
Indoor air —
Part 37:
Measurement of PM_{2,5} mass
concentration

Air intérieur —

Partie 37: Mesure de la concentration massique en PM_{2,5}



This document is a preview generated by EMS



COPYRIGHT PROTECTED DOCUMENT

© ISO 2019

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

	Page
Foreword.....	iv
Introduction.....	v
1 Scope.....	1
2 Normative references.....	1
3 Terms and definitions.....	1
4 Abbreviated terms.....	3
5 Measurement strategy for determining PM_{2,5} indoors.....	3
5.1 Location and number of sampling points.....	3
5.2 Measurement strategy for source attribution.....	4
5.3 Indoor air condition.....	4
6 Principle of measurement.....	4
6.1 General considerations.....	4
6.2 Description of the standard measuring principle.....	4
7 Equipment and facilities.....	5
7.1 Sampling system components.....	5
7.2 Weighing facilities and procedure.....	5
8 Supplementary high time resolution method.....	5
8.1 General.....	5
8.2 Selection of the supplementary instrument.....	6
8.3 Supplementary procedure.....	6
9 Evaluation and reporting the results.....	6
10 Quality assurance and uncertainty evaluation.....	7
10.1 Reference method.....	7
10.1.1 General.....	7
10.1.2 Flow control system.....	7
10.1.3 Weighing system.....	7
10.1.4 Checking the equipment's parameters.....	7
10.2 Supplementary methods.....	8
Annex A (informative) Examples of particle concentrations encountered during room user activities.....	9
Bibliography.....	11

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 146, *Air quality*, Subcommittee SC 6, *Indoor air*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

A list of all parts in the ISO 16000 series can be found on the ISO website.

Introduction

Airborne particulate matter (colloquially known as “fine dust”) plays a role not only outdoors, but is also significant in terms of hygiene, especially indoors. People in industrialized countries spend most of the day indoors. Either particles are transported into indoor air from outdoor environments or the particles directly result from indoor sources, such as smoking, residential wood burning and cooking.

PM_{2,5} concentration and composition in indoor environments strongly depend on parameters such as the room size, relative humidity, air exchange rate, airflow conditions and sink effects on surfaces (e.g. walls, ceilings, floor coverings, furnishings). In addition, particles already sedimented are temporarily resuspended to the air through various activities and can be inhaled. All this can result in highly variable levels of indoor PM_{2,5} pollution that are not easily ascertained or assessed in terms of their impacts on health.

This document describes the general strategies for the measurement of indoor PM_{2,5} concentration.

This document was prepared in response to the need for improved comparability of methods for particle measurement.

Indoor air —

Part 37:

Measurement of PM_{2,5} mass concentration

1 Scope

This document specifies the measurement methods and strategies for determining the PM_{2,5} mass concentrations of suspended particulate matter (PM) in indoor air. It can also be used for determining PM₁₀ mass concentration.

The reference method principle consists of collecting PM_{2,5} on a filter after separation of the particles by an impaction head and weighing them by means of a balance.

Measurement procedure and main requirements are similar to the conditions specified in EN 12341.

This document also specifies procedures for operating appropriate supplementary high time resolution instruments, which can be used to highlight peak emission, room investigation and as part of the quality control of the reference method.

Quality assurance, determination of the measurement uncertainty and minimal reporting information are also part of this document.

The lower range of application of this document is 2 µg/m³ of PM_{2,5} (i.e. the limit of detection of the standard measurement method expressed as its uncertainty).

This document does not cover the determination of bioaerosols or the chemical characterization of particles. For the measurement and assessment of dust composition, see the relevant technical rules in the International Standards in the ISO 16000 series.

This document does not cover passenger compartments of vehicles and public transport systems.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 12341, *Ambient air — Standard gravimetric measurement method for the determination of the PM₁₀ or PM_{2,5} mass concentration of suspended particulate matter*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>