SLOVENSKI STANDARD
SIST EN ISO 8292-1:2010

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Nadomešča:
SIST EN ISO 8292:1998

Živalske in rastlinske maščobe in olja - Določevanje trdnih maščob s pulzno jedrsko magnetno resonanco - 1. del: Neposredna metoda (ISO 8292-1:2008)

Animal and vegetable fats and oils - Determination of solid fat content by pulsed NMR - Part 1: Direct method (ISO 8292-1:2008)

Tierische und pflanzliche Fette und Öle - Bestimmung des Festanteils von Fett durch das Verfahren mit gepulster magnetischer Kernresonanz - Teil 1: Direktes Verfahren (ISO 8292-1:2008)

Corps gras d'origines animale et végétale - Détermination de la teneur en corps gras solides par RMN pulsée - Partie 1: Méthode directe (ISO 8292-1:2008)

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67.200.10	Rastlinske in živalske maščobe in olja	Animal and vegetable fats and oils

SIST EN ISO 8292-1:2010 **en**

EUROPEAN STANDARD

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EN ISO 8292-1

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ICS 67.200.10

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English Version

Animal and vegetable fats and oils - Determination of solid fat content by pulsed NMR - Part 1: Direct method (ISO 8292-1:2008)

Corps gras d'origines animale et végétale - Détermination de la teneur en corps gras solides par RMN pulsée - Partie 1: Méthode directe (ISO 8292-1:2008)

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Foreword

The text of ISO 8292-1:2008 has been prepared by Technical Committee ISO/TC 34 “Food products” of the International Organization for Standardization (ISO) and has been taken over as EN ISO 8292-1:2010 by Technical Committee CEN/TC 307 “Oilseeds, vegetable and animal fats and oils and their by-products - Methods of sampling and analysis” the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by October 2010, and conflicting national standards shall be withdrawn at the latest by October 2010.

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Endorsement notice

The text of ISO 8292-1:2008 has been approved by CEN as a EN ISO 8292-1:2010 without any modification.

INTERNATIONAL STANDARD

ISO 8292-1

First edition
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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

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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.

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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.

3.2
liquid fat content
percentage mass fraction of fat in the liquid state at a specified temperature

NOTE The liquid fat content is equal to $100 - w_{SFC}$, where w_{SFC} is the solid fat content.

3.3
tempering
thermal treatment of the fat, after crystallization and prior to equilibration at the measurement temperature, which consists of holding the fat at a specified temperature for a specified time to transform the fat to a desired polymorph, and/or to ensure that a desired phase equilibrium has been achieved and/or to ensure that crystallization is complete

3.4
measurement temperature
temperature at which the solid fat content is determined

3.5
repetition time
interval between successive pulses

3.6
dead time
time during which the instrument receiver is unable to record the decay signal

NOTE Dead time is usually less than 10 µs after the pulse.

3.7
measurement protocol
complete description of the solid fat content determination specifying application, instrumental conditions, method, tempering, and whether measurements are in series or in parallel

NOTE Measurement protocols are listed in Table 1 and Annex C.

4 Symbols and abbreviated terms

f	conversion (extrapolation) factor to correct the NMR signal observed at 11 µs to that at time zero
n_p	number of pulses
S_1	magnetization decay signal measured at about 11 µs
S_2	magnetization decay signal measured at about 70 µs
SFC	solid fat content
S_L	magnetization decay signal corresponding to the liquid phase
S_S	magnetization decay signal corresponding to the solid phase
S_{S+L}	magnetization decay signals corresponding to both solid plus liquid phases
t_{rep}	repetition time
$w_{SFC,i}$	"true" SFC (measured in accordance with ISO 8292-2)
$w_{SFC,T}$	SFC at measurement temperature, T