

Australian Standard[®]

**Workplace atmospheres—Method for
sampling and gravimetric determination
of respirable dust**



This Australian Standard® was prepared by Committee CH-031, Methods for Examination of Workplace Atmospheres. It was approved on behalf of the Council of Standards Australia on 14 September 2009.

This Standard was published on 2 November 2009.

The following are represented on Committee CH-031:

- Australian Aluminium Council
 - Australian Chamber of Commerce and Industry
 - Australian Institute of Occupational Hygienists
 - Australian Mines and Metals Association
 - Bureau of Steel Manufacturers of Australia
 - Clean Air Society of Australia & New Zealand
 - Coal Services
 - Commonwealth Department of Health and Ageing
 - Department for Administrative and Information Services, SA
 - Department of Consumer & Employment Protection, WorkSafe Division, WA
 - Department of Mineral Resources, NSW
 - National Association of Testing Authorities Australia
 - WorkCover New South Wales
-

This Standard was issued in draft form for comment as DR AS 2985.

Standards Australia wishes to acknowledge the participation of the expert individuals that contributed to the development of this Standard through their representation on the Committee and through the public comment period.

Keeping Standards up-to-date

Australian Standards® are living documents that 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Standards may also be withdrawn.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 that may have been published since the Standard was published.

Detailed information about Australian Standards, drafts, amendments and new projects can be found by visiting www.standards.org.au

Standards Australia welcomes suggestions for improvements, and encourages readers to notify us immediately of any apparent inaccuracies or ambiguities. Contact us via email at mail@standards.org.au, or write to Standards Australia, GPO Box 476, Sydney, NSW 2001.

Australian Standard[®]

**Workplace atmospheres—Method for
sampling and gravimetric determination
of respirable dust**

Originated as AS 2985—1987.
Previous edition 2004.
Third edition 2009.

COPYRIGHT

© Standards Australia

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 GPO Box 476, Sydney, NSW 2001, Australia
ISBN 0 7337 9292 8

PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee CH-031, Methods for the Examination of Workplace Atmospheres, to supersede AS 2985—2004, *Workplace atmospheres—Method for sampling and gravimetric determination of respirable dust*. After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this Standard as an Australian Standard rather than an Australian/New Zealand Standard.

The objective of this revision is to enable calibration laboratories to meet the requirements for the balance and uncertainty requirements.

During the course of the preparation of this Standard, the Committee became aware of new technology for personal respirable dust monitoring, using a tapered element oscillating microbalance technique, but it was decided not to address this issue at this time and to leave it for a future date.

The terms ‘normative’ and ‘informative’ have been used in this Standard to define the application of the appendix to which they apply. A ‘normative’ appendix is an integral part of a Standard, whereas an ‘informative’ appendix is only for information and guidance.

CONTENTS

	<i>Page</i>
FOREWORD.....	4
1 SCOPE.....	5
2 OBJECTIVE	5
3 REFERENCED DOCUMENTS.....	5
4 DEFINITIONS.....	6
5 PRINCIPLE	7
6 APPARATUS	7
7 FLOW RATE DETERMINATION.....	10
8 PROCEDURE.....	10
9 CALCULATIONS	13
10 EXPRESSION OF UNCERTAINTY IN MEASUREMENT	13
11 LIMIT OF REPORTING	13
12 REPORTING OF RESULTS	14
APPENDICES	
A BIBLIOGRAPHY.....	15
B CALIBRATION OF SECONDARY FLOWMETER.....	17

FOREWORD

Most airborne industrial dusts contain particles of a wide range of sizes. The behaviour, deposition and fate of any particle after entry into the human respiratory system and the response that it elicits depends on the nature and size of the particle.

Occupational hygiene practice commonly differentiates between two size fractions of airborne dust, namely respirable and inhalable dust. Where particles may have toxic effects if absorbed in the nasopharyngeal (nose and throat) region or may have toxic effects if ingested after deposition in this region, it is appropriate to measure the mass concentration of inhalable particles in the atmosphere. It may also be apt to measure this size fraction for particles that exhibit no specific toxic effects, namely ‘particulates/dusts not otherwise classified.’ AS 3640, *Workplace atmospheres—Method for sampling and gravimetric determination of inhalable dust*, should be referred to for determining inhalable particles in workplace atmospheres.

Respirable particles can be measured when the nature of these particles is such that they exhibit toxic effects primarily when deposited in the alveolar region (deepest reserve) of the lungs. This usually applies to toxic insoluble particles that accumulate in the lungs such as crystalline silica, coal dust and cadmium oxide fume. This Standard sets down the method for determining the mass concentration of these respirable sized particles in workplace atmospheres.

STANDARDS AUSTRALIA

Australian Standard
**Workplace atmospheres—Method for sampling and gravimetric
determination of respirable dust**

1 SCOPE

This Standard sets out a method of the collection and gravimetric determination of respirable dust in workplace atmospheres. This method does not consider the measurement of ‘inhalable’ dust, which is covered in AS 3640.

2 OBJECTIVE

The objective of this Standard is to provide a method to assess personal exposure to respirable dust by sampling in a worker’s breathing zone.

Whilst the method only allows for personal sampling, it can also be used to assist in controlling the occupational environment by means of static samples, i.e. samples taken at a fixed location. However, static samples are not to be used to evaluate health risks unless a specific situation or circumstance indicates otherwise.

3 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS

- | | |
|--------|---|
| 2162 | Verification and use of volumetric apparatus |
| 2162.1 | Part 1: General—Volumetric glassware |
| 3640 | Workplace atmospheres—Method for sampling and gravimetric determination of inhalable dust |

AS/NZS

- | | |
|------------|---|
| 60079 | Explosive atmospheres |
| 60079.10.1 | Part 10.1: Classification of areas—Explosive gas atmospheres |
| 60079.11 | Part 11: Equipment protection by intrinsic safety ‘i’ |
| 61241 | Electrical apparatus for use in the presence of combustible dust |
| 61241.3 | Part 3: Classification of areas where combustible dusts are or may be present |

ISO

- | | |
|-------|--|
| 7708 | Air quality—Particle size fraction definitions for health-related sampling |
| 15767 | Workplace atmospheres—Controlling and characterizing errors in weighing collected aerosols |
| 20988 | Air quality—Guidelines for estimating measurement uncertainty |

MORRIS, Edwin C. and FEN, Kitty M.K. *The Calibration of Weights and Balances* Monograph 4: Technology Transfer Series, 3rd Edition, National Measurement Institute, November 2003.

NOTE: See Appendix A for bibliography.

This is a free preview. Purchase the entire publication at the link below:

-
- ▶ [Looking for additional Standards? Visit SAI Global Infostore](#)
 - ▶ [Subscribe to our Free Newsletters about Australian Standards® in Legislation; ISO, IEC, BSI and more](#)
 - ▶ [Do you need to Manage Standards Collections Online?](#)
 - ▶ [Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation](#)
 - ▶ [Do you want to know when a Standard has changed?](#)
 - ▶ [Want to become an SAI Global Standards Sales Affiliate?](#)

Learn about other SAI Global Services:

- ▶ [LOGICOM Military Parts and Supplier Database](#)
- ▶ [Metals Infobase Database of Metal Grades, Standards and Manufacturers](#)
- ▶ [Materials Infobase Database of Materials, Standards and Suppliers](#)
- ▶ [Database of European Law, CELEX and Court Decisions](#)

Need to speak with a Customer Service Representative - [Contact Us](#)