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## **Air quality — Determination of total non-methane organic compounds — Cryogenic preconcentration and direct flame ionization detection method**

*Qualité de l'air — Dosage des composés organiques non méthaniques totaux — Méthode par préconcentration cryogénique et ionisation sélective directe dans la flamme*



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## Contents

	Page
Foreword.....	iv
Introduction.....	v
1 Scope .....	1
2 Normative references .....	1
3 Terms and definitions .....	2
4 Description of the method .....	2
4.1 Sampling.....	2
4.2 Analysis .....	2
5 Interferences .....	3
6 Apparatus .....	3
6.1 Sample collection system (Figure 1).....	3
6.2 Sample-canister cleaning system (Figure 2) .....	4
6.3 Analytical system (Figure 3).....	6
7 Reagents and materials .....	9
8 Canister cleanup and preparation.....	9
9 Sampling.....	10
9.1 General.....	10
9.2 Sample collection .....	11
10 Sample analysis.....	12
10.1 Assembly .....	12
10.2 Analytical system leak check .....	12
10.3 Sample volume determination.....	12
10.4 Analytical system dynamic calibration .....	13
10.5 Analysis procedure (see Figure 3).....	14
11 Performance criteria and Quality Assurance.....	16
11.1 General.....	16
11.2 Standard operating procedure (SOP).....	17
11.3 Method sensitivity, accuracy and precision .....	17
12 Method modification.....	18
12.1 Sample metering system .....	18
12.2 Canister cleaning .....	18
12.3 FID system.....	18
12.4 Range .....	18
12.5 Alternative cryogenic trapping and heating systems.....	18
12.6 Sub-atmospheric pressure canister sampling .....	18
12.7 Alternative sampling system .....	18
13 Precision and accuracy.....	19
13.1 Precision.....	19
13.2 Accuracy.....	19
Annex A (informative) Example of pressurized canister Sampling Data Sheet.....	20
Bibliography .....	21

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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 3.

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 International Standard may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 14965 was prepared by Technical Committee ISO/TC 146, *Air quality*, Subcommittee SC 3, *Ambient atmospheres*.

Annex A of this International Standard is for information only.

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## Introduction

Accurate measurements of ambient concentrations of total non-methane volatile organic compounds (NMVOC) are important for the control of photochemical smog because these organic compounds are primary precursors of atmospheric ozone and other oxidants.

The NMVOC concentrations typically found at urban sites may range up to 1 ppmC to 3 ppmC (see definition 3.4) or higher. In order to determine transport of precursors into an area, measurement of NMVOC upwind of the area may be necessary. Rural NMVOC concentrations originating from areas free from NMVOC sources are likely to measure less than a few tenths of 1 ppmC.

Conventional methods that depend on gas chromatography and qualitative and quantitative species evaluation are excessively difficult and expensive to operate and maintain. The method described in this International Standard involves a simple, cryogenic preconcentration procedure with subsequent direct detection with the flame ionization detector (FID). The method is sensitive and provides accurate measurements of ambient total NMVOC concentrations where species data are not required.

This International Standard is intended for analysis of air samples from sampling canisters and has not been designed for continuous ambient air monitoring.

Another application of this International Standard is the monitoring of the cleanliness of canisters and screening of canister samples prior to analysis.

Collection of ambient air samples in pressurized canisters provides the following advantages:

- convenient integration of ambient samples over a specific time period;
- capability of remote sampling with subsequent central laboratory analysis;
- ability to ship and store samples, if necessary;
- analysis of samples from multiple sites with one analytical system;
- collection of replicate samples for assessment of measurement precision;
- specific hydrocarbon analysis may be performed with the same sample system.