INTERNATIONAL STANDARD

ISO 11043

First edition
1998-10-01

Oil of basil, methyl chavicol type (*Ocimum basilicum* L.)

Huile essentielle de basilic, type méthylchavicol (Ocimum basilicum *L.*)

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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.

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

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International Standard ISO 11043 was prepared by Technical Committee ISO/TC 54, *Essential oils*.

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

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Oil of basil, methyl chavicol type (*Ocimum basilicum* L.)

1 Scope

This International Standard specifies certain characteristics of the oil of basil, methyl chavicol type[1)] (*Ocimum basilicum* L.), 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 210, *Essential oils — General rules for packaging, conditioning and storage.*

ISO 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.*

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3 Term and definition

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

3.1
oil of basil, methyl chavicol type
essential oil obtained by steam distillation of the leaves of *Ocimum basilicum* L., of the Lamiaceae family

4 Requirements

4.1 Appearance

Liquid.

4.2 Colour

Pale yellow to amber yellow.

1) Methyl chavicol content higher than 75 %.

4.3 Odour

Characteristic, spicy, slightly aniseed.

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

Minimum: 0,948

Maximum: 0,970

4.5 Refractive index at 20 °C

Minimum: 1,510 0

Maximum: 1,520 0

4.6 Optical rotation at 20 °C

Range from −1° to +2°.

4.7 Miscibility in 80 % ethanol (volume fraction) at 20 °C

1 volume of the oil shall not require more than 7 volumes of 80 % ethanol at 20 °C to give a clear solution.

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, indicated by the integrator, shall be as shown in Table 1. This constitutes the chromatographic profile of the essential oil.

4.9 Flashpoint

Information on the flashpoint is given in annex B.

5 Sampling

See ISO 212.

Minimum volume of final 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 80 % ethanol (volume fraction) at 20 °C

See ISO 875.

6.5 Chromatographic profile

See ISO 11024-1 and ISO 11024-2.

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7 Packaging, labelling, marking and storage

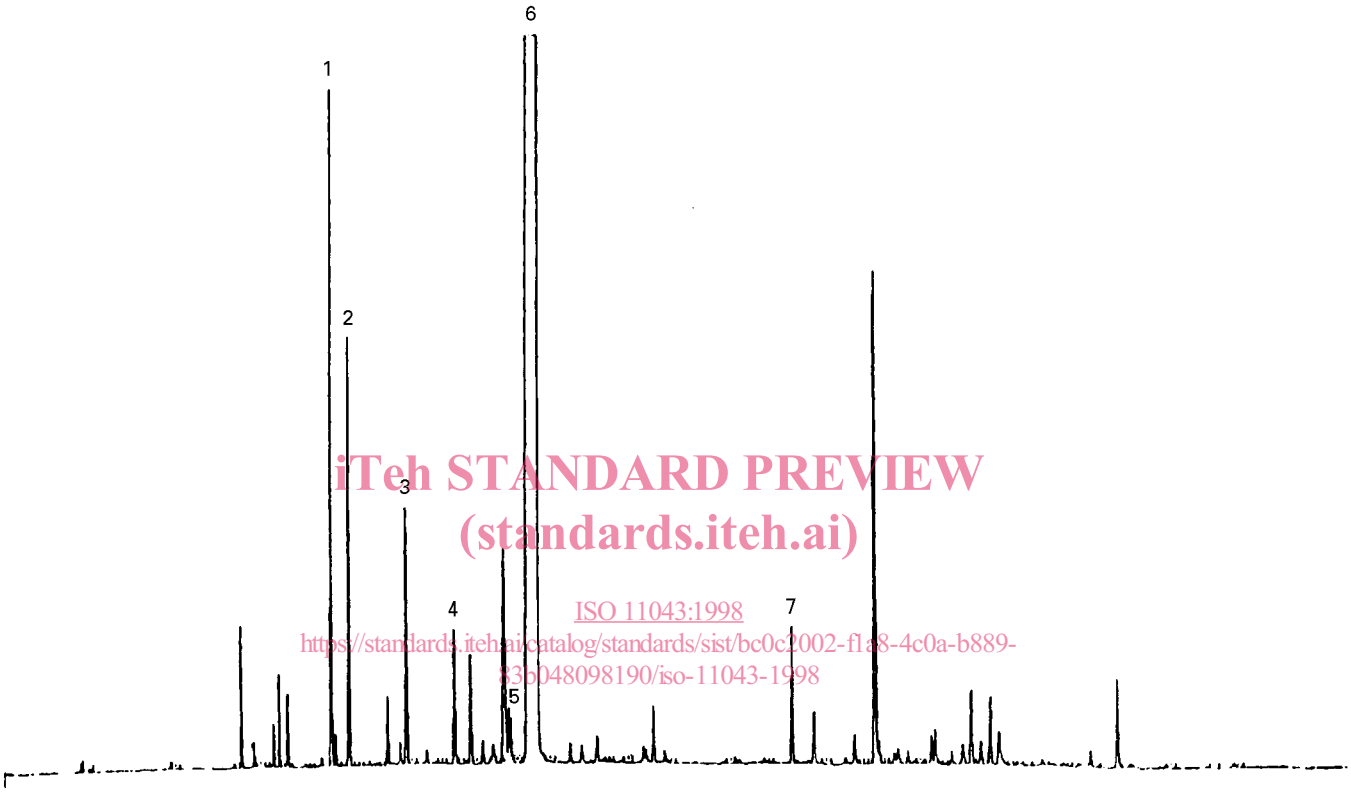
See ISO 210 and ISO 211.

Table 1 — Chromatographic profile

Component	Minimum %	Maximum %
1,8-Cineole	1	3,5
trans-Ocimene	0,9	2,8
Camphor	0,15	0,8
Linalol	0,5	3
Terpinen-4-ol	0,2	0,6
Methyl chavicol	75	87
Methyl eugenol	0,3	2,5
NOTE The chromatographic profile is normative, contrary to typical chromatograms given for information in annex A.		

Annex A
(informative)

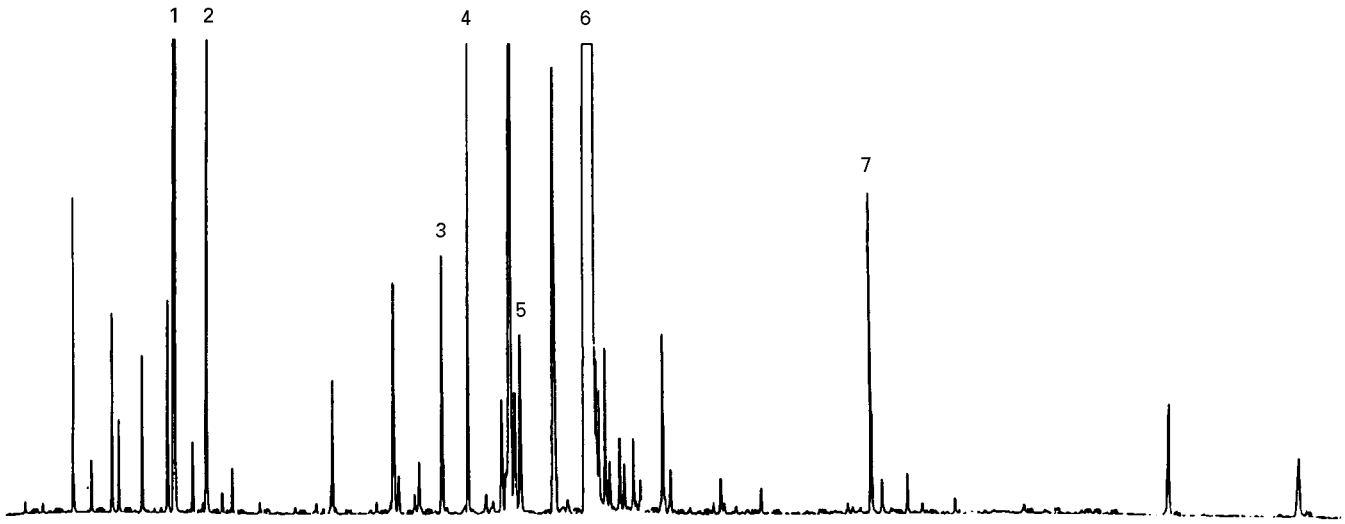
Typical chromatograms of the essential oil of basil, methyl chavicol type (*Ocimum basilicum* L.)



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Peak identification	**Operating conditions**
1 Limonene + 1,8-cineole	Column: capillary, fused silica, length 50 m, internal diameter 0,25 mm
2 *trans*-Ocimene	Film thickness: 0,25 µm
3 Linalol	Stationary phase: OV 101
4 Camphor	Oven temperature: programming temperature, 65 °C to 250 °C, at a rate of 2 °C/min
5 Terpinen-4-ol	Injector temperature: 250 °C
6 Methyl chavicol	Detector temperature: 250 °C
7 Methyl eugenol	Detector: flame ionization
	Carrier gas: nitrogen
	Volume injected: 0,20 µl
	Carrier gas flow rate: 2 ml/min

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



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Peak identification	Operating conditions
1 1,8-Cineole	Column: capillary, in fused silica, length 50 m, internal diameter 0,25 mm
2 *trans*-Ocimene	Film thickness: 0,25 µm
3 Camphor	Stationary phase: polyethylene glycol (Carbowax 20M)
4 Linalol	Oven temperature: programming temperature 65 °C to 230 °C at a rate of 2 °C/min, then at 230 °C for 10 min
5 Terpinen-4-ol	Injector temperature: 250 °C
6 Methyl chavicol	Detector temperature: 250 °C
7 Methyl eugenol	Detector: flame ionization
	Carrier gas: nitrogen
	Volume injected: 0,20 µl
	Carrier gas flow rate: 1,3 ml/min

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Figure A.2 — Typical chromatogram taken on a polar column

Annex B
(informative)

Flashpoint

B.1 General information

For reasons of safety, transport companies, insurance companies, people in charge of safety services, etc., require information on the flashpoints of essential oils, which in most cases are flammable products.

A comparative study on the relevant methods of analysis (see ISO/TR 11018[2]) concluded that it was hard to find a single method for standardization purposes, given that:

— essential oils are varied and their chemical compositions differ to a large extent;

— the volume of the sample needed for certain test equipment is incompatible with the high price of essential oils;

— there are different types of equipment that satisfy the desired objective, but users cannot be obliged to use one type of equipment rather than another.

Consequently, it was decided to give a mean value for the flashpoint in an informative annex in each International Standard, for information purposes, in order to meet the requirements of the interested parties.

If possible, the method by which this value was obtained should be specified.

For further information see ISO/TR 11018[2].

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B.2 Flashpoint of essential oil of basil, methyl chavicol type

The mean value is +75 °C.

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2) ISO/TR 11018, *Essential oils — General guidance on the determination of flashpoint.*

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ICS 71.100.60

Descriptors: oils, essential oils, basil, specifications, characteristics, chemical composition, chromatograms, tests, packaging, marking, labelling, storage.

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