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Utsläpp och utomhusluft – Automatisk metod för bestämning av metankoncentrationen med flamjonisationdetektor (FID) (ISO 25140:2010)

Stationary source emissions – Automatic method for the determination of the methane concentration using flame ionisation detection (FID) (ISO 25140:2010)

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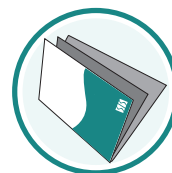
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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN ISO 25140

August 2010

ICS 13.040.40

English Version

**Stationary source emissions - Automatic method for the
determination of the methane concentration using flame
ionisation detection (FID) (ISO 25140:2010)**

Émissions de sources fixes - Méthode automatique pour la
détermination de la concentration en méthane par détection
à ionisation de flamme (FID) (ISO 25140:2010)

Emissionen aus stationären Quellen - Automatisches
Verfahren zur Bestimmung der Methan-Konzentration mit
dem Flammenionisationsdetektor (FID) (ISO 25140:2010)

This European Standard was approved by CEN on 26 May 2010.

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Foreword

This document (EN ISO 25140:2010) 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of an identical text or by endorsement, at the latest by February 2011, and conflicting national standards shall be withdrawn at the latest by February 2011.

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The text of ISO 25140:2010 has been approved by CEN as a EN ISO 25140:2010 without any modification.

Introduction

Methane (CH₄) is a gas of relevance to the climate (greenhouse gas) and contributes directly to the atmospheric greenhouse effect. The emissions of methane originate from natural and anthropogenic sources. Significant sources are, for example, cattle breeding, cultivation of rice, extraction and transport of natural gas, and landfills. Other important sources contributing to emissions of methane are, for example, composting plants, the use of biogas and natural gas, and biomass firings. This International Standard specifies a method of measurement for the determination of methane emissions from stationary sources.

Stationary source emissions — Automatic method for the determination of the methane concentration using flame ionisation detection (FID)

1 Scope

This International Standard specifies the principle, the essential performance criteria, and quality assurance and quality control procedures for an automatic method for measuring methane in the waste gas of stationary sources using flame ionisation detection. It is applicable to measurements of methane in dry or wet waste gases. The method allows continuous monitoring with permanently installed measuring systems as well as intermittent measurements of methane emissions.

NOTE 1 This International Standard is specific to automatic methods for measuring methane in the waste gas of stationary sources using flame ionisation detection. It supplements the general requirements of other international or national standards on performance testing, QA/QC procedures, and the test report as specified, for example, in EN 15267-3^[7], EN 14181^[5], and EN 15259^[6].

This International Standard does not specify an independent method of measurement.

NOTE 2 An independent method of measurement, e.g. to calibrate or validate permanently installed measuring systems, is specified in ISO 25139^[3].

NOTE 3 In EN 14181^[5], “independent method of measurement” is called “standard reference method (SRM)”.

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 to 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

<air quality> 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 the mass concentrations of methane passing through the duct.

3.2 analyser

⟨stationary source emissions⟩ analytical part in an extractive or *in situ* automatic measuring system

NOTE Adapted from ISO 12039:2001^[2], 3.3.

3.3 measurand

particular quantity subject to measurement

[ISO/IEC Guide 98-3:2008^[4], B.2.9]

EXAMPLE The mass concentration of methane in air.

3.4 mass concentration

⟨stationary source emissions⟩ concentration of a substance in an emitted waste gas expressed as mass per volume

[ISO 12039:2001^[2], 3.10]

NOTE Mass concentration is often expressed in milligrams per cubic metre.

3.5 independent reading

⟨stationary source emissions⟩ reading that is not influenced by a previous individual reading by separating two individual readings by at least four response times

3.6 individual reading

⟨stationary source emissions⟩ reading averaged over a time period equal to the response time of the automatic measuring system

3.7 interferent

interfering substance

⟨air quality⟩ substance present in the air mass under investigation, other than the measurand, that affects the response

[ISO 9169:2006, 2.1.12]

3.8 adjustment

⟨automatic measuring system⟩ operation of bringing an automatic measuring system into a state of performance suitable for its use

NOTE Adjustment can be automatic, semi-automatic or manual.

[ISO 9169:2006, 2.1.5]

3.9 calibration

⟨stationary source emissions⟩ procedure for establishing the statistical relationship between values of the measurand indicated by the automatic measuring system and the corresponding values given by an independent method of measurement implemented simultaneously at the same measuring point

NOTE 1 An independent method of measurement for the purpose of calibration of permanently installed methane measuring systems is specified in ISO 25139^[3].

NOTE 2 In EN 14181^[5], “independent method of measurement” is called “standard reference method (SRM)”.

**3.10
interference**

⟨air quality⟩ negative or positive effect upon the response of the measuring system, due to a component of the sample that is not the measurand

**3.11
zero gas**

⟨stationary source emissions⟩ gas or gas mixture used to establish the zero point on a calibration curve within a given concentration range

[ISO 12039:2001^[2], 3.4.2]

**3.12
span gas**

gas or gas mixture used to adjust and check a specific point on a calibration curve

NOTE Adapted from ISO 12039:2001^[2], 3.4.1.

**3.13
reference gas**

⟨stationary source emissions⟩ gas of known, reliable and stable composition that may be used to check the response of an automatic measuring system and to calibrate the automatic measuring system

**3.14
zero point**

⟨stationary source emissions⟩ specified value of the output quantity (measured signal) of the automatic measuring system and which, in the absence of the measured component, represents the zero crossing of the calibration line

**3.15
span point**

value of the output quantity (measured signal) of the automatic measuring system for the purpose of calibration or adjustment that represents a correct measured value generated by a reference material

NOTE This concentration is often chosen to be around 80 % of the upper limit of the measuring range or around the emission limit value.

**3.16
performance characteristic**

⟨air quality⟩ one of the quantities assigned to equipment in order to define its performance

NOTE Performance characteristics can be described by values, tolerances or ranges.

**3.17
response time**

⟨air quality⟩ time interval between the instant when a stimulus is subjected to a specified abrupt change and the instant when the response reaches and remains within specified limits around its final stable value, determined as the sum of the lag time and the rise time in the rising mode, and the sum of the lag time and the fall time in the falling mode

[ISO 9169:2006, 2.2.4]