Irish Standard
I.S. EN ISO 13199:2012

Stationary source emissions - Determination of total volatile organic compounds (TVOCs) in waste gases from non-combustion processes - Non-dispersive infrared analyser equipped with catalytic converter (ISO 13199:2012)

I.S. EN ISO 13199:2012

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EUROPEAN STANDARD

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English Version

Stationary source emissions - Determination of total volatile organic compounds (TVOCs) in waste gases from non-combustion processes - Non-dispersive infrared analyser equipped with catalytic converter (ISO 13199:2012)

Émissions de sources fixes - Détermination des composés organiques volatils totaux (COVT) dans les effluents gazeux des processus sans combustion - Analyseur à infrarouge non dispersif équipé d'un convertisseur catalytique (ISO 13199:2012)

Emissionen aus stationären Quellen - Bestimmung der Summe der flüchtigen organischen Verbindungen (TVOCs) in Abgasen, die nicht aus Verbrennungsprozessen stammen - Nicht-dispersives Infrarot-Messgerät mit Konverter (ISO 13199:2012)

This European Standard was approved by CEN on 14 October 2012.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (EN ISO 13199:2012) 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of an identical text or by endorsement, at the latest by April 2013, and conflicting national standards shall be withdrawn at the latest by April 2013.

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The text of ISO 13199:2012 has been approved by CEN as a EN ISO 13199:2012 without any modification.

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I.S. EN ISO 13199:2012

INTERNATIONAL STANDARD

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Stationary source emissions — Determination of total volatile organic compounds (TVOCs) in waste gases from non-combustion processes — Non-dispersive infrared analyser equipped with catalytic converter

Émissions de sources fixes — Détermination des composés organiques volatils totaux (COVTs) dans les effluents gazeux des processus sans combustion — Analyseur à infrarouge non dispersif équipé d'un convertisseur catalytique

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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.

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ISO 13199 was prepared by Technical Committee ISO/TC 146, *Air quality*, Subcommittee SC 1, *Stationary source emissions*.

Introduction

Volatile organic compounds (VOCs) play significant roles in atmospheric chemistry, especially the formation of photochemical oxidants and/or ozone (O_3) and suspended particulate matter (SPM), which are known to have negative impacts on human health and biological systems. There are many areas of the world where their atmospheric concentrations are close to or above the level of the WHO guidelines for environmental standards in each nation. It is therefore strongly required in many nations to reduce the emission of VOC from various anthropogenic sources.

In order to manage VOC emission from stationary emission sources, it is essential for enterprises to evaluate the quantity of VOCs emitted from their facilities where organic solvents as well as other chemicals are used for industrial processes like painting, printing, cleaning, and degreasing.

A technique for continuously and precisely measuring the concentration of total VOCs (TVOCs) in waste gases emitted from ducts to atmosphere, which is easy to operate and to maintain, is very helpful for both governments and enterprises to control and reduce VOC emissions. This measurement method, based on the use of an NDIR analyser equipped with a catalytic converter for oxidation of TVOCs to CO_2, has some advantages compared to measurement methods using flame ionization detection (FID) and FID–GC (flame ionization detection–gas chromatography), namely:

a) high-safety operation is possible, since no flame and no hydrogen are used;

b) response factors of individual VOCs are not different from each other;

c) no interference due to oxygen is observed.

Note, however, that this method is not applicable to waste gas from combustion processes.

Stationary source emissions — Determination of total volatile organic compounds (TVOCs) in waste gases from non-combustion processes — Non-dispersive infrared analyser equipped with catalytic converter

1 Scope

This International Standard specifies the principle, the essential performance criteria and quality assurance/quality control (QA/QC) procedures of an automatic method for measuring total volatile organic compound (TVOC) content in waste gases of stationary sources, using a non-dispersive infrared absorption (NDIR) analyser equipped with a catalytic converter which oxidizes VOC to carbon dioxide.

This method is suitable for the measurement of TVOC emissions from non-combustion processes. This method allows continuous monitoring with permanently installed measuring systems, as well as intermittent measurements of TVOC emissions.

The method has been tested on field operation for painting and printing processes, where TVOC concentrations in the waste gases were from about 70 mg/m^3 to 600 mg/m^3.

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 9169:2006, *Air quality — Definition and determination of performance characteristics of an automatic measuring system*

ISO 14956, *Air quality — Evaluation of the suitability of a measurement procedure by comparison with a required measurement uncertainty*

ISO 20988, *Air quality — Guidelines for estimating measurement uncertainty*

3 Terms and definitions

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

3.1
automatic measuring system
AMS
measuring system interacting with the waste gas under investigation, returning an output signal proportional to the physical unit of the measurand in unattended operation

NOTE 1 Adapted from ISO 9169:2006, 2.1.2.

NOTE 2 In the sense of this document, an AMS is a system that can be attached to a duct to continuously or intermittently measure and record TVOC mass concentrations passing through the duct.

3.2
analyser
analytical part in an extractive or *in situ* AMS

[ISO 12039:2001,[3] 3.3]