INTERNATIONAL STANDARD

ISO 27107

First edition
2008-03-01

Corrected version
2009-05-15

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

Corps gras d'origines animale et végétale — Détermination de l'indice de peroxyde — Détermination avec point d'arrêt potentiométrique

Reference number
ISO 27107:2008(E)

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

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 27107 was prepared by Technical Committee ISO/TC 34, *Food products*, Subcommittee SC 11, *Animal and vegetable fats and oils*.

This corrected version of ISO 27107:2008 incorporates the following corrections:

— Introduction, lines 9 and 10, “greater than” and “less than or equal to” replace “>” and “⩽”, respectively;

— Introduction, line 11, “0 mmol to 15 mmol” has become “0 meq to 30 meq”;

— 5.6, final sentence, has been reedited to correct details of blue colour formation;

— 6.5 now contains a readability figure of 0,000 1 g, not 0,001 g;

— 9.2.2, line 1, now refers to 0,001 g instead of 0,001 mg;

— 9.2.2, paragraph 4, now contains a reedited calculation of the factor, using symbol F rather than f;

— the heading “10.1 Calculation” has been deleted;

— Clause 10, paragraph 1, has been revised to incorporate factor, F, from the revised 9.2.2;

— In Figure A.1, “PV =” has become “PV:” (five times).

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.