Animal and vegetable fats and oils - Determination of peroxide value - Potentiometric end-point determination

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NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN ISO 27107:2010 sisaldab Euroopa standardi EN ISO 27107:2010 ingliskeelset teksti.	This Estonian standard EVS-EN ISO 27107:2010 consists of the English text of the European standard EN ISO 27107:2010.
Standard on kinnitatud Eesti Standardikeskuse 31.05.2010 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.	This standard is ratified with the order of Estonian Centre for Standardisation dated 31.05.2010 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.
Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 07.04.2010.	Date of Availability of the European standard text 07.04.2010.
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English Version

Animal and vegetable fats and oils - Determination of peroxide value - Potentiometric end-point determination (ISO 27107:2008, corrected version 2009-05-15)

Corps gras d'origines animale et végétale - Détermination de l'indice de peroxyde - Détermination avec point d'arrêt potentiométrique (ISO 27107:2008, version corrigée 2009-05-15)

Tierische und pflanzliche Fette und Öle - Bestimmung der Peroxidzahl - Potentiometrische Endpunktbestimmung (ISO 27107:2008, korrigierte Fassung 2009-05-15)

This European Standard was approved by CEN on 13 March 2010.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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Foreword

The text of ISO 27107:2008, corrected version 2009-05-15 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 27107:2010 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of an identical text or by endorsement, at the latest by October 2010, and conflicting national standards shall be withdrawn at the latest by October 2010.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 27107:2008, corrected version 2009-05-15 has been approved by CEN as a EN ISO 27107:2010 without any modification.

Introduction

Over many years, various methods have been developed for the determination of peroxides in fats and oils. Their general principle is the liberation of iodine from potassium iodide in an acid medium. The method according to Wheeler (Reference [6]) was first adopted in standards more than 50 years ago by different bodies, and is widely used to control commodities by producers, receivers, and official laboratories. In national and international food legislation (including Codex Alimentarius), acceptable limits for peroxide values are often specified. Due to anomalies in the reproducibility of the results, it was noticed that there are slight differences between the standardized methods. A very important point is the dependence of the result on the amount of sample used for the determination. As the determination of the peroxide value (PV) is a highly empirical procedure, ISO/TC 34/SC 11 has decided to fix the sample mass at 5 g for PV greater than 1, and at 10 g for PV less than or equal to 1, and to limit the applicability of this method to animal and vegetable fats and oils with peroxide values from 0 meq to 30 meq of active oxygen per kilogram. The users of this International Standard should be aware that the results obtained can be slightly lower than with previous standards.

Animal and vegetable fats and oils — Determination of peroxide value — Potentiometric end-point determination

1 Scope

This International Standard specifies a method for the potentiometric end-point determination of the peroxide value, in milliequivalents of active oxygen per kilogram, of animal and vegetable fats and oils.

The method is applicable to all animal and vegetable fats and oils, fatty acids and their mixtures with peroxide values from 0 meq to 30 meq of active oxygen per kilogram. It is also applicable to margarines and fat spreads with varying water content. The method is not applicable to milk fats or lecithins.

NOTE A method for the iodometric (visual) determination of the peroxide value is given in ISO 3960. For milk fats, a method is specified in ISO 3976.

2 Normative references

The following referenced documents are indispensable for the application of this document. 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
peroxide value
PV
quantity of those substances in the sample, expressed in terms of active oxygen, that oxidize potassium iodide under the conditions specified in this International Standard

NOTE The peroxide value is usually expressed in milliequivalents of active oxygen per kilogram of oil, but it may also be expressed (in SI units) as millimoles of active oxygen per kilogram of oil. The value expressed in millimoles of active oxygen per kilogram is half that expressed in milliequivalents of active oxygen per kilogram. Multiplication of the peroxide value (milliequivalents of active oxygen per kilogram) by the equivalent mass of oxygen (equalling 8) gives the active oxygen mass fraction in milligrams per kilogram of oil.

4 Principle

The sample is dissolved in isooctane and glacial acetic acid, and potassium iodide is added. The iodide liberated by the peroxides is determined volumetrically with a sodium thiosulfate standard solution. The end-point of the titration is determined electrochemically.