INTERNATIONAL STANDARD

ISO 770

Second edition
2002-07-01

Crude or rectified oils of Eucalyptus globulus (*Eucalyptus globulus* Labill.)

*Huile essentielle, crue ou rectifiée, d'Eucalyptus globulus (*Eucalyptus globulus *Labill.)*

Reference number
ISO 770:2002(E)

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.ch
Web www.iso.ch

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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.

The main task of technical committees is to prepare International Standards. 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.

ISO 770 was prepared by Technical Committee ISO/TC 54, *Essential oils*.

This second edition cancels and replaces the first edition (ISO 770:1980) and ISO 4732:1983, *Rectified oil of* Eucalyptus globulus *Labillardière, Portugal*, which have been combined and technically revised.

Annexes A and B of this International Standard are for information only.

Crude or rectified oils of Eucalyptus globulus (*Eucalyptus globulus* Labill.)

1 Scope

This International Standard specifies certain characteristics of the raw and rectified oils of Eucalyptus globulus (*Eucalyptus globulus* Labill.), in order to facilitate assessment of its quality.

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/TR 210, *Essential oils — General rules for packaging, conditioning and storage*

ISO/TR 211, *Essential oils — General rules for labelling and marking of containers*

ISO 212, *Essential oils — Sampling*

ISO 279, *Essential oils — Determination of relative density at 20 °C — Reference method*

ISO 280, *Essential oils — Determination of refractive index*

ISO 592, *Essential oils — Determination of optical rotation*

ISO 875, *Essential oils — Evaluation of miscibility in ethanol*

ISO 11024-1, *Essential oils — General guidance on chromatographic profiles — Part 1: Preparation of chromatographic profiles for presentation in standards*

ISO 11024-2, *Essential oils — General guidance on chromatographic profiles — Part 2: Utilization of chromatographic profiles of samples of essential oils*

3 Term and definition

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

3.1
oil of Eucalyptus globulus
essential oil obtained by steam distillation of recently collected leaves and twigs of *Eucalyptus globulus* Labill., of the Myrtaceae family

NOTE 1 The trade products denominated “70 % to 75 %” and “80 % to 85 %” are the oils rectified by distillation in order to obtain 1,8-cineole contents higher than 70 % and 80 %, respectively.

NOTE 2 For information on the CAS number, see ISO/TR 21092.

4 Requirements

4.1 Appearance

Liquid.

4.2 Colour

Raw oils	Rectified oils	
	70 % to 75 %	80 % to 85 %
Yellow to pale yellow	Colourless	

4.3 Odour

Raw oils	Rectified oils	
	70 % to 75 %	80 % to 85 %
Aromatic with a characteristic odour of cineole	Fresh, aromatic and characteristic of cineole	

4.4 Relative density at 20 °C, d_{20}^{20}

Raw oils		Rectified oils			
		70 % to 75 %		80 % to 85 %	
min.	max.	min.	max.	min.	max.
0,905	0,925	0,904	0,920	0,906	0,920

4.5 Refractive index at 20 °C

Raw oils		Rectified oils			
		70 % to 75 %		80 % to 85 %	
min.	max.	min.	max.	min.	max.
1,457	1,475	1,460	1,468	1,458	1,465

4.6 Optical rotation at 20 °C

Raw oils		Rectified oils			
		70 % to 75 %		80 % to 85 %	
min.	max.	min.	max.	min.	max.
+ 2°	+ 8°	0°	+ 10°	+ 2°	+ 10°

4.7 Miscibility in ethanol, 70 % (volume fraction), at 20 °C

Raw oils	Rectified oils	
	70 % to 75 %	80 % to 85 %
It shall not be necessary to use more than		
7	10	5
volumes of ethanol 70 % (volume fraction) to obtain a clear solution with 1 volume of essential oil		

4.8 Chromatographic profile

Analysis of the essential oil shall be carried out by gas chromatography. In the chromatogram obtained, the representative and characteristic components shown in Table 1 shall be identified. The proportions of these components, by the normalization method indicated by the integrator, shall be as shown in Table 1. This constitutes the chromatographic profile of the essential oil.

Table 1 — Chromatographic profile

Component	Raw oil		Rectified oils			
			70 % to 75 %		80 % to 85 %	
	min. %	max. %	min. %	max. %	min. %	max. %
α-Pinene	10	22	1	10	1	10
α-Phellandrene	0,1	1	0,1	1,5	0,1	1
Limonene	1	8	2	15	4	15
1,8-Cineole	60	—	70	—	80	—
p-Cimene	1	2	1	6	1	4
trans-Pinocarveol	1	6	traces	5	traces	3
Aromadendrene	0,5	10	traces	2	traces	1
Globulol	0,5	1,5	—	traces	—	traces
NOTE The chromatographic profile is normative, contrary to typical chromatogram given for information in annex A.						

4.9 Flashpoint

Information on the flashpoint is given in annex B.

5 Sampling

See ISO 212.

Minimum volume of test sample: 25 ml.

NOTE This volume allows each of the tests specified in this International Standard to be carried out at least once.

6 Test methods

6.1 Relative density at 20 °C, d_{20}^{20}

See ISO 279.

6.2 Refractive index at 20 °C

See ISO 280.

6.3 Optical rotation at 20 °C

See ISO 592.

6.4 Miscibility in ethanol, 70 % (volume fraction), at 20 °C

See ISO 875.

6.5 Chromatographic profile

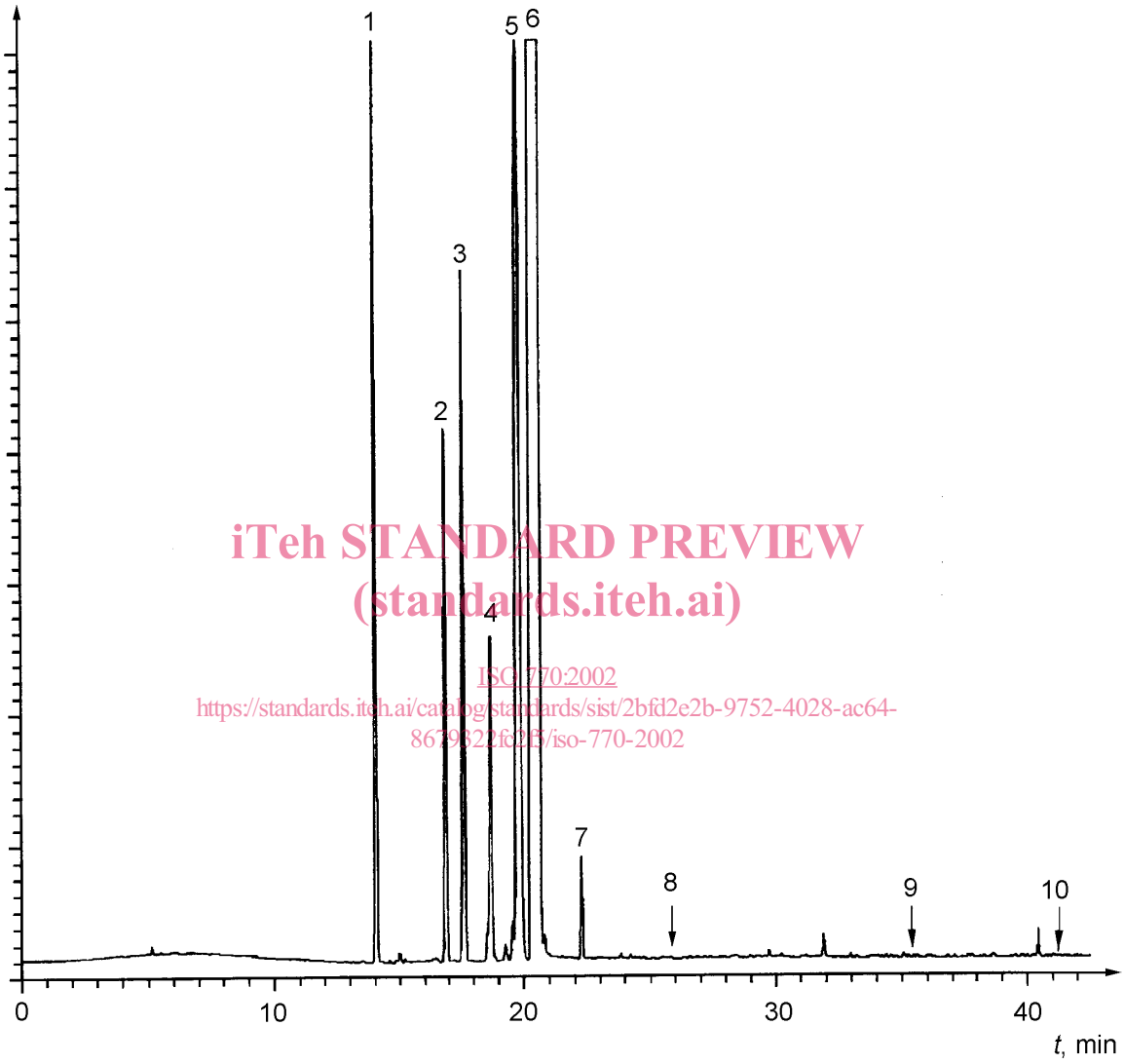
See ISO 11024-1 and ISO 11024-2.

7 Packaging, labelling, marking and storage

See ISO/TR 210 and ISO/TR 211.

Annex A
(informative)

Typical chromatograms of the analysis by gas chromatography of the rectified essential oil of Eucalyptus globulus (*Eucalyptus globulus* Labill.) 80 %



Peak identification

1 α-Pinene
2 β-Pinene
3 Myrcene
4 α-Phellandrene
5 *p*-Cymene
6 Limonene + 1,8-cineole
7 γ-Terpinene
8 *trans*-Pinocarveol
9 Aromadendrene
10 Globulol

Operating conditions

Column: capillary; length 60 m; internal diameter 0,25 mm
Stationary phase: poly(dimethyl siloxane) (SPB-1®)
Film thickness: 0,25 µm
Oven temperature: isothermal at 80 °C for 15 min, then temperature programming from 80 °C to 260 °C at a rate of 4 °C/min
Injector temperature: 250 °C
Detector temperature: 270 °C
Detector: flame ionization type
Carrier gas: nitrogen
Volume injected: 0,06 µl
Carrier gas flow rate: 1 ml/min
Split ratio: 1/80

Figure A.1 — Typical chromatogram taken on an apolar column