

English Version

Stationary source emissions - Manual method for the
determination of the mass concentration of formaldehyde
- Reference method

Emissions de sources fixes - Méthode manuelle pour la
détermination de la concentration massique en
formaldéhyde - Méthode de référence

Emissionen aus stationären Quellen - Manuelles
Verfahren zur Bestimmung der Massenkonzentration
von Formaldehyd - Referenzverfahren

This Technical Specification (CEN/TS) was approved by CEN on 16 May 2021 for provisional application.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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European foreword

This document (CEN/TS 17638:2021) has been prepared by Technical Committee CEN/TC 264 “Air quality”, the secretariat of which is held by DIN.

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Introduction

Formaldehyde is a carcinogenic pollutant that is generated in different industrial sectors, like energy industries (combustion plants (e.g. for wood and gas), combustion engines (gas engines and turbines)), chemical industry (e.g. formaldehyde production), food industry (e.g. smoking plants), wood industry (e.g. production of wood-based panels or wood pellets) and thus contained in emissions of these processes.

Currently, no European (EN) or International (ISO) Standard exists for the continuous or periodic measurement of formaldehyde emissions, which are being addressed, e.g. by the European Commission in its implementing decision 2015/2119 [1] establishing best available techniques (BAT) conclusions, under Directive 2010/75/EU [2], for the production of wood-based panels.

Instead, different national methods for formaldehyde measurements are currently applied, e.g. US EPA M316 [3], VDI 3862 Part 4 [4], VDI 3862 Part 6 [5], and FD X43-319 [6], all of them based on sampling in aqueous absorption solutions. Several comparison studies have shown that the equivalence of these methods is not ensured.

This measurement method is specified as a Technical Specification because currently no sufficient validation data are available. A comprehensive validation programme has been developed and will be carried out as soon as the funding is ensured (see Annex C).

1 Scope

This document specifies the reference method for the determination of the concentration of formaldehyde in emissions from stationary sources. Waste gas samples are taken by absorption in water and subsequently analysed by spectrophotometry or HPLC. The method applies to waste gases in which the formaldehyde concentration is 2 mg/m³ to 60 mg/m³, on dry basis, at the reference conditions of 273 K and 101,3 kPa.

The specific components and the requirements for the measuring system are described. A number of performance characteristics with associated minimum performance criteria are specified for the measuring system.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

EN 13284-1:2017, *Stationary source emissions - Determination of low range mass concentration of dust - Part 1: Manual gravimetric method*

EN 15259:2007, *Air quality - Measurement of stationary source emissions - Requirements for measurement sections and sites and for the measurement objective, plan and report*

EN ISO 14956, *Air quality – Evaluation of the suitability of a measurement procedure by comparison with a required measurement uncertainty (ISO 14956)*

ISO/IEC Guide 98-3:2008, *Uncertainty of measurement - Part 3: Guide to the expression of uncertainty in measurement (GUM:1995)*

3 Terms and definitions

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

3.1

absorber

device in which formaldehyde is absorbed into an absorption solution

Note 1 to entry: For formaldehyde absorption wash bottles are used as absorbers.

3.2

limit of quantification

lowest amount of an analyte that is quantifiable with a given confidence level

Note 1 to entry: For a manual method the limit of quantification is usually calculated as ten times the standard deviation of blank measurements provided that the blank value is negligible. This corresponds to a confidence level of 95 %.