

ICS 67.200.10

CCS X 14



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 5538-2005

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

(English Translation)

Issued on: November 11, 2005

Implemented on: December 1, 2006

**Issued by: General Administration of Quality Supervision, Inspection and
Quarantine**

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Foreword

This Standard equivalently adopts ISO 3960:2001 Animal and Vegetable Fats and Oils - Determination of Peroxide Value (English Version).

This Standard replaced GB/T 5538-1995 Animal and Vegetable Fats and Oils - Determination of Peroxide Value.

For the benefit of use, this Standard made the following editorial modifications:

- a) Change "this International Standard" into "this Standard";
- b) Use decimal point "." to replace the comma "," that is used as decimal point;
- c) Use GB/T 15687 Oils and Fats - Preparation of Test Sample to replace ISO 661:1989 Animal and Vegetable fats and Oils - Preparation of Test Sample;
- d) Use GB/T 6682-1992 Water for Laboratory Use - Specifications to replace ISO 3696:1987 Water for Analytical Laboratory Use - Specification and Test Methods.

- e) Delete the Foreword of the international standard;
- f) Add SN in 9.3 according to the test sequence, making the test procedures clearer;
- g) Change the unit "milligram equivalent" in the original international standard into China's legal measurement unit "millimoles per kilogram"; and the value in the original international standard in the unit of "milligram equivalent" is placed in parentheses after it for readers' reference;
- h) After the units of the experimental test results in Annex A are converted, the data have the same significant figures as the original data; and the data in the original international standard are placed in brackets after them.

The major technical difference between this Standard and GB/T 5538-1995 is the change of

solvent; this Standard uses isooctane to replace chloroform in the original standard.

Annex A of this Standard is informative.

This Standard was proposed by and under the jurisdiction of State Administration of Grain.

Drafting organization of this Standard: Xi'an Oil Food and Feed Quality Supervision, Inspection and Testing Center, State Administration of Grain.

The chief drafting staffs of this Standard: Xue Yalin, Zhang Ying, and Liu Jiantao.

Animal and Vegetable Fats and Oils - Determination of
Peroxide Value

1 Scope

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

2 Normative References

The provisions in the following documents become the provisions of this Standard through reference in this Standard. For dated references, the subsequent amendments (excluding corrigendum) or revisions do not apply to this Standard, however, parties who reach an agreement based on this Standard are encouraged to study if the latest versions of these documents are applicable. For undated references, the latest edition of

the referenced document applies.

GB/T 6682-1992 Water for laboratory use - Specifications (neq ISO 3696:1987)

GB/T 15687 Oils and fats - Preparation of test sample (GB/T 15687-1995, eqv ISO 661:1989)

3 Terms and Definitions

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

3.1 Peroxide value

Quantity of those substances in the sample, expressed in terms of active oxygen, which oxidize

potassium iodide under the conditions specified in this Standard, divided by the mass of the test

portion.

NOTE 1: Peroxide value is usually expressed in industry as milliequivalents per kilogram.

NOTE 2: Peroxide value may also be expressed (in SI units) as millimoles per kilogram. The value expressed in millimoles per kilogram is half that expressed in milliequivalents per kilogram (see Clause 10).

5.8 Starch solution, 5 g/L.

Mix 1 g of starch and a small amount of cold distilled water. Add this mixture, while stirring, to 200 mL of boiling water. Add 250 mg of salicylic acid as preservative and boil for 3 min. Immediately remove from the heat and cool.

If long storage is required, keep the solution in a refrigerator at between 4 °C and 10 °C for 2

weeks to 3 weeks. A fresh starch solution shall be prepared when the endpoint of the titration

from blue to colorless fails to be sharp.

The sensitivity of the starch solution may be tested as follows. To 5 mL of the starch solution in 100 mL of water; add 0.05 % of potassium iodide solution (5.5) and 1 drop of 0.05 % sodium

hypochlorite solution. When titrating more than 0.05mL of sodium thiosulfate solution (5.6), if

the deep blue color disappears, it shall indicate that the sensitivity is insufficient.

6 Apparatus

All used equipment shall be free from reducing or oxidizing substances. Do not grease ground

glass surfaces.

Usual laboratory apparatus and, in particular, the following.

7 Sampling

It is important that the laboratory receive a sample that is truly representative and has not been

damaged or changed during transport or storage.

Sampling is not part of the method specified in this Standard. A recommended sampling method

is given in ISO 5555.

Ensure that the sample is taken and stored away from strong light, kept cold, and contained in

completely filled dark-colored glass containers, hermetically sealed with ground glass stoppers.

8 Preparation of Test Sample

Ensure that the packaging of the sample is not damaged, and is well closed. When parameters

other than the peroxide value have to be investigated, the test portion for the peroxide value shall be taken first from the laboratory sample.

Prepare the test sample in accordance with GB/T 15687.

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