INTERNATIONAL STANDARD

ISO 4719

Second edition
1999-12-01

Oil of spike lavender [*Lavandula latifolia* (L.f.) Medikus], Spanish type

*Huile essentielle d'aspic [*Lavandula latifolia *(L.f.) Medikus], type Espagne*

Reference number
ISO 4719:1999(E)

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.

International Standard ISO 4719 was prepared by Technical Committee ISO/TC 54, *Essential oils*.

This second edition cancels and replaces the first edition (ISO 4719:1983), which has been technically revised.

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

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Oil of spike lavender [*Lavandula latifolia* (L.f.) Medikus], Spanish type

1 Scope

This International Standard specifies certain characteristics of the oil of spike lavender [*Lavandula latifolia* (L.f.) Medikus], Spanish type, 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 709, *Essential oils — Determination of ester value.*

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

ISO 1242, *Essential oils — Determination of acid value.*

ISO 3794, *Essential oils (containing tertiary alcohols) — Estimation of free alcohols content by determination of ester value after acetylation.*

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 spike lavender
essential oil obtained by steam distillation of the flowering tops of *Lavandula latifolia* (L.f.) Medikus, of the Lamiaceae family, growing mainly in Spain

4 Requirements

4.1 Appearance

Clear mobile liquid.

4.2 Colour

Almost colourless to light orange yellow.

4.3 Odour

Characteristic, earthy, reminiscent of lavender, more or less camphoraceous.

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

Minimum: 0,894.
Maximum: 0,907.

4.5 Refractive index at 20 °C

Minimum: 1,461 0.
Maximum: 1,468 0.

4.6 Optical rotation at 20 °C

Between – 7° and + 2°.

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

It shall not be necessary to use more than 3 volumes of ethanol (70 % volume fraction) to obtain a clear solution with 1 volume of essential oil.

NOTE Sometimes opalescence is observed on dilution.

4.8 Acid value

Maximum: 1,0.

4.9 Ester value

Minimum: 3.
Maximum: 14.

4.10 Ester value after acetylation

Minimum: 130.
Maximum: 200.

4.11 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.

Table 1 — Chromatographic profile

Component	Minimum %	Maximum %
Limonene	0,5	3
1,8-Cineole	16	39
Camphor	8	16
Linalool	34	50
Linalyl acetate	traces	1,6
α-Terpineol	0,2	2
trans-α-Bisabolene	0,4	2,5
NOTE The chromatographic profile is normative, contrary to typical chromatograms given for information in annex A.		

4.12 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 Acid value

See ISO 1242.

6.6 Ester value

See ISO 709.

6.7 Ester value after acetylation

See ISO 3794.
Test portion: 2 g.
Acetylation time: 16 h.
Hydrolysis time: 1 h.

6.8 Chromatographic profile

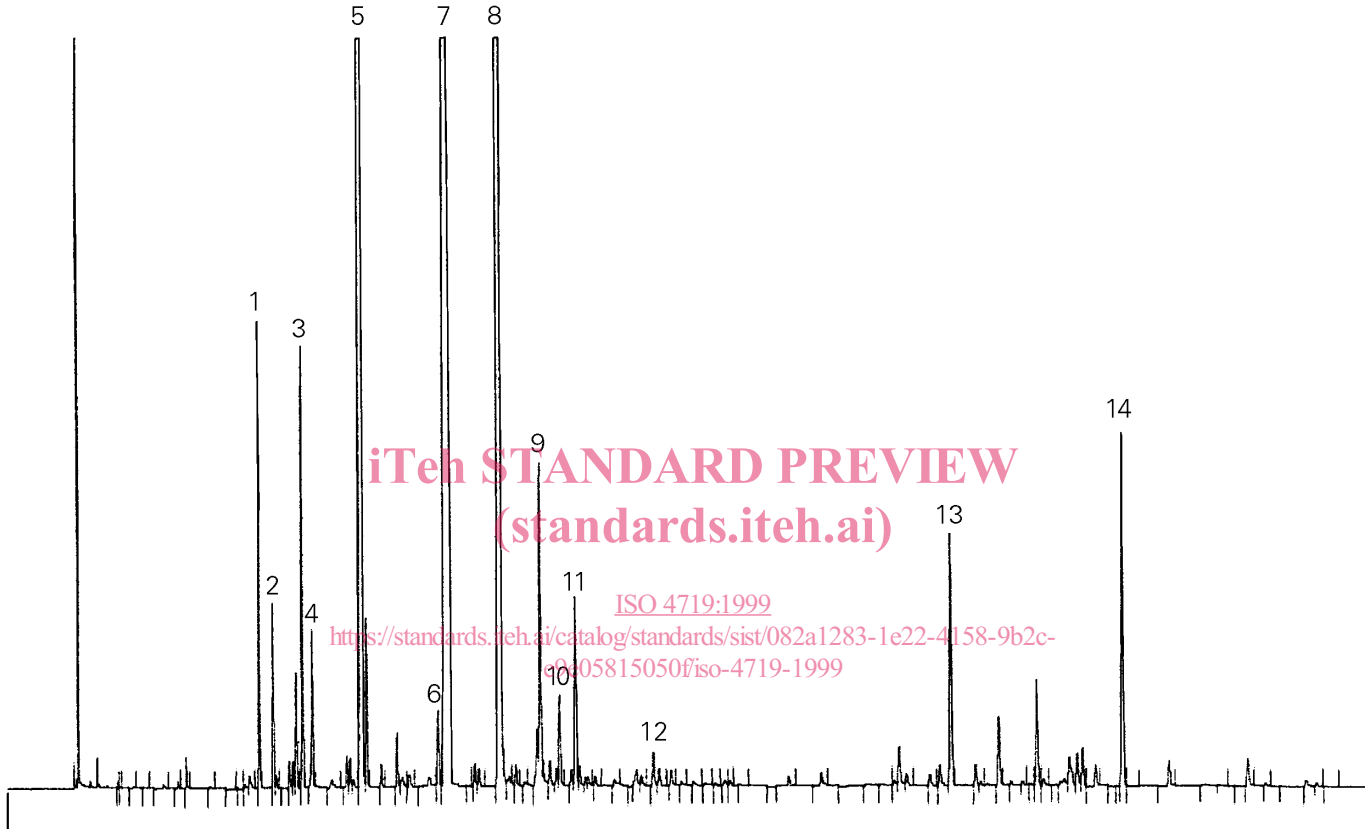
See ISO 11024-1 and ISO 11024-2.

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 essential oil of spike lavender [*Lavandula latifolia* (L.f.) Medikus], Spanish type



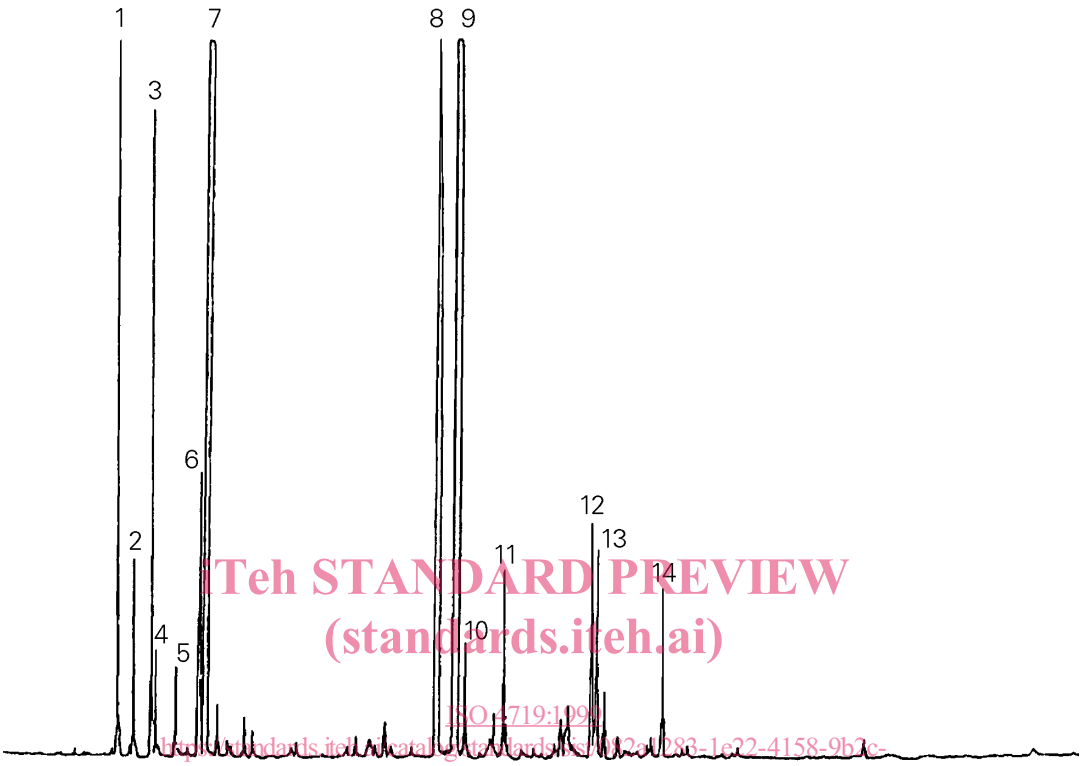
Peak identification

1 α-Pinene
2 Camphene
3 β-Pinene
4 Myrcene
5 Limonene + cineole
6 Terpinolene
7 Linalool
8 Camphor
9 Borneol
10 Terpinen-4-ol
11 α-Terpineol
12 Linalyl acetate
13 β-Caryophyllene
14 *trans*-α-Bisabolene

Operating conditions

Column: capillary, fused silica; length 60 m; internal diameter 0,3 mm
Thickness of film: 0,25 µm
Stationary phase: dimethyl polysiloxane DB-1
Oven temperature: programmed from 70 °C to 250 °C at a rate of 2 °C/min
Injector temperature: 250 °C
Detector temperature: 250 °C
Detector: flame ionization type
Carrier gas: helium
Volume injected: 0,2 µl
Carrier gas velocity: 18 cm/s
Split ratio: 1/80

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



Peak identification

1 α-Pinene
2 Camphene
3 β-Pinene
4 Sabinene
5 Myrcene
6 Limonene
7 1,8-Cineole
8 Camphor
9 Linalool
10 Linalyl acetate
11 β-Caryophyllene
12 α-Terpineol
13 Borneol
14 *trans*-α-Bisabolene

Operating conditions

Column: capillary, fused silica; length 60 m; internal diameter 0,30 mm
Thickness of film: 0,5 µm
Stationary phase: polyethyleneglycol (Carbowax 20 M)
Oven temperature: programmed from 70 °C to 200 °C at 2 °C/min; holding for 1 min, then from 125 °C to 250 °C at 2 °C/min, then final holding stage of 10 min
Injector temperature: 250 °C
Detector temperature: 250 °C
Detector: flame ionization type
Carrier gas: helium
Volume injected: 0,2 µl
Carrier gas flow rate: 1 ml/min
Split ratio: 1/50

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 flashpoint of essential oils, which in most cases are flammable products.

A comparative study on the relevant methods of analysis (see ISO/TR 11018[1)]) 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[1)].

B.2 Flashpoint of the essential oil of spike lavender, Spanish type

The mean value is + 60 °C

NOTE Obtained with "Setaflash" equipment.

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