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Determination of the triacylglycerol composition of fats and oils — Determination by capillary gas chromatography

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National foreword

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Foreword

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The committee responsible for this document is ISO/TC 34, *Food products*, Subcommittee SC 11, *Animal and vegetable fats and oils*.

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Determination of the triacylglycerol composition of fats and oils — Determination by capillary gas chromatography

1 Scope

This Technical Specification describes the procedure for the capillary gas chromatographic determination of the qualitative and semi-quantitative composition of individual triglycerides of fats, oils, and fat mixtures. The separation of the triglycerides is based on their retention depending on the carbon number of the fatty acids in the triglycerides and their degree of unsaturation.

This Technical Specification is applicable to animal and vegetable fats, as well as to mixtures of natural and synthetic triglycerides, as long as

— the oil fatty acid composition does not contain high content of linolenic acid such as linseed oil and

— the total chain length does not exceed a total carbon number of C60.

NOTE If quantitative results are expected, the response factors of several triglycerides have to be checked as the increase of the triglyceride unsaturation reduces the sensitivity.

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 Terms and definitions

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

3.1
proportion of the triglyceride or triglyceride group
composition of the mixture of triglycerides is expressed as a percentage of area assuming the total of the triglyceride peaks is normalized to 100 %

4 Principle

Triglycerides of different polarities are separated by capillary gas chromatography on a highly polar stationary phase without any further sample preparation. After normalization of all peak areas, the content of the relevant triglycerides of the same retention time is expressed as a percentage proportion of the sum of all peak areas in percent.

5 Reagents

WARNING — Attention is drawn to the regulations which specify the handling of hazardous substances. Technical, organizational, and personal safety measures shall be followed.

Unless otherwise stated, analytically pure reagents are to be used.

5.1 n-Hexane, analytical grade.

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