
**Animal and vegetable fats and oils —
Determination of water content —
Karl Fischer method (pyridine free)**

*Corps gras d'origines animale et végétale — Détermination de la
teneur en eau — Méthode de Karl Fischer (sans pyridine)*



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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).

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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 on 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 the following URL: 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 third edition cancels and replaces the second edition (ISO 8534:2008), of which it constitutes a minor revision to exclude the applicability for fat coming from milk and milk products.

Introduction

The determination of the water content of fats and oils according to Karl Fischer is carried out by two different procedures. This document specifies the volumetric Karl Fischer method for the determination of higher milligram levels of water (high level moisture). It is used for samples having between 1 mg and 100 mg of water in the sample.

[Annex B](#) specifies a coulometric titration, which requires between 10 µg and 10 mg water in the sample. The coulometric method is more sensitive than the volumetric method and permits the determination of lower water contents.

Animal and vegetable fats and oils — Determination of water content — Karl Fischer method (pyridine free)

1 Scope

This document specifies a method for the determination of the water content of animal and vegetable fats and oils (hereinafter referred to as fats) using Karl Fischer apparatus and a reagent which is free of pyridine.

Milk and milk products (or fat coming from milk and milk products) are excluded from the scope of this document.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

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

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1

water content

mass, in grams per 100 g of sample, of water as determined in accordance with the method specified in this document

Note 1 to entry: The water content is expressed as a percentage mass fraction.

4 Principle

Dissolved fat is titrated against an iodine solution and sulfur dioxide (SO₂) is oxidized by iodine in the presence of water. In principle, the chemical reaction in [Formula \(1\)](#) takes place:



The alcohol reacts with SO₂ and a nitrogenous base (RN) to form an intermediate alkylsulfite salt, which is then oxidized by iodine to an alkylsulfate salt. This oxidation reaction consumes water contained in the sample. The end point is monitored potentiometrically.

5 Reagents

WARNING — Comply with any local regulations which specify the handling of hazardous substances. Technical, organizational and personal safety measures shall be followed.