

Animal and vegetable fats and oils - Gas chromatography of fatty acid methyl esters - Part 3: Preparation of methyl esters using trimethylsulfonium hydroxide (TMSH)

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN ISO 12966-3:2010 sisaldab Euroopa standardi EN ISO 12966-3:2009 ingliskeelset teksti.

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English Version

Animal and vegetable fats and oils - Gas chromatography of
fatty acid methyl esters - Part 3: Preparation of methyl esters
using trimethylsulfonium hydroxide (TMSH) (ISO 12966-3:2009)

Corps gras d'origines animale et végétale -
Chromatographie en phase gazeuse des esters
méthylliques d'acides gras - Partie 3: Préparation des
esters méthylliques à l'aide d'hydroxyde de
triméthylsulfonium (TMSH) (ISO 12966-3:2009)

Tierische und pflanzliche Fette und Öle -
Gaschromatographie von Fettsäuremethylestern - Teil 3:
Herstellung von Methylestern mittels
Trimethylsulfoniumhydroxid (TMSH) (ISO 12966-3:2009)

This European Standard was approved by CEN on 18 November 2009.

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

Management Centre: Avenue Marnix 17, B-1000 Brussels

Foreword

This document (EN ISO 12966-3:2009) has been prepared by Technical Committee ISO/TC 34 "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of an identical text or by endorsement, at the latest by June 2010, and conflicting national standards shall be withdrawn at the latest by June 2010.

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Endorsement notice

The text of ISO 12966-3:2009 has been approved by CEN as a EN ISO 12966-3:2009 without any modification.

Animal and vegetable fats and oils — Gas chromatography of fatty acid methyl esters —

Part 3: Preparation of methyl esters using trimethylsulfonium hydroxide (TMSH)

1 Scope

This part of ISO 12966 specifies a rapid base-catalysed transesterification method for fats and oils with trimethylsulfonium hydroxide (TMSH) to prepare fatty acid methyl esters. The method is exclusively applicable to the preparation of methyl esters of fats and oils for gas liquid chromatographic (GLC) analysis. It is applicable to all fats and oils including milk fat and blends containing milk fat. Isomerization of unsaturated fatty acids only occurs to a minor extent and isomerized fatty acids are only present at the determination limit. As isomerization takes place, the procedure is not recommended for conjugated linoleic acid (CLA). As CLA is not correctly analysed, this method is not applicable to the determination of the complete fatty acid composition of milk fat samples.

Only about 70 % to 80 % of the free fatty acids are esterified. In the case of conjugated cyclopropyl and cyclopropenyl fatty acids, side reactions may occur, but these do not interfere with the determination of the fatty acids.

NOTE This part of ISO 12966 is based upon German Standard Method C-VI 11e (98) (see Reference [8]).

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.

ISO 661, *Animal and vegetable fats and oils — Preparation of test sample*

3 Principle

The sample is dissolved in *tert*-butyl methyl ether (TBME) and mixed with a methanolic solution of trimethylsulfonium hydroxide. Glycerides are base-catalysed transesterified and fatty acid methyl esters are formed (see References [4] to [8]). Free fatty acids are converted to salts which are pyrolysed to methyl esters and dimethylsulfide in the injector. Excess reagent is also pyrolysed into methanol and dimethylsulfide. To obtain a complete pyrolytic reaction, a hot injector (split injection) of at least 250 °C is necessary.

For the determination of short-chain fatty acids (C_4 to C_8), valeric acid methyl ester is used as an internal standard. Lipids containing hydroxy groups are partially converted to the corresponding *O*-methyl ether derivatives which may interfere with fatty acid methyl esters in the GLC separation (Reference [9]). In the early part of the chromatogram (region of C_4), peaks may occur, which are from the reagent. These peaks are not taken into account.