Characterization of waste - Determination of polycyclic aromatic hydrocarbons (PAH) in waste using gas chromatography mass spectrometry (GC/MS)

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NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 15527:2008 sisaldab Euroopa standardi EN 15527:2008 ingliskeelset teksti.	This Estonian standard EVS-EN 15527:2008 consists of the English text of the European standard EN 15527:2008.
Standard on kinnitatud Eesti Standardikeskuse 18.08.2008 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.	This standard is ratified with the order of Estonian Centre for Standardisation dated 18.08.2008 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.
Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 09.07.2008.	Date of Availability of the European standard text 09.07.2008.
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English Version

Characterization of waste - Determination of polycyclic aromatic hydrocarbons (PAH) in waste using gas chromatography mass spectrometry (GC/MS)

Caractérisation des déchets - Dosage des hydrocarbures aromatiques polycycliques (HAP) dans les déchets par chromatographie en phase gazeuse/spectrométrie de masse (CG/SM)

Charakterisierung von Abfällen - Bestimmung von polycyclischen aromatischen Kohlenwasserstoffen (PAK) in Abfall mittels Gaschromatographie-Massenspektrometrie (GC/MS)

This European Standard was approved by CEN on 29 May 2008.

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 CEN Management Centre or to any CEN member.

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

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Foreword

This document (EN 15527:2008) has been prepared by Technical Committee CEN/TC 292 “Characterization of waste”, the secretariat of which is held by NEN.

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 January 2009, and conflicting national standards shall be withdrawn at the latest by January 2009.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

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Introduction

Polynuclear aromatic hydrocarbons (PAH) are ubiquitous because of the fact that they are released in appreciable quantities every year into the environment through the combustion of organic materials such as coal, fuel oils, petrol, wood, refuse and plant materials. Since some of these PAH compounds are carcinogenic or mutagenic, their presence in the environment (air, water, soil, sediment and waste) are regularly monitored and controlled. At present, the determination of PAH is carried out in these matrices in most of the routine laboratories following the preceding steps for sampling, pre-treatment, extraction, clean-up by measurement of specific PAH by means of gas chromatography in combination with mass spectrometric detection(GC-MS) or by HPLC in combination with UV-DAD- or Fluorescence-detection (HPLC-UV-DAD/FLD). However, the different matrices covered in this standard may contain a lot of contaminants. For this reason, the GC-MS method seems to be most appropriate for waste analysis.

1 Scope

This European Standard specifies the quantitative determination of 16 polynuclear aromatic hydrocarbons (PAH) according to the priority list of the Environmental Protection Agency (EPA, 1982). This European Standard is applicable for wastes such as contaminated soil, sludge and rubble, bitumen or waste containing bitumen.

This European Standard describes a gas chromatographic method with mass spectrometric detection (GC-MS). Under the conditions specified in this document, a typical lower limit of application of 0,1 mg/kg for each individual PAH can be achieved.

NOTE 1 This method may be applied to the analysis of other PAH compounds not specified in the scope provided its applicability has been proven by proper in-house validation experiments.

NOTE 2 For some materials, e. g. bitumen, the lower limit of application of 0,1 mg/kg cannot be achieved due to interferences.

NOTE 3 Under certain circumstances the method may be applicable to PAH concentrations lower than 0,1 mg/kg but it is in the responsibility of the laboratory to provide proper validation data for such low concentrations.

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.

EN 14346, *Characterization of waste — Calculation of dry matter by determination of dry residue or water content*

EN 15002, *Characterization of waste — Preparation of test portions from the laboratory sample*

ISO 14507, *Soil quality — Pretreatment of samples for determination of organic contaminants*

3 Terms and definitions

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

3.1
analyte
selected polynuclear aromatic hydrocarbons (PAH) with 2 to 6 condensed aromatic rings (see Table 1)

3.2
calibration standard
solution of PAH prepared from a secondary standard and/or stock solutions of native PAH and deuterated PAH used to calibrate the response of the instrument

3.3
extraction standard
deuterated PAH or native (unlabeled) PAH of medium volatility that are unlikely to be present in waste added to the sample before extraction and used for control of the extraction efficiency