



SLOVENSKI STANDARD
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Indoor air - Part 7: Sampling strategy for determination of airborne asbestos fibre concentrations (ISO 16000-7:2007)

Innenraumlufiverunreinigungen - Teil 7: Probenahmestrategie zur Bestimmung luftgetragener Asbestfaserkonzentrationen (ISO 16000-7:2007)

iTeh STANDARD PREVIEW

(général de l'air)
Air intérieur - Partie 7: Stratégie d'échantillonnage pour la détermination des concentrations en fibres d'amiante en suspension dans l'air (ISO 16000-7:2007)

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ICS:

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English Version

Indoor air - Part 7: Sampling strategy for determination of airborne asbestos fibre concentrations (ISO 16000-7:2007)

Air intérieur - Partie 7: Stratégie d'échantillonnage pour la détermination des concentrations en fibres d'amiante en suspension dans l'air (ISO 16000-7:2007)

Innenraumluftverunreinigungen - Teil 7: Probenahme-strategie zur Bestimmung luftgetragener Asbestfaserkonzentrationen (ISO 16000-7:2007)

This European Standard was approved by CEN on 13 July 2007.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN Management Centre has the same status as the official versions.

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Contents

Page

Foreword.....3

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SIST EN ISO 16000-7:2008

<https://standards.iteh.ai/catalog/standards/sist/7b5aff9b-5250-4f7f-aa28-413706b2d68d/sist-en-iso-16000-7-2008>

Foreword

This document (EN ISO 16000-7:2007) has been prepared by Technical Committee ISO/TC 146 "Air quality" in collaboration with Technical Committee CEN/TC 264 "Air quality" the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by February 2008, and conflicting national standards shall be withdrawn at the latest by February 2008.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

Endorsement notice

The text of ISO 16000-7:2007 has been approved by CEN as a EN ISO 16000-7:2007 without any modification.

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Indoor air —

Part 7:

**Sampling strategy for determination of
airborne asbestos fibre concentrations**

Air intérieur —

*Partie 7: Stratégie d'échantillonnage pour la détermination
des concentrations en fibres d'amiante en suspension dans l'air*
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Reference number
ISO 16000-7:2007(E)

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Published in Switzerland

Contents

Page

Foreword	iv
Introduction	vi
1 Scope	1
2 Normative references	1
3 Sources and occurrence	1
4 Terms and definitions	2
5 Symbols and abbreviations	6
6 Measurement strategy	7
7 Quality assurance	19
Annex A (normative) Simulation methods	21
Annex B (informative) Choice of analytical method	23
Annex C (informative) Example of sample data form	25
Annex D (informative) Example of summary report form	26
Bibliography	28

SIST EN ISO 16000-7:2008

<https://standards.iteh.ai/catalog/standards/sist/7b5aff9b-5250-4f7f-aa28-413706b2d68d/sist-en-iso-16000-7-2008>

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 16000-7 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 — 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/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/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*

The following parts are under preparation:

- *Part 18: Detection and enumeration of moulds — Sampling by impaction*
- *Part 23: Performance test for evaluating the reduction of formaldehyde concentrations by sorptive building materials*
- *Part 24: Performance test for evaluating the concentration reduction of volatile organic compounds and carbonyl compounds except formaldehyde by sorptive building materials*
- *Part 25: Determination of the emission of semi volatile organic compounds for building products — Micro chamber method*

The following parts are planned:

- *Part 19: Sampling strategy for moulds*
- *Part 20: Detection and enumeration of moulds — Sampling from house dust*
- *Part 21: Detection and enumeration of moulds — Sampling from materials*
- *Part 22: Detection and enumeration of moulds — Molecular methods*
- *Part 26: Road vehicle interior test stand — Determination of VOC, SVOC and carbonyls including formaldehyde in car interiors*

Furthermore, two International Standards, ISO 16017-1 on pumped sampling and ISO 16017-2 on diffusive sampling, focus on volatile organic compound (VOC) measurements.

Introduction

Measurements of airborne asbestos fibre concentrations in indoor atmospheres are made for several reasons related to short-term or long-term exposure of building occupants to asbestos. One application of such measurements is to ensure that airborne asbestos fibres dispersed in areas of a building that are undergoing asbestos abatement do not result in unacceptable exposures of occupants in other areas of the building. After asbestos abatement is completed, measurements are made prior to removal of containment barriers and before safety precautions are discontinued to determine whether any residual asbestos that may remain in the abated area could give rise to unacceptable airborne asbestos exposures when the areas are re-occupied.

The characterization and assessment of ambient air at a fixed position, whether in a building or outside, is normally based on a series of measurements made over a long period of time, generally months or years. However, the release of asbestos fibres into ambient air is not constant and human, or in some cases animal, activity will result in short-term release episodes. Maintenance activity in particular will disturb asbestos-containing materials and settled dust in buildings. Control and monitoring of these activities will determine the long-term exposure levels ^{[1][2]}. Workplace atmospheres are also assessed by a series of repeated measurements, the number of measurements depending on the difference between the measured value and the control limit.

In contrast to the strategy used for assessment of long-term asbestos fibre concentrations and personal exposures, the assessment of asbestos fibre concentrations in connection with asbestos abatement measures is nearly always based on a set of measurements made at one time. This special situation needs to be taken into account, both when planning the measurements, and during collection of the air samples. It is not possible to predict long-term changes of airborne asbestos fibre concentrations resulting from any deterioration of asbestos-containing material or the type of usage of the rooms. However, through the use of an appropriate sampling strategy and sampling technique, and by taking extreme, but realistic, conditions into consideration, it is possible to simulate and estimate the short-term maximum asbestos fibre concentrations that can occur.

The sampling strategy described in this part of ISO 16000 is based on VDI 3492 ^[3].

Indoor air —

Part 7:

Sampling strategy for determination of airborne asbestos fibre concentrations

1 Scope

This part of ISO 16000 specifies procedures to be used in planning of air measurements to determine the concentrations of asbestos in indoor atmospheres. Careful planning of the measurement strategy is important, because the results can become the basis of recommendations for major building renovations, or for the return of a building to normal occupancy status after removal of asbestos-containing materials.

This part of ISO 16000 uses the following definition for indoor environments as specified in ISO 16000-1:

- dwellings having living rooms, bedrooms, do-it-yourself (DIY) rooms, recreation rooms, cellars, kitchens and bathrooms;
- workrooms or workplaces in buildings which are not subject to health and safety inspections in regard to air pollutants (for example, offices and sales premises);
- public and commercial buildings (for example, hospitals, schools, kindergartens, sports halls, libraries, restaurants and bars, theatres and other function rooms);
- cabins of vehicles and public transport.

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 16000-1, *Indoor air — Part 1: General aspects of sampling strategy*

ISO/IEC 17025, *General requirements for the competence of testing and calibration laboratories*

3 Sources and occurrence

Airborne fibres in building atmospheres can originate from various sources within or outside the building. Many of the fibres are organic, such as cotton or synthetic fibres released from upholstery fabrics or the clothing of the occupants, or cellulose fibres dispersed during manipulation of paper. Other organic fibres originating from vegetation can infiltrate the building from outside, or can be dispersed from potted plants. Inorganic fibres, such as asbestos, glass fibres, mineral wool fibres and gypsum can be released from various building materials. Release of airborne fibres from building materials can occur intermittently, particularly during disturbances of the materials during maintenance activities. Fragments of the materials can become detached when the materials are contacted, and, if not removed, these fragments can be pulverized by subsequent activities to form dust that can be dispersed into the atmosphere.