
**Animal and vegetable fats and oils —
Determination of solid fat content by
pulsed NMR —**

**Part 1:
Direct method**

*Corps gras d'origines animale et végétale — Détermination de la teneur
en corps gras solides par RMN pulsée —*

Partie 1: Méthode directe



PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

This document is a preview generated by EVS



COPYRIGHT PROTECTED DOCUMENT

© ISO 2008

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

Foreword.....	iv
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Symbols and abbreviated terms	2
5 Principle.....	3
6 Apparatus	3
7 Sampling.....	5
8 Procedure	5
8.1 Measurement protocol and test sample	5
8.2 Oven, water baths and temperature-controlled blocks	7
8.3 Determination of the conversion factor (where necessary)	7
8.4 NMR spectrometer	8
8.5 Filling the measurement tubes	8
8.6 Removing the thermal history	8
8.7 Equilibrating at the initial temperature	8
8.8 Crystallization and tempering	9
8.9 Measuring the SFC	9
8.10 Number of determinations	10
8.11 Cleaning the measurement tubes	10
9 Expression of results	10
10 Precision.....	11
10.1 Interlaboratory test	11
10.2 Repeatability.....	11
10.3 Reproducibility.....	11
11 Test report	12
Annex A (informative) Results of interlaboratory tests	13
Annex B (informative) Theory of the direct method	23
Annex C (informative) Additional measurement protocols.....	25
Bibliography	27

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 8292-1 was prepared by Technical Committee ISO/TC 34, *Food products*, Subcommittee SC 11, *Animal and vegetable fats and oils*.

This part of ISO 8292, together with ISO 8292-2, cancel and replace ISO 8292:1991.

ISO 8292 consists of the following parts, under the general title *Animal and vegetable fats and oils — Determination of solid fat content by pulsed NMR*:

- *Part 1: Direct method*
- *Part 2: Indirect method*

Animal and vegetable fats and oils — Determination of solid fat content by pulsed NMR —

Part 1: Direct method

1 Scope

This part of ISO 8292 specifies a direct method for the determination of solid fat content in animal and vegetable fats and oils (hereafter designated “fats”) using low-resolution pulsed nuclear magnetic resonance (NMR) spectrometry.

Two alternative thermal pre-treatments are specified: one for general purpose fats not exhibiting pronounced polymorphism and which stabilize mainly in the β' -polymorph; and one for fats similar to cocoa butter which exhibit pronounced polymorphism and stabilize in the β -polymorph. Additional thermal pre-treatments, which may be more suitable for specific purposes, are given in an informative annex.

The direct method is easy to carry out and is reproducible, but is not as accurate as the indirect method due to the approximate method of calculation.

NOTE An indirect method is specified in ISO 8292-2.

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*

ISO 8292-2, *Animal and vegetable fats and oils — Determination of solid fat content by pulsed NMR — Part 2: Indirect method*

3 Terms and definitions

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

3.1

solid fat content

SFC

ratio as a percentage of the number of protons in the solid phase to the number of protons in the solid and liquid phase at a specified temperature

NOTE SFC expressed on this basis is taken to be numerically equivalent to the percentage mass fraction of fat in the solid state. No correction is made for the different densities of protons in the solid and liquid phases, because this would require exact knowledge of the composition of the solid and liquid phases of the fat blends at each temperature. Regardless of any other systematic errors, this means that SFC values obtained by this method are about 0,5 % to 1,0 % higher than the true solid fat percentage mass fraction.