AS 2986.2—2003
ISO 16200-2:2000

Australian Standard™

Workplace air quality—Sampling and analysis of volatile organic compounds by solvent desorption/gas chromatography

Part 2: Diffusive sampling method

Standards Australia

This Australian Standard was prepared by Committee CH-031, Methods for the Examination of Workplace Atmospheres. It was approved on behalf of the Council of Standards Australia on 3 November 2003 and published on 24 December 2003.

The following are represented on Committee CH-031:

Australian Aluminium Council

Australian Chamber of Commerce and Industry

Australian Institute of Occupational Hygienists

Australian Mines and Metals Association

Bureau of Steel Manufacturers of Australia

Clean Air Society of Australia & New Zealand

Coal Services

Commonwealth Department of Health and Aging

Department for Administrative and Information Services, S.A.

Department of Mineral Resources, N.S.W.

National Association of Testing Authorities, Australia

WorkCover New South Wales

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Part 2: Diffusive sampling method

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PREFACE

This Standard was prepared by the Standards Australia Committee CH-031, Methods for Examination of Workplace Atmospheres, to supersede, in part, AS 2986—1987, *Workplace atmospheres—Organic vapours—Sampling by solid absorption techniques.*

This Standard is identical with and has been reproduced from ISO 16200-2:2000, *Workplace air quality—Sampling and analysis of volatile organic compounds by solvent desorption/gas chromatography*, Part 2: *Diffusive sampling method.*

The objective of this Standard is to provide a method for sampling, using a personal pump and analysis of organic compounds by gas chromatography in workplace atmospheres.

As this Standard is reproduced from an International Standard, the following applies:

(a) Its number appears on the cover and title page while the International Standard number appears only on the cover.

(b) In the source text, 'this part of ISO 16200' should read 'this Australian Standard'.

(c) A full point should be substituted for a comma when referring to a decimal marker.

None of the documents referenced in this Standard have been adopted as Australian Standards.

This Standard is Part 2 of the following series:

AS	
2986	Workplace air quality—Sampling and analysis of volatile organic compounds by solvent desorption/gas chromatography
2986.1	Part 1: Pumped sampling method
2986.2	Part 2: Diffusive sampling method

The Committee acknowledges advice from NATA (National Association of Testing Authorities) that, in Australia, some clauses in this Standard, which are given as advisory, are mandatory requirements for laboratories seeking NATA accreditation. Specifically:

(i) Clause 4.4.1: Traceability of calibration blend solutions to national or international Standards is a NATA requirement.

(ii) Clause 6: Preparation of field blanks is a NATA requirement.

(iii) Clause 10: Estimations of uncertainty are required by NATA to be prepared in accordance with the principles of ISO GUM.*

The term 'informative' has been used in this Standard to define the application of the annex to which is applies. An 'informative' appendix is only for information and guidance.

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* 'Guide to the Expression of Uncertainty in Measurement' issued by BIPM, IEC, IFCC, ISO, IUPAC, IUPAP and OIML, Geneva, 1993.

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AUSTRALIAN STANDARD

Workplace air quality—Sampling and analysis of volatile organic compounds by solvent desorption/gas chromatography

Part 2:

Diffusive sampling method

1 Scope

This part of ISO 16200 gives general guidance for the sampling and analysis of volatile organic compounds (VOCs) in air.

This part of ISO 16200 is applicable to a wide range of VOCs, including hydrocarbons, halogenated hydrocarbons, esters, glycol ethers, ketones and alcohols. A number of devices and sorbents are recommended for the sampling of these VOCs, each sorbent having a different range of applicability.

NOTE Activated coconut shell charcoal is frequently used. Very polar compounds may require derivatization; very low boiling compounds will only be partially retained by the sorbents and can only be estimated qualitatively. Semi-volatile compounds will be fully retained by the sorbents, but may only be partially recovered.

This part of ISO 16200 is valid for the measurement of airborne vapours of VOCs in a concentration range of approximately 1 mg/m^3 to 1000 mg/m^3 individual organic for an exposure time of 8 h.

The upper limit of the useful range is set by the sorptive capacity of the sorbent used and, subject to dilution of the analysed solution, 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 sampling devices or in the desorption solvent. Artefacts are typically sub-nanogram for activated charcoal, but higher levels of aromatic hydrocarbons have been noted in some batches.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 16200. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 16200 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

EN 838:1995, *Workplace atmospheres — Diffusive samplers for the determination of gases and vapours — Requirements and test methods.*

EN 1540, *Workplace atmospheres — Terminology.*

3 Principle

Diffusive samplers consist of a sorbent separated from ambient air by some form of diffusion resistance, commonly a controlled air gap and draught shield. The diffusive sampler (or samplers) is exposed to air for a measured time