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МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ

Animal and vegetable fats and oils — Determination of saponification value

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

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Reference number
ISO 3657:1988 (E)

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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 3657 was prepared by Technical Committee ISO/TC 34, *Agricultural food products*.

This second edition cancels and replaces the first edition (ISO 3657 : 1977), of which it constitutes a technical revision.

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Animal and vegetable fats and oils — Determination of saponification value

1 Scope

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

If mineral acid is present, the results given by this method are not interpretable unless the mineral acids are determined separately.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards listed below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 661 : 1980, *Animal and vegetable fats and oils — Preparation of test sample*.

ISO 5555 : 1983, *Animal and vegetable fats and oils — Sampling*.

3 Definition

For the purposes of this International Standard, the following definition applies.

saponification value: The number of milligrams of potassium hydroxide required to saponify 1 g of fat under the conditions specified in this International Standard.

4 Principle

Boiling of a sample under reflux with ethanolic potassium hydroxide solution, followed by titration of the excess potassium hydroxide with standard volumetric hydrochloric acid solution.

5 Reagents

All reagents shall be of recognized analytical grade and the water used shall be distilled water or water of equivalent purity.

5.1 Potassium hydroxide, $c(\text{KOH}) \approx 0,5$ mol/l solution in 95 % (V/V) ethanol.

This solution shall be colourless or straw yellow. A stable colourless solution can be prepared by either of the following procedures.

a) Reflux 1 litre of ethanol with 8 g of potassium hydroxide and 5 g of aluminium pellets for 1 h, then distil immediately. Dissolve the required amount of potassium hydroxide in the distillate. Allow to stand for several days, then decant the clear supernatant liquid from the potassium carbonate deposited.

b) Add 4 g of aluminium tertbutylate to 1 litre of ethanol and allow the mixture to stand for several days. Decant the supernatant liquid and dissolve in it the required amount of potassium hydroxide. Allow to stand for several days, then decant the clear supernatant liquid from the potassium carbonate deposited.

Store this solution in a brown or yellow glass bottle fitted with a rubber stopper, and decant it for use.

5.2 Hydrochloric acid, standard volumetric solution, $c(\text{HCl}) = 0,5$ mol/l.

5.3 Phenolphthalein, 10 g/l solution in 95 % (V/V) ethanol, or alkali blue 6B, 20 g/l solution in 95 % (V/V) ethanol.

5.4 Boiling aids.

6 Apparatus

Usual laboratory apparatus and, in particular, the following.

6.1 Conical flask, of 250 ml capacity, made of alkali-resistant glass and having a ground neck.