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ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION

R 592

DETERMINATION OF THE OPTICAL ROTATION OF ESSENTIAL OILS

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BRIEF HISTORY

The ISO Recommendation R 592, *Determination of the Optical Rotation of Essential Oils*, was drawn up by Technical Committee ISO/TC 54, *Essential Oils*, the Secretariat of which is held by Repartição de Normalização (IGPAI).

Work on this question by the Technical Committee began in 1952 and led, in 1963, to the adoption of a Draft ISO Recommendation.

In September 1964, this Draft ISO Recommendation (No. 89) was circulated to all the ISO Member Bodies for enquiry. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies:

Argentina	Italy	Spain
Belgium	Japan	Sweden
Bulgaria	Korea, Rep. of	Turkey
Chile	Netherlands	United Kingdom
Czechoslovakia	New Zealand	U.S.S.R.
France	Poland	Yugoslavia
Germany	Portugal	
India	Republic of South Africa	
Iran		
Israel	Romania	

No Member Body opposed the approval of the Draft.

The Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided, in July 1967, to accept it as an ISO RECOMMENDATION.

ISO Recommendation R 592 July 1967

DETERMINATION OF THE OPTICAL ROTATION OF ESSENTIAL OILS

1. SCOPE

This ISO Recommendation specifies a method for determining the optical rotation of essential oils.

2. DEFINITION

By the *optical rotation* of an essential oil is meant the angle α through which the plane of polarized light is rotated by a layer 10 cm thick of this essential oil at a specified temperature.

The wave-length of the radiation employed should be 589.3 $\pm$ 0.3 nm, the mean of the *D* lines for sodium light.

The determination should normally be carried out at a temperature of 20 $\pm$ 3 °C, the readings being corrected to 20 °C. Exceptions should be noted in the specifications for particular essential oils.

3. APPARATUS

3.1 Polarimeter

Use a polarimeter of a precision within $\pm$ 0.03° ($\pm$ 2′). If it is properly adjusted it should give a reading of 0° and also of 180°, with distilled water.

The instrument should also be checked with a quartz plate of known optical rotation. If a quarzt plate is not available an aqueous solution of pure anhydrous sucrose may be used containing 26.00 g of sucrose per 100 cm³ of solution at a temperature of 20 °C, the optical rotation of this solution being + 34.62° (+ 34° 37′ 12″) in a 200 mm layer.

The instrument should be kept and operated in a dark room under stable conditions.

3.2 Light source

Use any device giving monochromatic light of wave-length 589.3 $\pm$ 0.3 nm. For this purpose a sodium vapour lamp is recommended.

3.3 Polarimeter tubes

When the determination of the optical rotation has to be carried out at a temperature of exactly 20 °C, or at any other specified temperature, use polarimeter tubes provided with a jacket for circulating water, with a suitable thermometer pocket incorporated in the jacket. If the determination has to be carried out at room temperature any other type of polarimeter tube may be used. The length of the tubes generally employed should be 100 ± 0.05 mm. For faintly coloured essential oils tubes 200 ± 0.05 mm long may be employed, while for strongly coloured essential oils tubes 50 ± 0.05 mm long may be necessary.

3.4 Apparatus for temperature maintenance

When the determination of the optical rotation has to be carried out at 20 °C, or at any other specified temperature, water at a suitable temperature should be passed through the jacket surrounding the polarimeter tube in order to maintain the essential oil at the specified temperature (± 0.2 °C) during the observation.

3.5 Standardized thermometer

Graduated in fifths or tenths of a Celsius degree, and allowing determination of temperatures between 10 and 30 °C.

4. SAMPLING

See ISO Recommendation R 212, *Essential oils – Sampling*.

5. PROCEDURE

5.1 Preparation of test sample

See ISO Recommendation R 356, *Essential oils – Methods of test – Preparation of sample*.