

Australian Standard™

**Air filters for use in general ventilation
and airconditioning**

Part 2: Methods of test

This Australian Standard was prepared by Committee ME-080, Air Filters. It was approved on behalf of the Council of Standards Australia on 7 March 2003 and published on 8 May 2003.

The following are represented on Committee ME-080:

Air-Conditioning and Refrigeration Equipment Manufacturers Association of Australia
Australian Chamber of Manufacturers
Australian Contamination Control Society
Australian Institute of Hotel Engineering
Australian Institute of Refrigeration Air Conditioning and Heating
CSIRO—Division of Animal Health
CSIRO—Division of Atmospheric Research
Institute of Plant Engineers of Australasia
Metal Trades Industry Association of Australia
Property Council of Australia

Keep your Standards up-to-date

Standards are living documents which reflect progress in science, technology and systems. To maintain their currency, all Standards are periodically reviewed, and new editions are published. Between editions, amendments may be issued. Standards may also be withdrawn. It is important that readers assure themselves they are using a current Standard, which should include any amendments which may have been published since the Standard was purchased.

Detailed information about Standards can be found by visiting the Standards Australia web site at www.standards.com.au and looking up the relevant Standard in the on-line catalogue.

Alternatively, the printed Catalogue provides information current at 1 January each year, and the monthly magazine, *The Australian Standard*, has a full listing of revisions and amendments published each month.

We also welcome suggestions for improvement in our Standards, and especially encourage readers to notify us immediately of any apparent inaccuracies or ambiguities. Contact us via email at mail@standards.com.au, or write to the Chief Executive, Standards Australia International Ltd, GPO Box 5420, Sydney, NSW 2001.

This Standard was issued in draft form for comment as DR 01312.

Australian Standard™

**Air filters for use in general ventilation
and airconditioning**

Part 2: Methods of test

Formulated in part as AS 1132.1—1973, AS 1132.2—1973, AS 1132.3—1973,
AS 1132.4—1973, AS 1132.5—1973, AS 1132.6—1973, AS 1132.7—1973,
AS 1132.8—1973, and part of AS 1323—1973.
Previous edition AS 1324.2—1996.
Second edition 2003.

COPYRIGHT

© Standards Australia International

All rights are reserved. No part of this work may be reproduced or copied in any form or by any means, electronic or mechanical, including photocopying, without the written permission of the publisher.

Published by Standards Australia International Ltd
GPO Box 5420, Sydney, NSW 2001, Australia

ISBN 0 7337 5157 1

PREFACE

This Standard was prepared by Standards Australia Committee ME-080, Air Filters, to supersede AS 1324.2—1996.

The objective of this Standard is to establish uniform comparative testing procedures, meaningful to users and manufacturers, for evaluating the performance of all air cleaning devices used in airconditioning and general ventilation to remove particulate matter. The Standard further establishes uniform specifications for equipment used to conduct such tests and a uniform method for reporting the performance obtained from the specified procedure.

Changes to the previous editions are the following:

- (a) Dynamic arrestance tests have been deleted and Test Dusts Nos 2 and 3 tests have been separated and designated as special tests for assessing particular filter applications.
- (b) Testing methodology and apparatus have been generally revised to improve the reproducibility of test results and to bring the test methods more in line with current European and American practices. This policy has been adopted in anticipation of an ISO International Standard being developed and adopted as a national Standard in Australia.

This Standard forms Part 2 of a two-part series of Standards that address general air filters. Part 1 of the series covers the application, performance and construction requirements for such filters.

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

CONTENTS

	<i>Page</i>
SECTION 1 SCOPE AND GENERAL	
1.1 SCOPE.....	5
1.2 REFERENCED DOCUMENTS.....	5
1.3 GENERAL INFORMATION.....	5
1.4 DEFINITIONS.....	6
SECTION 2 INITIAL RESISTANCE	
2.1 SCOPE.....	7
2.2 APPLICATION.....	7
2.3 PRINCIPLE.....	7
2.4 APPARATUS AND MATERIALS.....	7
2.5 PROCEDURE.....	7
2.6 TEST REPORT.....	7
SECTION 3 MASS STABILIZATION	
3.1 SCOPE.....	8
3.2 APPLICATION.....	8
3.3 PRINCIPLE.....	8
3.4 APPARATUS AND MATERIALS.....	8
3.5 PROCEDURE.....	8
3.6 TEST REPORT.....	8
SECTION 4 TEST DUST NO.1—EFFICIENCY TEST	
4.1 SCOPE.....	9
4.2 APPLICATION.....	9
4.3 PRINCIPLE.....	9
4.4 COMPOSITION.....	9
4.5 NOTATION.....	9
4.6 APPARATUS.....	10
4.7 PROCEDURE.....	10
4.8 CALCULATIONS.....	12
4.9 TEST REPORT.....	14
SECTION 5 TEST DUST NO.4—GRAVIMETRIC TESTS	
5.1 SCOPE.....	15
5.2 PRINCIPLE.....	15
5.3 APPARATUS, MATERIALS AND REAGENTS.....	15
5.4 PROCEDURE.....	16
5.5 CALCULATIONS.....	16
5.6 TEST REPORT.....	17
SECTION 6 EFFECTIVENESS OF RENEWING MECHANISM	
6.1 SCOPE.....	18
6.2 PRINCIPLE.....	18
6.3 APPARATUS AND MATERIALS.....	18
6.4 TEST SAMPLE FILTER.....	18
6.5 PROCEDURE.....	18
6.6 TEST REPORT.....	18

SECTION 7 TEST DUSTS NOS 2 AND 3—SPECIAL TESTS

7.1	SCOPE.....	19
7.2	APPLICATION	19
7.3	GRAVIMETRIC TESTS	19
7.4	EFFECTIVENESS OF RENEWING MECHANISM TEST	19
7.5	TEST DUST COMPOSITION.....	19
7.6	TEST REPORTS	19

SECTION 8 TEST REPORTS

8.1	REPORTS.....	20
8.2	GRAPHS	20
8.3	PRELIMINARY INFORMATION	20
8.4	INFORMATION.....	20
8.5	DEVIATIONS FROM STANDARD TEST PROCEDURE.....	22

APPENDIX A	GENERAL EQUIPMENT AND TEST REQUIREMENTS.....	24
------------	--	----

STANDARDS AUSTRALIA

Australian Standard

Air filters for use in general ventilation and airconditioning

Part 2: Methods of test

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard provides test methods for laboratory or bench testing of air filters used in general ventilation and airconditioning systems. It also includes general information on test dusts, test rig and apparatus.

Test methods for filter applications are given in AS 1324.1.

NOTES:

- 1 Requirements of performance and construction of air filters for use in general ventilation and airconditioning are specified in AS 1324.1.
- 2 Methods for on-site testing of High Efficiency Particulate Air filters (HEPA filters) are specified in AS 1807 series. Performance, construction and methods of test for HEPA filters are specified in AS 4260.

1.2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS

- | | |
|------------|---|
| 1289 | Methods of testing soils for engineering purposes |
| 1289.3.6.3 | Method 3.6.3: Soil classification tests—Determination of the particle size distribution of a soil—Standard method of fine analysis using a hydrometer |
| 1324 | Air filters for use in general ventilation and airconditioning |
| 1324.1 | Part 1: Application, performance and construction |
| 1349 | Bourdon tube pressure and vacuum gauges |
| 1807 | Cleanrooms, workstations and safety cabinets—Methods of test |
| 2360 | Measurement of fluid flow in closed conduits |
| 2360.1.1 | Part 1.1: Pressure differential methods—Measurement using orifice plates, nozzles or Venturi tubes—Conduits with diameters from 50 mm to 1200 mm |
| 4260 | High efficiency particulate air (HEPA) filters—Classification, construction and performance |

1.3 GENERAL INFORMATION

The three performance characteristics of greatest interest to users and manufacturers of air cleaning equipment are the ability of the equipment to remove particulates from the air stream, the resistance to airflow, and the dust holding capacity before cleaning or replacement is required. Test methods for filter application are given in AS 1324.1.