SLOVENSKI STANDARD

SIST EN ISO 22959:2009

01-september-2009

Ģivalske in rastlinske maģļ obe in olja - Doloļ evanje policikliļ nih aromatskih ogljikovodikov z neposredno kompleksno "donor-akceptor" kromatografijo in HPLC s fluorescenļ no detekcijo (ISO 22959:2009)

Animal and vegetable fats and oils - Determination of polycyclic aromatic hydrocarbons by on-line donor acceptor complex chromatography and HPLC with fluorescence detection (ISO 22959:2009)

Tierische und pflanzliche Fette und Öle - Bestimmung polycyclischer aromatischer Kohlenwasserstoffe durch direkte Donor-Akzeptor-Komplex-Chromatographie und HPLC mit Fluoreszenzdetektion (ISO 22959:2009)

Corps gras d'origines animale et végétale - Détermination de la teneur en hydrocarbures aromatiques polycycliques par chromatographie de complexe donneur -accepteur et CLHP avec détection par fluorescence (ISO 22959:2009)

Ta slovenski standard je istoveten z: **EN ISO 22959:2009**

ICS:

67.200.10	Rastlinske in ģivalske maģļ obe in olja	Animal and vegetable fats and oils

SIST EN ISO 22959:2009 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 22959

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ICS 67.200.10

English Version

Animal and vegetable fats and oils - Determination of polycyclic aromatic hydrocarbons by on-line donor-acceptor complex chromatography and HPLC with fluorescence detection (ISO 22959:2009)

Corps gras d'origines animale et végétale - Détermination de la teneur en hydrocarbures aromatiques polycycliques par chromatographie de complexe donneur-accepteur et CLHP avec détection par fluorescence (ISO 22959:2009)

Tierische und pflanzliche Fette und Öle - Bestimmung polycyclischer aromatischer Kohlenwasserstoffe durch gekoppelte Donor-Akzeptor-Komplex-Chromatographie und HPLC mit Fluoreszenzdetektion (ISO 22959:2009)

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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (EN ISO 22959:2009) has been prepared by Technical Committee ISO/TC 34 "Agricultural food products" in collaboration with Technical Committee CEN/TC 307 “Oilseeds, vegetable and animal fats and oils and their by-products - Methods of sampling and analysis” the secretariat of which is held by AFNOR.

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 November 2009, and conflicting national standards shall be withdrawn at the latest by November 2009.

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Endorsement notice

The text of ISO 22959:2009 has been approved by CEN as a EN ISO 22959:2009 without any modification.

INTERNATIONAL STANDARD

ISO 22959

First edition
2009-05-15

Animal and vegetable fats and oils — Determination of polycyclic aromatic hydrocarbons by on-line donor-acceptor complex chromatography and HPLC with fluorescence detection

Corps gras d'origines animale et végétale — Détermination de la teneur en hydrocarbures aromatiques polycycliques par chromatographie de complexe donneur-accepteur et CLHP avec détection par fluorescence

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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ISO 22959 was prepared by Technical Committee ISO/TC 34, *Food products*, Subcommittee SC 11, *Animal and vegetable fats and oils*.

Introduction

Polycyclic aromatic hydrocarbons (PAHs) are formed during pyrolytic processes such as the incomplete combustion of organic substances or have a petrogenic origin (mineral oils). Edible fats and oils may be contaminated by environmental pollution and/or processing steps prior to refining. The presence of PAHs in fats and oils is a health concern due to their carcinogenicity. Different levels of PAHs have been observed in crude edible oils. Refining of the oils (deodorization, bleaching, charcoal treatment) under the appropriate conditions reduces the content of the individual PAHs to the microgram per kilogram level. The known methods of analysis of PAHs in edible fats and oils include complex and laborious extraction and clean-up procedures to isolate the low levels of PAHs present.

With the donor-acceptor complex-chromatography (DACC) technique, PAHs can be extracted from different matrices. PAHs are electron donors (π-electrons) and the strong interaction of the PAHs with an electron acceptor stationary phase results in retention of the PAHs and elution of (the bulk of) the other components of the oil. This International Standard specifies an automated on-line method for the determination of PAHs in edible oils and fats, which can easily be applied as a routine analysis. The method consists of an LC-LC coupling of a clean-up DACC column to an analytical column for the separation. PAHs are quantified by fluorescence detection.

Compared to older techniques, this automated on-line method significantly reduces the amount of solvent used and saves considerable time. The DACC column clean-up is fast and is carried out during the HPLC run of the previous sample. The total analysis time for one sample is approximately 90 min, compared with the traditional methods which require 8 h to 10 h. Moreover, the system can run 24 h/day. Finally, losses of volatile PAHs during solvent evaporation, for example, are eliminated. The quantification limits of 0,1 µg/kg of the individual PAHs have been retained with the DACC method, which automatically corrects for possibly incomplete recoveries because the calibration samples are subjected to the same treatment as the samples to be analysed. The system uses conventional HPLC instrumentation.