
Essential oils — Determination of refractive index

Huiles essentielles — Détermination de l'indice de réfraction



Foreword

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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.

International Standard ISO 280 was prepared by Technical Committee ISO/TC 54, *Essential oils*.

This second edition cancels and replaces the first edition (ISO 280:1976), which has been technically revised.

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Essential oils — Determination of refractive index

1 Scope

This International Standard specifies a method for the determination of the refractive index of essential oils.

2 Normative reference

The following normative document contains 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 edition of the normative document 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 356, *Essential oils — Preparation of test samples*.

3 Term and definition

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

3.1

refractive index, n_D^t

ratio of the sine of the angle of incidence to the sine of the angle of refraction, when a ray of light of defined wavelength passes from air into the essential oil kept at a constant temperature

NOTE The wavelength specified is 589,3 nm $\pm$ 0,3 nm corresponding to the D₁ and D₂ lines of the sodium spectrum.

4 Principle

According to the type of instrument used, either the angle of refraction is directly measured or the limit of total reflection is observed, the oil being maintained under conditions of isotropism and transparency.

5 Reagents

5.1 Standard products, of refractometry grade, to adjust the refractometer, as follows.

- 5.1.1 Distilled water**, of refractive index 1,333 0 at 20 °C.
- 5.1.2 *p*-Cymene**, of refractive index 1,490 6 at 20 °C.
- 5.1.3 Benzyl benzoate**, of refractive index 1,568 5 at 20 °C.
- 5.1.4 1-Bromonaphthalene**, of refractive index 1,658 5 at 20 °C.

6 Apparatus

- 6.1 Refractometer**, allowing direct readings of refractive indices between 1,300 0 and 1,700 0 to be made with an accuracy of $\pm 0,000\ 2$.
- 6.2 Thermostat or apparatus for temperature maintenance**, which ensures a circulation of water through the refractometer, thus keeping the instrument at the reference temperature to within $\pm 0,2\ ^\circ\text{C}$.

- 6.3 Light source**, sodium light.

NOTE Diffused daylight or light from an electric lamp may be used for refractometers fitted with an achromatic compensator.

- 6.4 Plate of glass** (optional), of known refractive index.

7 Sampling

It is important that the laboratory receive a representative sample which has not been damaged or modified during transportation or storage.

Sampling does not constitute a part of the method specified in this International Standard. A recommended sampling method is given in ISO 212.¹⁾

8 Procedure

8.1 Preparation of test sample

Prepare the test sample in accordance with ISO 356. Bring the test sample to the temperature at which the measurements shall be made.

8.2 Regulation of the refractometer

8.2.1 Regulate the refractometer (6.1) by measuring the refractive index of the standard products described in 5.1.1 to 5.1.4.

NOTE Some instruments may be adjusted by means of a plate of glass (6.4), according to the directions supplied by the manufacturer of the instrument.

1) ISO 212, *Essential oils — Sampling*.