Heitmed püsiallikatest. PCDD/PCDF massikontsentratsiooni määramine.Osa 2: Ekstraheerimine ja puhastamine

Stationary source emissions - Determination of the mass concentration of PCDDs/PCDFs - Part 2: Extraction and clean-up

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 1948-2:1999 sisaldab Euroopa standardi EN 1948-2:1996 ingliskeelset teksti. Käesolev dokument on jõustatud 12.12.1999 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes. Standard on kättesaadav Eesti standardiorganisatsioonist.	This Estonian standard EVS-EN 1948-2:1999 consists of the English text of the European standard EN 1948-2:1996. This document is endorsed on 12.12.1999 with the notification being published in the official publication of the Estonian national standardisation organisation. The standard is available from Estonian standardisation organisation.

Käsitlusala: Standardi käesolev osa määrab kindlaks prooviks võetud PCDD/PCDF ekstraheerimise ja puhastamise protseduurid. See on tervikliku mõõtmisprotseduuri lahutamatu osa. PCDD/PCDF määramiseks on vaja kasutada ka standardi kahte ülejäänud osa EN 1948-1:1996 ja EN 1948-3:1996, mis kirjeldavad vastavalt proovivõtmist ning kvalitatiivset ja kvantitatiivset analüüsimist.	**Scope:**

ICS 13.040.40

Võtmesõnad: ekstraheerimine, emissioon, heitgaasid, kontsentratsioon, kvaliteedi kontroll, kvaliteet, määramine, pcdd, pcdf, proovid, puhtus, õhk, õhu saastumine

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 1948-2

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Descriptors: Air quality, PCDD, PCDF, emission, measurements.

English version

Stationary source emissions

Determination of the mass concentration of PCDDs/PCDFs

Part 2: Extraction and clean-up

Emissions de sources fixes – Détermination de la concentration massique en PCDDs/PCDFs – Partie 2: Extraction et purification

Emissionen aus stationären Quellen – Bestimmung der Massenkonzentration von PCDD/PCDF – Teil 2: Extraktion und Reinigung

This European Standard was approved by CEN on 1996-12-27.

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.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

The European Standards exist in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, the Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom.

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart 36, B-1050 Brussels

Ref. No. EN 1948-2:1996 E

Contents

Foreword

This European Standard has been prepared by 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 June 1997, and conflicting national standards shall be withdrawn at the latest by June 1997.

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex C, which is an integral part of this standard.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

This European Standard was elaborated by

AENOR (Spain)
AFNOR (France)
BSI (United Kingdom)
DIN (Germany)
DS (Denmark)
NNI (Netherlands)
NSF (Norway)
ON (Austria)
SFS (Finland)
SIS (Sweden)
SNV (Switzerland)
UNI (Italy)

The precision and the performance characteristics were determined in four comparative and validation trials at waste incinerators sponsored by the Commission of the European Communities, the European Free Trade Association and the German Federal Environment Agency.

This European Standard EN 1948:1996 consists of:

Part 1: Sampling
Part 2: Extraction and clean-up

Part 3: Identification and quantification

All three parts are necessary for the performance of the dioxin measurements.

The European Standard was developed on the basis of the following national standards or guidelines:

NFX 43-313 : 1991	Air Quality - Stationary Source Emissions - Determination of PCDD/PCDF
Nordic:1987	Recommended method for dioxin measurements in flue gases from waste incineration, Swedish Environmental Protection Agency
Unichim Method N° 825 : 1989	Stationary source emission measurements Conveyed gas flows Sampling and determination of organic micropollutants - Sampling - PAH determination - PCDD and PCDF determination - PCB determination
VDI 3499 Part 1 : 1990 (Draft)	Emission measurement - Measurement of residual materials - Determination of polychlorinated dibenzodioxins and dibenzofurans in flue and stack gas of incineration and firing plants - Dilution method - Determination in filter dust, potash and slag
VDI 3499 Part 2 : 1993 (Draft)	Emission measurement - Determination of polychlorinated dibenzo-p-dioxins (PCDD) and dibenzofurans (PCDF) - Filter/condenser method
VDI 3499 Part 3 : 1996 (Draft)	Emission measurement - Determination of polychlorinated dibenzo-p-dioxins (PCDD) and dibenzofurans (PCDF) - Cooled probe method

Introduction

Two groups of related chlorinated aromatic dibenzo ethers are known as polychlorinated dibenzodioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs); they consist of a total of 210 individual substances (congeners): 75 PCDDs and 135 PCDFs.

PCDDs and PCDFs can form in the combustion of organic materials; they also may occur as undesirable by-products in the manufacture or further processing of chlorinated organic chemicals. PCDDs/PCDFs enter the environment via these emission paths and through the use of contaminated materials. In fact, they are universally present in very small concentrations. The 2,3,7,8-chlorine substituted congeners are toxicologically significant. Toxicologically much less significant than the tetrachlorinated to octachlorinated dibenzodioxins/dibenzofurans are the 74 monochlorinated to trichlorinated dibenzodioxins/dibenzofurans (for toxicity equivalent factors, see Annex A of EN 1948-1:1996).

Only skilled operators who are trained in handling highly toxic compounds should apply this Standard.

1 Scope

The present Part of this Standard specifies the extraction and clean-up procedures of the sampled PCDDs/PCDFs. It is integral part of the complete measurement procedure. The use of the other two parts EN 1948-1:1996 and EN 1948-3:1996 describing sampling or identification and quantification, respectively, is necessary for the determination of the PCDDs/PCDFs.

This Standard has been designed to measure PCDD/PCDF concentrations at about 0,1 ng I-TEQ/m^3 in stationary source emissions.

This Standard specifies both method validation and a framework of quality control requirements which have to be fulfilled by any PCDD/PCDF extraction and clean-up methods to be applied. Some methods are described in detail in Annex A as examples of proven procedures.

Each of the three sampling methods (Part 1) can be combined with the extraction and clean-up (Part 2) and the identification and quantification (Part 3) to complete the measurement procedure.

During comparison measurements on a municipal waste incinerator at the level of about 0,1 ng I-TEQ/m³ these three methods have been deemed comparable within the expected range of uncertainty. Validation trials were performed on the flue gas of municipal waste incinerators at the level of about 0,1 ng I-TEQ/m³ and a dust loading of from 1 mg/m³ to 15 mg/m³.

In principle it is not possible to evaluate the accuracy (trueness and precision) of emission measurements. Following the validation trials the internal and external variabilities were calculated for the process considered and are given in clause 13 of EN 1948-3:1996. These variabilities given an indication of the variabilities which have been observed when using this standard and should be taken into account when expressing results.

The procedure described in the three Parts of Standard EN 1948:1996 lays down requirements in order to measure the 17 congeners required to calculate the total I-TEQ (see Table A.1 of EN 1948-1:1996).

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 1948-1:1996	Stationary source emissions - Determination of the mass concentration of PCDDs/PCDFs - Part 1: Sampling
EN 1948-3:1996	Stationary source emissions - Determination of the mass concentration of PCDDs/PCDFs - Part 3: Identification and quantification

A bibliography is shown in Annex B (informative).

3 Definitions and abbreviations

3.1 Definitions