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Vegetable fats and oils — Determination of toluene insoluble matter

Corps gras d'origine végétale — Détermination des matières insolubles dans le toluène

Reference number
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Contents

Page

Foreword

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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).

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Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

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

This second edition cancels and replaces the first edition (ISO 28198:2009), which has been technically revised to include a procedure for turbid samples.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Vegetable fats and oils — Determination of toluene insoluble matter

1 Scope

This document specifies a method for the determination of the content of toluene insoluble matter (TIM) in lecithin formulations, which indicates the presence of impurities such as protein, carbohydrate-containing extraction residues and other solid contaminants. This method is applicable to all types of vegetable lecithin.

The purpose of the method is to enable the analysis of lecithin under several regulations. Lecithin [Codex International Numbering System for Food Additives (INS) No. 322] is a generally permitted additive and the determination of the TIM is part of many specifications. The purity requirement with regard to TIM content is based on the method specified.

Toluene is the replacement for the carcinogenic benzene, which was used in older methods.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.1
toluene insoluble matter
TIM
w_{TIM}
quantity of those substances that are insoluble in toluene under the conditions specified in this document

Note 1 to entry: The toluene insoluble matter content is expressed as a mass fraction in grams per 100 g.

4 Principle

4.1 The sample is dissolved in toluene and filtered through a glass filter crucible of defined pore size (P 40). The insoluble residue is dried at (103 ± 2) °C and weighed.

4.2 Glass filter crucibles with other pore sizes give different results and shall not be used.

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.

During the analysis, unless otherwise stated, use only reagents of recognized analytical grade and distilled or demineralized water or water of equivalent purity.

5.1 Toluene.

6 Apparatus

6.1 Glass filter crucible P 40[1], capacity 30 ml, pore size 16 µm to 40 µm.

NOTE For the determination of TIM, the Joint FAO/WHO Expert Committee on Food Additives (JECFA) recommends the use of a filter funnel G3 with a porosity of 16 µm to 40 µm (see Reference [5]). According to ISO 4793[1], the porosity G3 (G2) is denominated as P 40 (P 100).

IMPORTANT — To clean glass filter crucibles, fill the ultrasonic bath with a phosphate-free alkaline cleaning solution[2] for laboratory glassware with a volume fraction of 10 %. Put the glass filter crucibles into the ultrasonic bath for 30 min. Wash the glass filter crucibles with water, and if necessary repeat the cleaning step. Clean the glass filter crucibles in the laboratory cleaning machine. Use each glass filter crucible for a maximum of 10 analyses, as the pores become blocked and cannot be cleaned to a sufficient standard after repeated use.

6.2 Drying oven, capable of being maintained at (103 ± 2) °C.

6.3 Desiccator, with silica gel.

6.4 Glass beaker, of capacity 150 ml, tall form.

6.5 Filtering bottle.

6.6 Vacuum pump (for the filtration).

6.7 Analytical balance, capable of being read to the nearest 0,001 g.

6.8 Measuring cylinder, of capacity 50 ml.

6.9 Glass rods of different sizes.

7 Sampling

7.1 General

A representative sample should be sent to the laboratory. It should not be damaged or changed during transport or storage.

Sampling is not part of the method specified in this document. A recommended sampling method is given in ISO 5555[2].

1) Duran® filter crucible, porosity 3, diameter 36 mm, is an example of a suitable product available commercially. This information is given for the convenience of users of this document and does not constitute an endorsement by ISO of this product.

2) Extran® MA03 phosphate-free is an example of a suitable product available commercially. This information is given for the convenience of users of this document and does not constitute an endorsement by ISO of this product.