
Indoor air —

Part 25:

Determination of the emission of semi-volatile organic compounds by building products — Micro-chamber method

Air intérieur —

Partie 25: Dosage de l'émission de composés organiques semi-volatils des produits de construction — Méthode de la micro-chambre



This document is a preview generated by EVS



COPYRIGHT PROTECTED DOCUMENT

© ISO 2011

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web 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 Symbols	4
5 Principle	4
6 Micro-chamber system	4
7 Apparatus and materials	8
8 Test conditions	8
9 Verification of test conditions	9
10 Test specimens	10
11 Micro-chamber preparation	10
12 Test method	10
13 Calculation of area specific emission rates and expression of results	11
14 Performance characteristics	11
15 Test report	11
Annex A (normative) System for quality assurance and quality control (QA/QC)	13
Annex B (informative) Examples of micro-chambers and procedure	15
Annex C (informative) Example of a method of micro-chamber recovery measurement	19
Annex D (informative) Selection of test specimens	21
Bibliography	23

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 16000-25 was prepared by Technical Committee ISO/TC 146, *Air quality*, Subcommittee SC 6, *Indoor air*.

ISO 16000 consists of the following parts, under the general title *Indoor air*:

- *Part 1: General aspects of sampling strategy*
- *Part 2: Sampling strategy for formaldehyde*
- *Part 3: Determination of formaldehyde and other carbonyl compounds in indoor air and test chamber air — Active sampling method*
- *Part 4: Determination of formaldehyde — Diffusive sampling method*
- *Part 5: Sampling strategy for volatile organic compounds (VOCs)*
- *Part 6: Determination of volatile organic compounds in indoor and test chamber air by active sampling on Tenax TA[®] sorbent, thermal desorption and gas chromatography using MS or MS-FID*
- *Part 7: Sampling strategy for determination of airborne asbestos fibre concentrations*
- *Part 8: Determination of local mean ages of air in buildings for characterizing ventilation conditions*
- *Part 9: Determination of the emission of volatile organic compounds from building products and furnishing — Emission test chamber method*
- *Part 10: Determination of the emission of volatile organic compounds from building products and furnishing — Emission test cell method*
- *Part 11: Determination of the emission of volatile organic compounds from building products and furnishing — Sampling, storage of samples and preparation of test specimens*
- *Part 12: Sampling strategy for polychlorinated biphenyls (PCBs), polychlorinated dibenzo-p-dioxins (PCDDs), polychlorinated dibenzofurans (PCDFs) and polycyclic aromatic hydrocarbons (PAHs)*

- *Part 13: Determination of total (gas and particle-phase) polychlorinated dioxin-like biphenyls (PCBs) and polychlorinated dibenzo-p-dioxins/dibenzofurans (PCDDs/PCDFs) — Collection on sorbent-backed filters*
- *Part 14: Determination of total (gas and particle-phase) polychlorinated dioxin-like biphenyls (PCBs) and polychlorinated dibenzo-p-dioxins/dibenzofurans (PCDDs/PCDFs) — Extraction, clean-up and analysis by high-resolution gas chromatography and mass spectrometry*
- *Part 15: Sampling strategy for nitrogen dioxide (NO₂)*
- *Part 16: Detection and enumeration of moulds — Sampling by filtration*
- *Part 17: Detection and enumeration of moulds — Culture-based method*
- *Part 18: Detection and enumeration of moulds — Sampling by impaction*
- *Part 19: Sampling strategy for moulds*
- *Part 23: Performance test for evaluating the reduction of formaldehyde concentrations by sorptive building materials*
- *Part 24: Performance test for evaluating the reduction of volatile organic compound (except formaldehyde) concentrations by sorptive building materials*
- *Part 25: Determination of the emission of semi-volatile organic compounds by building products — Micro-chamber method*
- *Part 26: Sampling strategy for carbon dioxide (CO₂)*
- *Part 28: Determination of odour emissions from building products using test chambers*

The following parts are under preparation:

- *Part 21: Detection and enumeration of moulds — Sampling from materials*
- *Part 27: Determination of settled fibrous dust on surfaces by SEM (scanning electron microscopy) (direct method)*
- *Part 29: Test methods for VOC detectors*
- *Part 30: Sensory testing of indoor air*
- *Part 31: Measurement of flame retardants and plasticizers based on organophosphorus compounds — Phosphoric acid ester*
- *Part 32: Investigation of constructions on pollutants and other injurious factors — Inspections*

Introduction

The determination of semi-volatile organic compounds (SVOCs) emitted from building products using micro-chambers in conjunction with standardized sampling, storage of samples and preparation of test specimens aims, for example, to:

- provide manufacturers, builders, and end-users with emission data useful for the evaluation of the impact of building products on the indoor air quality;
- promote the development of improved products.

The measurement method specified in this part of ISO 16000 is applicable to products used in construction such as board materials, wallpapers, flooring materials, insulation materials, adhesives, paints, and their combinations.

SVOCs such as phthalic esters are found in many construction materials. If emitted into the indoor environment they adhere to many surfaces and can become a persistent indoor air contaminant.

This part of ISO 16000 specifies a test procedure for measuring SVOC emissions from construction products and materials. This method can, in principle, be used for most building products used indoors.

ISO 16017^{[6][7]} and ISO 12219^{[1]–[5]} also focus on volatile organic compound (VOC) measurements.

Indoor air —

Part 25:

Determination of the emission of semi-volatile organic compounds by building products — Micro-chamber method

1 Scope

This part of ISO 16000 specifies a test method for determination of the area-specific emission rate of semi-volatile organic compounds (SVOCs) from newly produced building products or furnishings under defined climate conditions using a micro-chamber. The method can in principle also be applied to aged products. This measurement method is applicable to products and materials, such as board materials, wallpapers, flooring materials, insulation materials, adhesives, paints, and their combinations.

Sampling, transport and storage of materials to be tested, and preparation of test specimens are specified in ISO 16000-11. Air sampling and analytical methods for the determination of SVOCs are specified in ISO 16000-6 and ISO 16017-1.

An example of a micro-chamber is described in Annex B.

2 Normative references

The following referenced documents are indispensable for the application 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.

ISO 554, *Standard atmospheres for conditioning and/or testing — Specifications*

ISO 16000-6, *Indoor air — Part 6: Determination of volatile organic compounds in indoor and test chamber air by active sampling on Tenax TA[®] sorbent, thermal desorption and gas chromatography using MS or MS-FID*

ISO 16000-11, *Indoor air — Part 11: Determination of the emission of volatile organic compounds from building products and furnishing — Sampling, storage of samples and preparation of test specimens*

ISO 16017-1, *Indoor, ambient and workplace air — Sampling and analysis of volatile organic compounds by sorbent tube/thermal desorption/capillary gas chromatography — Part 1: Pumped sampling*

3 Terms and definitions

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

3.1

air change rate for micro-chamber

n

ratio of the volume of clean air brought into the micro-chamber per hour and the free micro-chamber volume measured in identical units