of new publications, new editions and amendments, and of withdrawn Standards.

Suggestions for improvements to Australian Standards, addressed to the head office of Standards Australia, are welcomed. Notification of any inaccuracy or ambiguity found in an Australian Standard should be made without delay in order that the matter may be investigated and appropriate action taken.

This Standard was issued in draft form for comment as DR 89219.

Australian Standard[®]

Alumina

**Part 2: Determination of particles
passing a 20 μm aperture sieve**

First published as AS 2879.2—1991.

PREFACE

This Standard was prepared by the Standards Australia Committee on Alumina and Materials used in Aluminium Production, under the direction of the Minerals Standards Board, as one of a series of Standards for the testing of alumina.

CONTENTS

	<i>Page</i>
1 SCOPE	3
2 REFERENCED DOCUMENTS	3
3 PRINCIPLE	3
4 APPARATUS	3
5 SAMPLING AND SAMPLE PREPARATION	3
6 PROCEDURE	3
7 CALCULATION AND EXPRESSION OF RESULTS	4
8 PRECISION	4
9 TEST REPORT	5
APPENDIX A TEST SIEVE CALIBRATION PROCEDURE	6

© Copyright — STANDARDS AUSTRALIA

Users of Standards are reminded that copyright subsists in all Standards Australia publications and software. Except where the Copyright Act allows and except where provided for below no publications or software produced by Standards Australia may be reproduced, stored in a retrieval system in any form or transmitted by any means without prior permission in writing from Standards Australia. Permission may be conditional on an appropriate royalty payment. Requests for permission and information on commercial software royalties should be directed to the head office of Standards Australia.

Standards Australia will permit up to 10 percent of the technical content pages of a Standard to be copied for use exclusively in-house by purchasers of the Standard without payment of a royalty or advice to Standards Australia.

Standards Australia will also permit the inclusion of its copyright material in computer software programs for no royalty payment provided such programs are used exclusively in-house by the creators of the programs.

Care should be taken to ensure that material used is from the current edition of the Standard and that it is updated whenever the Standard is amended or revised. The number and date of the Standard should therefore be clearly identified.

The use of material in print form or in computer software programs to be used commercially, with or without payment, or in commercial contracts is subject to the payment of a royalty. This policy may be varied by Standards Australia at any time.

STANDARDS AUSTRALIA

Australian Standard

Alumina

Part 2: Determination of particles passing a 20 μm aperture sieve

1 SCOPE This Standard sets out a wet-sieving procedure for the determination of the percentage by mass of particles of smelter-grade alumina passing a 20 μm aperture sieve.

2 REFERENCED DOCUMENTS The following documents are referred to in this Standard:

AS

1006 Solid stem general purpose thermometers

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

2879 Alumina—Determination of loss of mass at 300°C and 1000°C

NIST

SRM 1003a Glass spheres 8-58 μm

3 PRINCIPLE A test sample of alumina is sieved on a 20 μm electroformed sieve, using acetone and manual brushing, and the retained material is determined gravimetrically. Compensation is made for water absorption by ignition of the test sample and the + 20 μm material at 300°C.

4 APPARATUS

4.1 General Ordinary laboratory equipment.

4.2 Test sieve—nominally 75 mm to 100 mm diameter frame with an electroformed 20 μm aperture medium. The aperture shape may be either square or round. The medium may be supported by a suitable grid to provide adequate strength. The materials of construction shall be such that no physical change or chemical corrosion shall occur as a result of contact with acetone or moisture, or heating to 110°C. The test sieve shall be calibrated in accordance with the procedure in Appendix A.

4.3 Sieve brush—unpainted.

NOTE: A Fitch No 6 brush has been found to be suitable.

4.4 Ovens—The following ovens are required:

(a) An oven controlled at $110 \pm 5^\circ\text{C}$.

(b) An oven fitted with mechanical air circulation and capable of being controlled at $300 \pm 5^\circ\text{C}$. The temperature of the oven shall be measured using a total immersion mercury thermometer complying with AS 1006.

NOTE: Ovens utilizing natural air convection are not likely to achieve the required temperature control.

4.5 Desiccator—containing an aluminium heat sink (see AS 2879) and tray of desiccant (activated alumina or phosphorus pentoxide). A metal tray of approximate dimensions 150 mm diameter, 30 mm depth and containing approximately 250 g of desiccant is suitable. The desiccator should be of such dimensions that the internal circulation of air is not restricted.

4.6 Platinum crucibles—of 25 mL capacity and approximate dimensions of 35 mm diameter and 40 mm depth. Two crucibles are required for each determination. The crucibles shall be conditioned by placing in an oven held at 300°C for 30 min, then cooled and stored in the heat sink in the desiccator.

4.7 Wash bottle—polyethylene, with a fine jet and filled with reagent grade acetone.

5 SAMPLING AND SAMPLE PREPARATION A 50 g test sample shall be prepared from the laboratory sample using a riffle or rotary divider, taking particular care to avoid loss of fine particles through dusting. The test sample should be mixed well immediately before use.

6 PROCEDURE The procedure shall be as follows:

(a) Weigh 2 ± 0.1 g of test sample to the nearest 0.0001 g, record the mass (m_1) and transfer to a clean 20 μm test sieve (4.2).