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Oilseeds — Determination of acidity of oils

Graines oléagineuses — Détermination de l'acidité de l'huile

Reference number
ISO 729 : 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 729 was prepared by Technical Committee ISO/TC 34, *Agricultural food products.*

This second edition cancels and replaces the first edition (ISO 729 : 1985), of which it constitutes a minor revision.

Oilseeds — Determination of acidity of oils

1 Scope

This International Standard specifies a method for the determination of the acidity of oils in oilseeds. The acidity is expressed, by preference, as an acid value or alternatively as conventionally calculated acidity.

NOTE 1 — This International Standard has been developed in alignment with ISO 660[1].

The acidity may be determined on the oil from the product as received (pure seeds and impurities), or, if required, on the pure seeds and possibly on the impurities.

The method is not applicable to cotton seeds with adherent cotton linters, or to oil palm or olive fruits.

NOTE 2 — Owing to the particularly poor results obtained during interlaboratory tests on seeds and fruits with high lauric acid content (copra and palm kernel), the application of this method to these oilseeds is at present problematic.

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 542 : 1980, *Oilseeds — Sampling.*

ISO 659 : 1988, *Oilseeds — Determination of hexane extract (or light petroleum extract), called "oil content".*

3 Definitions

For the purposes of this International Standard, the following definitions apply.

3.1 acid value: Number of milligrams of potassium hydroxide required to neutralize the free fatty acids in 1 g of oil.

3.2 acidity: Conventional expression of the percentage of free fatty acids.

According to the nature of the fat or oil, acidity may be expressed as shown in table 1.

Table 1

Nature of fat or oil	Expressed as	Molar mass (g/mol)
Copra oil, palm kernel oil and similar oils with high lauric acid content	Lauric acid	200
All other fats and oils	Oleic acid	282

If the result is reported simply as "acidity", without further definition, this is, by convention, the acidity expressed as oleic acid.

4 Principle

Dissolution in a mixture of diethyl ether and ethanol of the oil extracted for the determination of the "oil content" of the seeds, and then titration of the free fatty acids present using an ethanolic potassium hydroxide solution.

5 Reagents

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

5.1 Diethyl ether/ethanol 95 % (V/V), 1 + 1 mixture by volume.

WARNING — Diethyl ether is highly flammable and can form explosive peroxides. Special precautions shall be taken when using it.

Neutralize the mixture exactly, immediately prior to use, using the ethanolic potassium hydroxide solution (5.2) in the presence of 0,3 ml of indicator (5.3) per 100 ml of this mixture.

NOTE — If it is not possible to use diethyl ether, a mixture of ethanol and toluene can be used. If necessary, the ethanol can be replaced by propan-2-ol.

1) ISO 660 : 1983, *Animal and vegetable fats and oils — Determination of acid value and of acidity.*