

**Indoor, ambient and workplace air -
Sampling and analysis of volatile organic
compounds by sorbent tube/thermal
desorption/capillary gas chromatography -
Part 2: Diffusive sampling**

Indoor, ambient and workplace air - Sampling and
analysis of volatile organic compounds by sorbent
tube/thermal desorption/capillary gas
chromatography - Part 2: Diffusive sampling

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN ISO 16017-2:2003 sisaldab Euroopa standardi EN ISO 16017-2:2003 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 23.12.2003 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN ISO 16017-2:2003 consists of the English text of the European standard EN ISO 16017-2:2003.</p> <p>This document is endorsed on 23.12.2003 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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<p>Käsitlusala: This part of ISO 16017 gives general guidance for the sampling and analysis of volatile organic compounds (VOCs) in air. It is applicable to indoor, ambient and workplace air</p>	<p>Scope: This part of ISO 16017 gives general guidance for the sampling and analysis of volatile organic compounds (VOCs) in air. It is applicable to indoor, ambient and workplace air</p>
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ICS 13.040.01

Võtmesõnad: analysis, gravime, sampling equipment

ICS 13.040.01

English version

Indoor, ambient and workplace air - Sampling and analysis of
volatile organic compounds by sorbent tube/thermal
desorption/capillary gas chromatography - Part 2: Diffusive
sampling (ISO 16017-2:2003)

Air intérieur, air ambiant et air des lieux de travail -
Echantillonnage et analyse des composés organiques
volatils par tube à adsorption/désorption
thermique/chromatographie en phase gazeuse sur
capillaire - Partie 2: Echantillonnage par diffusion (ISO
16017-2:2003)

Innenraumluft, Außenluft und Luft am Arbeitsplatz -
Probenahme und Analyse flüchtiger organischer
Verbindungen durch Sorptionsröhrchen/thermische
Desorption/Kapillar- Gaschromatographie - Teil 2:
Probenahme mit Passivsammlern (ISO 16017-2:2003)

This European Standard was approved by CEN on 21 March 2003.

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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 Management Centre has the same status as the official versions.

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Foreword

This document (EN ISO 16017-2:2003) 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 November 2003, and conflicting national standards shall be withdrawn at the latest by November 2003.

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

Endorsement notice

The text of ISO 16017-2:2003 has been approved by CEN as EN ISO 16017-2:2003 without any modifications.

**Indoor, ambient and workplace air —
Sampling and analysis of volatile organic
compounds by sorbent tube/thermal
desorption/capillary gas
chromatography —**

**Part 2:
Diffusive sampling**

*Air intérieur, air ambiant et air des lieux de travail — Échantillonnage et
analyse des composés organiques volatils par tube à
adsorption/désorption thermique/chromatographie en phase gazeuse
sur capillaire —*

Partie 2: Échantillonnage par diffusion



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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 16017-2 was prepared by Technical Committee ISO/TC 146, *Air quality*, Subcommittee SC 6, *Indoor air*.

ISO 16017 consists of the following parts, under the general title *Indoor, ambient and workplace air — Sampling and analysis of volatile organic compounds by sorbent tube/thermal desorption/capillary gas chromatography*:

- *Part 1: Pumped sampling*
- *Part 2: Diffusive sampling*

Indoor, ambient and workplace air — Sampling and analysis of volatile organic compounds by sorbent tube/thermal desorption/capillary gas chromatography —

Part 2: Diffusive sampling

1 Scope

This part of ISO 16017 gives general guidance for the sampling and analysis of volatile organic compounds (VOCs) in air. It is applicable to indoor, ambient and workplace air.

This part of ISO 16017 is applicable to a wide range of VOCs, including hydrocarbons, halogenated hydrocarbons, esters, glycol ethers, ketones and alcohols. A number of sorbents¹⁾ are recommended for the sampling of these VOCs, each sorbent having a different range of applicability. Very polar compounds generally require derivatisation; very low boiling compounds are only partially retained by the sorbents and can only be estimated qualitatively. Semi-volatile compounds are fully retained by the sorbents, but may only be partially recovered.

This part of ISO 16017 is applicable to the measurement of airborne vapours of VOCs in a mass concentration range of approximately 0,002 mg/m³ to 100 mg/m³ individual organic for an exposure time of 8 h, or 0,3 µg/m³ to 300 µg/m³ individual organic for an exposure time of four weeks.

The upper limit of the useful range is set by the sorptive capacity of the sorbent used and by the linear dynamic range of the gas chromatograph column and detector or by the sample splitting capability of the analytical instrumentation used. The lower limit of the useful range depends on the noise level of the detector and on blank levels of analyte and/or interfering artefacts on the sorbent tubes. Artefacts are typically sub-nanogram for well-conditioned Tenax GR and carbonaceous sorbents such as Carbopack/Carbotrap type materials, carbonized molecular sieves such as Spherocharb and pure charcoals. Artefacts are typically at low nanogram levels for Tenax TA and at 5 ng to 50 ng levels for other porous polymers such as Chromosorb and Porapak.

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*

1) The sorbents listed in Annex B and elsewhere in this part of ISO 16017 are those known to perform as specified under this part of ISO 16017. Each sorbent or product that is identified by a trademarked name is unique and has a sole manufacturer; however, they are widely available from many different suppliers. This information is given for the convenience of users of this part of ISO 16017 and does not constitute an endorsement by ISO of the product named. Equivalent products may be used if they can be shown to lead to the same results.