EESTI STANDARD EVS-EN 14039:2004

Characterization of waste - Determination of hydrocarbon content in the range of C10 to C40 by gas chromatography

Characterization of waste - Determination of hydrocarbon content in the range of C10 to C40 by gas chromatography

EESTI STANDARDIKESKUS

EESTI STANDARDI EESSÕNA **NATIONAL FOREWORD**

Käesolev Eesti standard EVS-EN 14039:2004 sisaldab Euroopa standardi EN 14039:2004 ingliskeelset teksti. Käesolev dokument on jõustatud 21.12.2004 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes. Standard on kättesaadav Eesti standardiorganisatsioonist.	This Estonian standard EVS-EN 14039:2004 consists of the English text of the European standard EN 14039:2004. This document is endorsed on 21.12.2004 with the notification being published in the official publication of the Estonian national standardisation organisation. The standard is available from Estonian standardisation organisation.

Käsitlusala: This European Standard specifies a method for the quantitative determination of the hydrocarbon content (C10 to C40) in solid waste by gas chromatography. It is applicable to hydrocarbon content between 100 mg/kg and 10 000 mg/kg expressed as dry matter basis.	**Scope:** This European Standard specifies a method for the quantitative determination of the hydrocarbon content (C10 to C40) in solid waste by gas chromatography. It is applicable to hydrocarbon content between 100 mg/kg and 10 000 mg/kg expressed as dry matter basis.

ICS 13.030.01

Võtmesõnad:

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 14039

September 2004

ICS 13.030.01

English version

Characterization of waste - Determination of hydrocarbon content in the range of C10 to C40 by gas chromatography

Caractérisation des déchets - Détermination de la teneur en hydrocarbures par chromatographie en phase gazeuse dans la plage C10 à C40

Charakterisierung von Abfällen - Bestimmung des Gehalts an Kohlenwasserstoffen von C10 bis C40 mittels Gaschromatographie

This European Standard was approved by CEN on 9 July 2004.

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

Management Centre: rue de Stassart, 36 B-1050 Brussels

Ref. No. EN 14039:2004: E

Contents

Foreword

This document (EN 14039:2004) 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 March 2005, and conflicting national standards shall be withdrawn at the latest by March 2005.

Anyone dealing with waste and sludge analysis should be aware of the typical risks of that kind of material irrespective of the parameter to be determined. Waste and sludge samples may contain hazardous (e.g. toxic, reactive, flammable, infectious) substances, which can be liable to biological and/or chemical reaction. Consequently these samples should be handled with special care. Gases which may be produced by microbiological or chemical activity are potentially flammable and will pressurise sealed bottles. Bursting bottles are likely to result in hazardous shrapnel, dust and/or aerosol. National regulations should be followed with respect to all hazards associated with this method.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Introduction

Hydrocarbons are important constituents of many types of waste and contaminated soils. They have been determined up to now mainly by infrared spectroscopy after extraction with halogenated solvents such as 1,1,2-trichloro-1,2,2-trifluoroethane or tetrachloromethane. The objective of this standard is to provide an analytical method for the determination of hydrocarbon content by capillary gas chromatography avoiding the use of such solvents. The user of this document should be aware that the results of this standard might not be comparable with those obtained when using the infrared spectroscopy.

A mixture of acetone and n-heptane is the preferred extraction solvent.

For waste samples containing large amounts of relatively high boiling hydrocarbons the gravimetric method (see EN 14345) can be used.

1 Scope

This document specifies a method for the quantitative determination of the hydrocarbon content (C_{10} to C_{40}) in solid waste by gas chromatography.

It is applicable to hydrocarbon content between 100 mg/kg and 10 000 mg/kg expressed as dry matter basis.

Using this standard all hydrocarbons with a boiling range of approximately 175 °C to 525 °C, e.g. n-alkanes from $C_{10}H_{22}$ to $C_{40}H_{82}$, isoalkanes, cycloalkanes, alkyl benzenes, alkyl naphthalenes and polycyclic aromatic compounds are determined as hydrocarbons, provided they do not adsorb on the Florisil column during clean-up. Volatile hydrocarbons cannot be quantitatively determined using this standard. This will affect the determination of some common hydrocarbon fuels, e.g. petrol.

NOTE 1 On the basis of the peak pattern of the gas chromatogram (see Annex A) and of the boiling points of the individual n-alkanes listed in Annex B the approximate boiling range of the hydrocarbons and some qualitative information on the nature of the hydrocarbons can be obtained.

NOTE 2 At the moment there is no sufficient information on how to handle organic liquid wastes for the analysis of hydrocarbons.

NOTE 3 Aqueous liquid waste samples can be analysed in accordance with EN ISO 9377-2 or the procedure specified in Annex E.

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.

prEN 14346, *Characterization of waste — Calculation of dry matter by determination of dry residue and water content*

EN ISO 3696, *Water for analytical laboratory use - Specification and test methods (ISO 3696:1987)*

ISO 8466-1, *Water quality — Calibration and evaluation of analytical methods and estimation of performance characteristics — Part 1: Statistical evaluation of the linear calibration function*

3 Terms and definitions

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

3.1
hydrocarbon content by gas chromatography
sum of compounds that are extractable with with acetone/n-heptane (2+1), provided that

— they do not adsorb on Florisil;

— they can be chromatographed on a non-polar capillary column with retention times between those of n-decane ($C_{10}H_{22}$) and n-tetracontane ($C_{40}H_{82}$)

NOTE 1 Substances that comply with this definition are mainly non-polar long chain or branched aliphatic, alicyclic, alkyl substituted aromatic or polycyclic aromatic compounds.

NOTE 2 This definition differs from that given in EN 14345.