



BSI Standards Publication

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

**National foreword**

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A list of organizations represented on this committee can be obtained on request to its secretary.

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

*Détermination de la composition des triacylglycérols des corps  
gras — Détermination par chromatographie en phase gazeuse sur  
colonne capillaire*



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# Contents

	Page
Foreword .....	iv
<b>1 Scope</b> .....	<b>1</b>
<b>2 Normative references</b> .....	<b>1</b>
<b>3 Terms and definitions</b> .....	<b>1</b>
<b>4 Principle</b> .....	<b>1</b>
<b>5 Reagents</b> .....	<b>1</b>
<b>6 Apparatus</b> .....	<b>2</b>
<b>7 Sampling</b> .....	<b>3</b>
<b>8 Preparation of test sample</b> .....	<b>3</b>
<b>9 Procedure</b> .....	<b>3</b>
9.1 Sample purification (if necessary) .....	3
9.2 Separation of individual triglycerides by GC .....	3
9.3 Identification .....	3
9.4 Verification of the response factors .....	3
<b>10 Calculation</b> .....	<b>4</b>
<b>11 Precision</b> .....	<b>4</b>
11.1 Interlaboratory test .....	4
11.2 Repeatability limit ( <i>r</i> ) .....	4
11.3 Reproducibility limit ( <i>R</i> ) .....	5
<b>12 Test report</b> .....	<b>5</b>
<b>Annex A (informative) Chromatograms</b> .....	<b>6</b>
<b>Annex B (informative) Results of interlaboratory test</b> .....	<b>10</b>

## 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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#)

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

# 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.