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INTERNATIONAL STANDARD

**ISO
6883**

Third edition
2000-07-01

Animal and vegetable fats and oils — Determination of conventional mass per volume (“litre weight in air”)

*Corps gras d'origines animale et végétale — Détermination de la masse
volumique conventionnelle dans l'air («poids du litre dans l'air»)*

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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 3.

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 International Standard may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 6883 was prepared by Technical Committee ISO/TC 34, *Agricultural food products*, Subcommittee SC 11, *Animal and vegetable fats and oils*.

This third edition cancels and replaces the second edition (ISO 6883:1995), of which it constitutes a minor revision.

Annex A of this International Standard is for information only. (standards.iteh.ai)

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Animal and vegetable fats and oils — Determination of conventional mass per volume (“litre weight in air”)

1 Scope

This International Standard specifies a method for the determination of conventional mass per volume (“litre weight in air”) of animal and vegetable fats and oils (hereinafter referred to as fats) in order to convert volume to mass or mass to volume.

The procedure is applicable only to fats in a liquid state.

The temperature of determination applied for any fat should be such that the fat does not deposit crystals at that temperature.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 661:1989, *Animal and vegetable fats and oils — Preparation of test sample*.

ISO 3507:1976, *Pyknometers*.

3 Term and definition

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

3.1

conventional mass per volume

litre weight in air

quotient of the mass in air of fat to its volume at a given temperature

NOTE It is expressed in kilograms per litre (numerically equal to grams per millilitre).

4 Principle

Measurement of the mass, at a specified temperature, of a volume of liquid fat in a calibrated pycnometer.

5 Apparatus

Usual laboratory apparatus and, in particular, the following.

5.1 Water bath, capable of being maintained within 0,1 °C of the temperatures chosen for the calibration and determination.

It should be fitted with a calibrated thermometer, graduated in divisions of 0,1 °C covering the relevant temperature range.

5.2 Pyknometer (Jaulmes), of capacity 50 ml, with side-arm.

It should be fitted by means of conical joints with a calibrated thermometer graduated in divisions of 0,1 °C and with a cap perforated at the top for the side-arm (see Figure 1).

The pyknometer should preferably be made of borosilicate glass, but if this is not available then one made of soda glass may be used.

NOTE The cap is only essential if the determination is carried out at a temperature below ambient.

Alternatively, the Type 3 (Gay-Lussac) pyknometer (see Figure 2) specified in ISO 3507 may be used; however, the use of a pyknometer with thermometer is preferred.

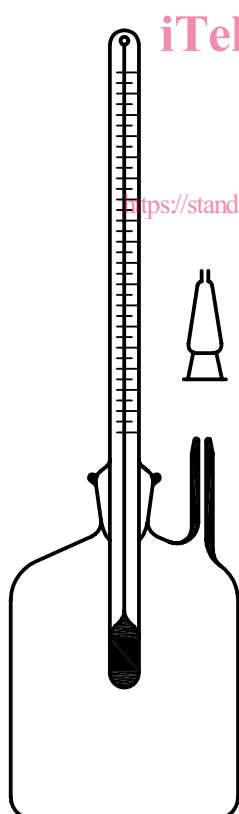


Figure 1 — Jaulmes pyknometer



Figure 2 — Gay-Lussac pyknometer

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6 Sampling

It is important that the laboratory receive a sample which is truly representative and has not been damaged or changed during transport or storage.

Sampling is not part of the method specified in this International Standard. A recommended sampling method is given in ISO 5555.

7 Preparation of test sample

Prepare the test sample in accordance with ISO 661, but do not filter or dry it.

Take care not to include air bubbles in the fat.

8 Procedure

8.1 Calibration of pyknometer

8.1.1 Calibrate the pyknometer (5.2) at least once a year, and at least in duplicate, by the procedure described in 8.1.2. Calibrate a pyknometer made of soda glass at least once every 3 months, at least in duplicate.

NOTE The calibration procedure described is used to determine the volume of the pyknometer when filled with water at the temperature θ_c .

8.1.2 Calibrate the pyknometer at the following temperatures:

- a) at 40 °C if the mean coefficient of cubic expansion (γ) of the pyknometer glass is known;
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- b) at 20 °C and 60 °C if γ is not known. [2b1f89b775ba/sist-iso-6883-2001](https://standards.iteh.ai/catalog/standards/sist/c9cb3d48-7a16-43e4-a22d-2b1f89b775ba/sist-iso-6883-2001)

8.1.3 Clean and thoroughly dry the pyknometer. Weigh, to the nearest 0,1 mg, the empty pyknometer with the thermometer and cap or with the stopper (m_1).

Bring recently distilled water or water of equivalent purity, free from air, to a temperature approximately 5 °C below the temperature of the water bath. Remove the thermometer and cap (or the stopper) and fill the pyknometer with the prepared water. Replace the thermometer or stopper. Take care not to include air bubbles during these operations. Place the filled pyknometer in the water bath, so that it is immersed up to the middle of its conical socket, until the contents have reached a stable temperature (which takes about 1 h). Allow the water to overflow from the side arm or stopper outlet. Record the temperature, θ_c , of the pyknometer contents to the nearest 0,1 °C. Carefully remove any water that has overflowed from the top and side of the side-arm or stopper. Place the cap on the side-arm. Remove the pyknometer from the water bath, wiping it thoroughly with fluff-free material until dry. Allow its temperature to reach ambient.

Weigh the full pyknometer with the thermometer and cap, or with the stopper, to the nearest 0,1 mg (m_2).

If the value of γ for the pyknometer glass is not known, adjust the water bath to the desired second calibration temperature and repeat the calibration procedure.