SLOVENSKI STANDARD
SIST ISO 3960:1995

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Rastlinske in živalske maščobe in olja - Določanje peroksidnega števila

Animal and vegetable oils and fats -- Determination of peroxide value

Corps gras d'origines animale et végétale -- Détermination de l'indice de peroxyde

Ta slovenski standard je istoveten z: **ISO 3960:1977**

ICS:

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

SIST ISO 3960:1995 **en**

INTERNATIONAL STANDARD ISO 3960

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Animal and vegetable oils and fats — Determination of peroxide value

Corps gras d'origines animale et végétale — Détermination de l'indice de peroxyde

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FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up 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.

Draft International Standards adopted by the technical committees are circulated to the member bodiés for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 3960 was developed by Technical Committee ISO/TC 34, *Agricultural food products,* and was circulated to the member bodies in October 1975.

It has been approved by the member bodies of the following countries :

Australia	Ghana	Portugal
Austria	Hungary	Romania
Belgium	India	South Africa, Rep. of
Canada	Iran	Thailand
Chile	Korea, Rep. of	Turkey
Czechoslovakia	Mexico	United Kingdom
France	New Zealand	Yugoslavia
Germany	Poland	

No member body expressed disapproval of the document.

This International Standard has also been approved by the International Union of Pure and Applied Chemistry (IUPAC).

Printed in Switzerland

Animal and vegetable oils and fats — Determination of peroxide value

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a method for the determination of the peroxide value of animal and vegetable oils and fats.

2 REFERENCE

ISO . . . , *Animal and vegetable oils and fats — Sampling.*[1]

3 DEFINITION

peroxide value : The quantity of those substances in the sample, expressed in terms of milliequivalents of active oxygen per kilogram, which oxidize potassium iodide under the operating conditions described.

4 PRINCIPLE

Treatment of a test portion, in solution in acetic acid and chloroform, by a solution of potassium iodide. Titration of the liberated iodine with standard volumetric sodium thiosulphate solution.

5 REAGENTS

All reagents shall be of analytical quality. The water used shall be distilled water or water of at least equivalent purity.

All the reagents and the water shall be free from dissolved oxygen.

5.1 Chloroform, freed from oxygen by purging with a current of pure, dry inert gas.

5.2 Glacial acetic acid, freed from oxygen by purging with a current of pure, dry inert gas.

5.3 Potassium iodide, saturated aqueous solution, recently prepared and free from free iodine and from iodates.

NOTE — Make sure the solution remains saturated as indicated by the presence of undissolved crystals. Store in the dark. Test daily by adding 2 drops of starch solution (5.5) to 0,5 ml of the potassium iodide solution in 30 ml of acetic acid-chloroform (3:2) solution. If a blue colour is formed which requires more than 1 drop of 0,01 N sodium thiosulphate solution to discharge, discard the iodide solution and prepare a fresh solution.

5.4 Sodium thiosulphate, 0,01 N or 0,002 N standard volumetric solution, standardized just before use.

5.5 Starch solution.

Mix 5 g of soluble starch in 30 ml of water, add this mixture to 1 000 ml of boiling water and leave boiling for 3 min.

6 APPARATUS

All the equipment used shall be free from reducing or oxidizing substances.

NOTE — Do not grease ground glass surfaces.

Usual laboratory equipment and the following items :

6.1 Flasks, with ground necks and ground glass stoppers, of about 250 ml capacity, dried beforehand and filled with a pure, dry inert gas (nitrogen or, preferably, carbon dioxide).

6.2 Glass scoop of suitable capacity for the test portion.

6.3 Burette, in accordance with class A of ISO/R 385.

6.4 Analytical balance.

1) In preparation.

7 SAMPLING

See ISO . . .

Ensure that the sample is taken and stored away from strong light, kept cold and contained in completely filled glass containers, hermetically sealed with ground glass or cork stoppers.

8 PROCEDURE

The test shall be carried out in diffuse daylight or in artificial light.

8.1 Test portion

Weigh in a flask (6.1), to the nearest 0,001 g, a mass of the sample in accordance with the following table, according to the expected peroxide value. Alternatively, weigh the test portion in a glass scoop (6.2) if the flask cannot be weighed directly.

Expected peroxide value milliequivalents/kg	Mass of test portion g
0 to 12	5,0 to 2,0
12 to 20	2,0 to 1,2
20 to 30	1,2 to 0,8
30 to 50	0,8 to 0,5
50 to 90	0,5 to 0,3

8.2 Determination

If the weighing was carried out in the scoop (6.2), place the scoop containing the test portion in the flask (6.1).

Add 10 ml of the chloroform (5.1). Dissolve the test portion quickly by stirring.

Add 15 ml of the acetic acid (5.2), then 1 ml of the potassium iodide solution (5.3).

Immediately close the flask (6.1), stir for 1 min and leave for exactly 5 min away from the light at a temperature from 15 to 25 °C.

Add about 75 ml of water. Stirring vigorously and in the presence of a few drops of the starch solution (5.5) as indicator, titrate the liberated iodine with the standard volumetric sodium thiosulphate solution (5.4), using the 0,002 N solution for expected peroxide values less than or equal to 12, or the 0,01 N solution for expected peroxide values greater than 12.

Carry out two determinations on the same test sample.

8.3 Blank test

Carry out a blank test in parallel with the determination.

If the result of the blank test exceeds 0,1 ml of 0,01 N sodium thiosulphate solution (5.4), replace the impure reagents.

9 EXPRESSION OF RESULTS

9.1 Method of calculation and formula

The peroxide value, expressed in milliequivalents of active oxygen per kilogram of sample, is equal to

$$\frac{(V_1 - V_0) \times T}{m} \times 1\,000$$

where

V_0 is the volume, in millilitres, of the sodium thiosulphate solution (5.4) used for the blank test;

V_1 is the volume, in millilitres of the sodium thiosulphate solution (5.4) used for the determination;

T is the normality of the sodium thiosulphate solution (5.4) used;

m is the mass, in grams, of the test portion.

Take as the result the arithmetic mean of the two determinations carried out.

NOTE — The peroxide value may also be expressed in millimolecules per kilogram or in micrograms of active oxygen per gram (see annex).

9.2 Repeatability

The difference between the results of two determinations carried out simultaneously or in rapid succession by the same operator on the same sample shall not exceed the following amounts :

Peroxide value milliequivalents/kg	Repeatability
less than 1	0,1
1 to 6	0,2
6 to 12	0,5
greater than 12	1

10 TEST REPORT

The test report shall show the method used, the results obtained and the method used to express them. It shall also mention all operating conditions not specified in this International Standard, or regarded as optional, as well as any circumstances that may have influenced the result.

The report shall include all details necessary for complete identification of the sample.

ANNEX

CONVERSION FACTORS

To express the peroxide value in millimoles of active oxygen per kilogram of fat or in micrograms of active oxygen per gram of fat, multiply the result obtained in 9.1 by the conversion factors shown in the following table :

Method of expression	Conversion factor
milliequivalents/kg	1
millimoles/kg	0,5
micrograms/g	8