Foodstuffs - Vegetable oils and foodstuff on basis of vegetable oils - Determination of mineral oil saturated hydrocarbons (MOSH) and mineral oil aromatic hydrocarbons (MOAH) with on-line HPLC-GC-FID analysis

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NATIONAL FOREWORD

See Eesti standard EVS-EN 16995:2017 sisaldab Euroopa standardi EN 16995:2017 ingliskeelset teksti.	This Estonian standard EVS-EN 16995:2017 consists of the English text of the European standard EN 16995:2017.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 14.06.2017.	Date of Availability of the European standard is 14.06.2017.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

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Foodstuffs - Vegetable oils and foodstuff on basis of vegetable oils - Determination of mineral oil saturated hydrocarbons (MOSH) and mineral oil aromatic hydrocarbons (MOAH) with on-line HPLC-GC-FID analysis

Produits alimentaires - Huiles végétales et produits alimentaires à base d'huiles végétales - Dosage des hydrocarbures saturés d'huile minérale (MOSH) et des hydrocarbures aromatiques d'huile minérale (MOAH) par analyse par CLHP-CG-FID en ligne

Lebensmittel - Pflanzliche Öle und Lebensmittel auf Basis pflanzlicher Öle - Bestimmung von gesättigten Mineralöl-Kohlenwasserstoffen (MOSH) und aromatischen Mineralöl-Kohlenwasserstoffen (MOAH) mit on-line HPLC-GC-FID

This European Standard was approved by CEN on 10 March 2017.

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

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European foreword

This document (EN 16995:2017) has been prepared by Technical Committee CEN/TC 275 “Food analysis - Horizontal methods”, 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of an identical text or by endorsement, at the latest by December 2017, and conflicting national standards shall be withdrawn at the latest by December 2017.

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

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1 Scope

This European Standard specifies a highly efficient method for the determination of saturated and aromatic hydrocarbons (from C10 to C50) in vegetable fats and oils and foodstuff on basis of vegetable oils for which it has been interlaboratory validated, with online-HPLC-GC-FID [1], [2] and [3]. This standard is not intended to be applied to other matrices.

The method can be used for the analysis of mineral oil saturated hydrocarbons (MOSH) and/or mineral oil aromatic hydrocarbons (MOAH).

The method has been tested in an interlaboratory study via the analysis of both naturally contaminated and spiked vegetable oil samples and mayonnaise and margarine samples, ranging from 4 mg/kg to 197 mg/kg for MOSH, and from 2 mg/kg to 51 mg/kg for MOAH.

According to the results of the interlaboratory studies, the method has been proven suitable for MOSH and MOAH mass concentrations each above 10 mg/kg.

In case of suspected interferences from natural sources, the fossil origin of the MOSH and MOAH fraction can be verified by examination of the pattern by GC-MS.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN ISO 661, *Animal and vegetable fats and oils - Preparation of test sample (ISO 661)*

3 Terms and definitions

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

3.1
mineral oil saturated hydrocarbons
MOSH
paraffinic (open-chain, usually branched) and naphthenic (cyclic, alkylated) hydrocarbons

3.2
mineral oil aromatic hydrocarbons
MOAH
aromatic mainly alkylated hydrocarbons

3.3
unresolved complex mixture
UCM
complex mixture of saturated or aromatic hydrocarbons not resolved by gas chromatography such as branched paraffins, alkylated naphthenes and alkylated aromatics

4 Principle

The fractions of MOSH and MOAH are isolated and separated by an HPLC-GC-FID system. MOSH and MOAH fractions are separated on a silica gel column using a *n*-hexane/dichloromethane gradient and each transferred as 450 µl fractions to GC using the Y-interface [4], while triglycerides are kept on the HPLC column. Solvent vapours are discharged via a solvent vapour exit located between the uncoated pre-column and the GC separation column. Volatile components are retained by solvent trapping