SLOVENSKI STANDARD
oSIST prEN 17340:2018

01-december-2018

Emisije nepremičnih virov - Določevanje masne koncentracije fluoriranih spojin, izraženih v obliki fluorovodikove kisline (HF) - Standardna referenčna metoda

Stationary source emissions - Determination of mass concentration of fluorinated compounds expressed as HF - Standard reference method

Emissionen aus stationären Quellen - Bestimmung des Massenkonzentration von gasförmigen Fluoriden, angegeben als HF - Standardreferenzverfahren

Emissions de sources fixes - Détermination de la concentration massique en composés fluorés exprimée en HF - Méthode de référence

Ta slovenski standard je istoveten z: **prEN 17340**

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ICS:

13.040.40	Emisije nepremičnih virov	Stationary source emissions

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

DRAFT
prEN 17340

November 2018

ICS 13.040.40

English Version

Stationary source emissions - Determination of mass concentration of fluorinated compounds expressed as HF - Standard reference method

Emissions de sources fixes - Détermination de la concentration massique en composés fluorés exprimée en HF - Méthode de référence

Emissionen aus stationären Quellen - Bestimmung des Massenkonzentration von gasförmigen Fluoriden, angegeben als HF - Standardreferenzverfahren

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 264.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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

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oSIST prEN 17340:2018

Contents

Page

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https://standards.iteh.ai/catalog/standards/sist/8a2f86a7-9208-481a-a0ab-617a39e37fcd/osist-pren-17340-2018

oSIST prEN 17340:2018

iTeh STANDARD PREVIEW
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Full standard:
https://standards.iteh.ai/catalog/standards/sist/8a2b6af-92b8-4831-a0ab-617a39c3711d/sist-pren-17340-2018

oSIST prEN 17340:2018

iTeh STANDARD PREVIEW
(standards.iteh.ai)
Full standard:
https://standards.iteh.ai/catalog/standards/sist/8a2b6a7-9208-4231-a9ab-617a39f3711d/osist-pren-17340-2018

oSIST prEN 17340:2018

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(standards.iteh.ai)
Full standard:
https://standards.iteh.ai/catalog/standards/sist/8a2b6aa7-9268-48e0a6617490c511d/oist-pren-17340-2018

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European foreword

This document (prEN 17340:2018) has been prepared by Technical Committee CEN/TC 264 “Air quality”, the secretariat of which is held by DIN.

This document is currently submitted to the CEN Enquiry.

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1 Scope

This document specifies a manual method for the determination of the concentration of fluorinated compounds expressed in HF. Two cases are presented:

- first case: the measurand is the concentration of hydrofluoric acid and gaseous and bound to particulates fluorides;
- second case: the measurand is the concentration of hydrofluoric acid and gaseous fluorides.

Three analytical techniques are proposed: ionometry, spectrophotometry and ion-exchange chromatography.

This document specifies the performance characteristics to be determined and the performance criteria to be fulfilled when it is used as the Standard Reference Method (SRM) for periodic monitoring and for calibration or control of Automated Measuring Systems (AMS) permanently installed on a stack, for regulatory or other purposes.

This document applies to more or less dust-laden flue gases whose HF concentration may vary between 0,1 mg/m^3 and 10 mg/m^3, at standard conditions of pressure and temperature (see NOTE). The quantification limit of the method is estimated at 0,1 mg/m^3 for a sampled volume of 0,1 m^3.

Interference may occur for some matrices. Known elements that may lead to interference are mentioned in Annex C.

NOTE The Emission Limit Values (ELV) are expressed in mg HF/m^3, for dry gases at the standard conditions: T_{std}: 273 K and P_{std}: 101,3 kPa.

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 1911, *Determination of mass concentration of gaseous chlorides expressed as HCl — Standard reference method — (classification index: X 43-32X)*

EN 14793:2017, *Stationary source emissions - Demonstration of equivalence of an alternative method with a reference 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*

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

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

EN ISO 10304-1, *Water quality - Determination of dissolved anions by liquid chromatography of ions - Part 1: Determination of bromide, chloride, fluoride, nitrate, nitrite, phosphate and sulfate (ISO 10304-1)*

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

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3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at http://www.iso.org/obp

3.1
absorber
device in which the compound to be trapped is absorbed into the absorption solution

3.2
absorption efficiency (ε)
ratio of quantity of the analyte q_1 collected in the first absorber divided by the quantity of the analyte collected in the series of absorbers

3.3
alternative method (AM)
measurement method which complies with the criteria given by this European Standard with respect to the reference method

Note 1 to entry: An alternative method can consist of a simplification of the reference method.

[SOURCE: EN 14793:2017]

3.4
analytical repeatability in the laboratory
closeness of the agreement between the results of successive measurements of the same measurand carried out under the same conditions of measurement

Note 1 to entry: Repeatability conditions include:

— the same measurement procedure;

— the same laboratory;

— the same measuring instrument, used under the same conditions;

— the same location;

— repetition over a short period of time.

Note 2 to entry: Repeatability may be expressed quantitatively in terms of the dispersion characteristics of the results. In this document, repeatability is expressed as a value with a repeatability standard deviation of 95 %.

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oSIST prEN 17340:2018

3.5
automated measuring system (AMS)
entirety of all measuring instruments and additional devices for obtaining a result of measurement

Note 1 to entry: Apart from the actual measuring device (the analyser), an AMS includes facilities for taking samples (e.g. probe, sample gas lines, flow meters and regulator, delivery pump) and for sample conditioning (e.g. dust filter, pre-separator for interferents, cooler, converter). This definition also includes testing and adjusting devices that are required for functional checks and, if applicable, for commissioning.

Note 2 to entry: The term "automated measuring system" (AMS) is typically used in Europe. The term "continuous emission monitoring system" (CEMS) is also typically used in the UK and USA.

3.6
calibration
set of operations that establish, under specified conditions, the relationship between values of quantities indicated by a measuring method or measuring system, and the corresponding values given by the applicable reference

Note 1 to entry: In case of automated measuring systems (AMS) permanently installed on a stack the applicable reference is the standard reference method (SRM) used to establish the calibration function of the AMS.

Note 2 to entry: In case of manual methods the applicable reference can be reference materials used as calibration standards to establish the relationship between the output signal of the analytical device and the reference values.

Note 3 to entry: Calibration should not be confused with adjustment of a measuring system.

3.7
chemical blank value
fluorine ion content of an unexposed sample of the absorption solution, completed with reagents that are added to the solution before analysis if necessary

3.8
emission limit value (ELV)
emission limit value according to regulations on the basis of 30 min, 1 hour or 1 day

3.9
detection limit (L_D)
concentration value of the measurand below which there is at least 95% level of confidence that the measured value corresponds to a sample free of that measurand

3.10
field blank procedure
procedure used to ensure that no significant contamination has occurred during all the steps of the measurement

Note 1 to entry: This includes for instance the equipment preparation in laboratory, its transport and installation in the field as well as the subsequent analytical work in the laboratory.

3.11
field blank
value determined by a specific procedure used to ensure that no significant contamination has occurred during all the measurement steps and to verify that the operator can reach a level of quantification suitable for the measurement

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oSIST prEN 17340:2018

3.12
hydrofluoric acid (HF)
particulate HF: inorganic fluorinated compounds present in the filter and analysed according to one of the methods described in Annex C originating from both the hydrofluoric acid trapped by the particles and the filter and the particulate fluorinated compounds present in the effluent

— gaseous HF: fluorinated compounds not retained by the filter and trapped in the absorbers

— Total HF: sum of particulate HF and of gaseous HF

3.13
influence quantity
quantity that is not the measurand but that affects the result of the measurement

Note 1 to entry: Influence quantities are e.g. ambient temperature, atmospheric pressure, presence of interfering gases in the flue gas matrix or pressure of the gas sample.

3.14
measurand
particular quantity subject to measurement

[SOURCE: EN 15259:2007]

Note 1 to entry: The measurand is a quantifiable property of the stack gas under test, for example mass concentration of a measured component, temperature, velocity, mass flow, oxygen content and water vapour content.

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3.15
measurement series
several successive measurements carried out on the same measurement plane and at the same process operating conditions

3.16
measurement site
place on the waste gas duct in the area of the measurement plane(s) consisting of structures and technical equipment, for example working platforms, measurement ports, energy supply

Note 1 to entry: Measurement site is also known as sampling site.

[SOURCE: EN 15259:2007]

3.17
measurement plane
plane normal to the centreline of the duct at the sampling position

Note 1 to entry: Measurement plane is also known as sampling plane.

[SOURCE: EN 15259:2007]

oSIST prEN 17340:2018

3.18
measurement port
opening in the waste gas duct along the measurement line, through which access to the waste gas is gained

Note 1 to entry: Measurement port is also known as sampling port or access port.

[SOURCE: EN 15259:2007]

3.19
measurement line
line in the measurement plane along which the measurement points are located, bounded by the inner duct wall

Note 1 to entry: Measurement line is also known as sampling line.

3.20
measurement point
position in the measurement plane at which the sample stream is extracted or the measurement data are obtained directly

Note 1 to entry: Measurement point is also known as sampling point.

[SOURCE: EN 15259:2007]

3.21
measuring system
set of one or more measuring instruments and often other devices, including any reagent and supply, assembled and adapted to give information used to generate measured quantity values within specified intervals for quantities of specified kinds

[SOURCE: JCGM 200:2012]

3.22
performance characteristic
one of the quantities (described by values, tolerances, range) assigned to equipment in order to define its performance

3.23
quantification limit (L_Q)
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 %.

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