

AS/NZS 3580.9.16:2022



Australian/New Zealand Standard™

Methods for sampling and analysis

of an **This is a preview. Click here to purchase the full publication.**

Method 9.16: Determination of suspended particulate matter — PM₁₀ continuous direct mass method using a tapered element oscillating microbalance monitor incorporating a filter dynamic measurement system (FDMS) unit



AS/NZS 3580.9.16:2022

This Joint Australian/New Zealand Standard™ was prepared by Joint Technical Committee EV-007, Methods for Examination of Air. It was approved on behalf of the Council of Standards Australia on 11 February 2022 and by the New Zealand Standards Approval Board on 02 February 2022.

This Standard was published on 04 March 2022.

The following are represented on Committee EV-007:

ACT Health
Australian Aluminium Council
Australian Industry Group
Australian Institute of Refrigeration Air Conditioning and Heating
Clean Air Society of Australia & New Zealand
Department of Environment and Science, Qld
Department of Planning, Industry and Environment, NSW
Department of Water and Environmental Regulation, WA
Environment Canterbury, New Zealand
Environment Protection Authority, Vic.
International Accreditation New Zealand
Ministry for the Environment New Zealand

This is a preview. Click here to purchase the full publication.

Waikato Regional Council, New Zealand

This Standard was issued in draft form for comment as DR AS/NZS 3580.9.16:2021.

Keeping Standards up-to-date

Ensure you have the latest versions of our publications and keep up-to-date about Amendments, Rulings, Withdrawals, and new projects by visiting:

www.standards.org.au

www.standards.govt.nz

ISBN 978 1 76113 666 5

Australian/New Zealand Standard™

Methods for sampling and analysis of ambient air

This is a preview. Click here to purchase the full publication.

Method 9.16: Determination of suspended particulate matter — PM₁₀ continuous direct mass method using a tapered element oscillating microbalance monitor incorporating a filter dynamic measurement system (FDMS) unit

Originated as AS/NZS 3580.9.16:2016.
Second edition 2022.

© Standards Australia Limited/the Crown in right of New Zealand, administered by the New Zealand Standards Executive 2022

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, unless otherwise permitted under the Copyright Act 1968 (Cth) or the Copyright Act 1994 (New Zealand).

Preface

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee EV-007, Methods for Examination of Air, to supersede AS/NZS 3580.9.16:2016.

The objective of this document is to provide regulatory and testing bodies with a standard method for continuously monitoring suspended particulate matter with an equivalent aerodynamic diameter (EAD) of less than 10 μm (PM_{10}) in ambient air, providing near real-time measurement of mean particle concentration.

The major changes in this edition are as follows:

- (a) Alignment with current technology and to ensure consistency and uniformity across the different methods used in other continuous particulate monitoring Standards.
- (b) Provision of an essential reference to AS 3580.19.

The requirements for instruments specified in this document are given in the United States Environmental Protection Agency (US EPA) Code of Federal Regulations, Title 40 Protection of Environment, Part 53 Ambient Air Monitoring Reference and Equivalent Methods (40 CFR 53), Subpart D.

This is a preview. Click here to purchase the full publication.

The terms “normative” and “informative” are used in Standards to define the application of the appendices 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

Preface	ii
1 Scope	1
2 Normative references	1
3 Terms and definitions	2
4 Principle	2
5 Apparatus	4
5.1 Monitor	4
5.2 Analytical balance	7
5.3 Sample filter cartridges	7
5.4 FDMS cooler purge filters	7
5.5 PM ₁₀ size selective inlet	7
5.6 Reference flow meter	7
5.7 Reference thermometer	7
5.8 Reference barometer	7
This is a preview. Click here to purchase the full publication.	
6 Sampling	8
6.1 Location	8
6.2 Installation	8
6.3 Sampling environment	8
7 Procedure	9
7.1 Instrument operation	9
7.2 Instrument calibration	10
7.2.1 General	10
7.2.2 Mass transducer calibration constant (K_0) check	10
7.2.3 Instrument clock check	11
7.2.4 Leak check	11
7.2.5 Flow controller check	11
7.2.6 Ambient temperature sensor check and calibration	11
7.2.7 Pressure sensor check and calibration	12
7.2.8 Flow controller calibration	12
7.2.9 Relative humidity sensor check and calibration	12
7.2.10 Zero noise check	12
7.2.11 Analogue calibration	13
7.3 Instrument maintenance	13
7.3.1 General	13
7.3.2 Filter replacement	13
7.3.3 Flow system component cleaning	15
7.3.4 FDMS cooler cleaning	15
7.3.5 FDMS unit switching valve maintenance	15
7.3.6 FDMS dryer replacement	16
7.3.7 Pump reconditioning	16
8 Calculation and expression of results	17
9 Measurement uncertainty	17
10 Quality control and assurance	17
10.1 Instrument and station log	17
10.2 Data acquisition and transfer	18
10.3 Data validation	18
10.3.1 General	18
10.3.2 Handling negative mass data artefacts	19