

INTERNATIONAL STANDARD

ISO 14716

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Oil of galbanum (*Ferula galbaniflua* Boiss. et Buhse)

Huile essentielle de galbanum (Ferula galbaniflua Boiss. et Buhse)



Reference number
ISO 14716:1998(E)

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 14716 was prepared by Technical Committee ISO/TC 54, *Essential oils*.

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

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Oil of galbanum (*Ferula galbaniflua* Boiss. et Buhse)

1 Scope

This International Standard specifies certain characteristics of the oil of galbanum (*Ferula galbaniflua* Boiss. et Buhse) 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 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 1242, *Essential oils — Determination of acid value*.

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

essential oil of galbanum

essential oil obtained by steam distillation of the gum of *Ferula galbaniflua* Boiss. et Buhse, of the Apiaceae family

4 Requirements

4.1 Appearance

Liquid.

4.2 Colour

Colourless to light yellow.

4.3 Odour

Turpentine-like, balsamic, with a characteristic green note.

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

Minimum: 0,867 0

Maximum: 0,890 0

4.5 Refractive index at 20 °C

Minimum: 1,478 0

Maximum: 1,485 0

4.6 Optical rotation at 20 °C

Between +7° and +17°.

4.7 Acid value

Less than or equal to 2.

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 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 Acid value

See ISO 1242.

Test sample: 1 g.

6.5 Chromatographic profile

See ISO 11024-1 and ISO 11024-2.

7 Packaging, labelling, marking and storage

See ISO 210 and ISO 211.

The essential oil should be kept in a cool dry place, in hermetically sealed and preferably full containers. Keep away from light.

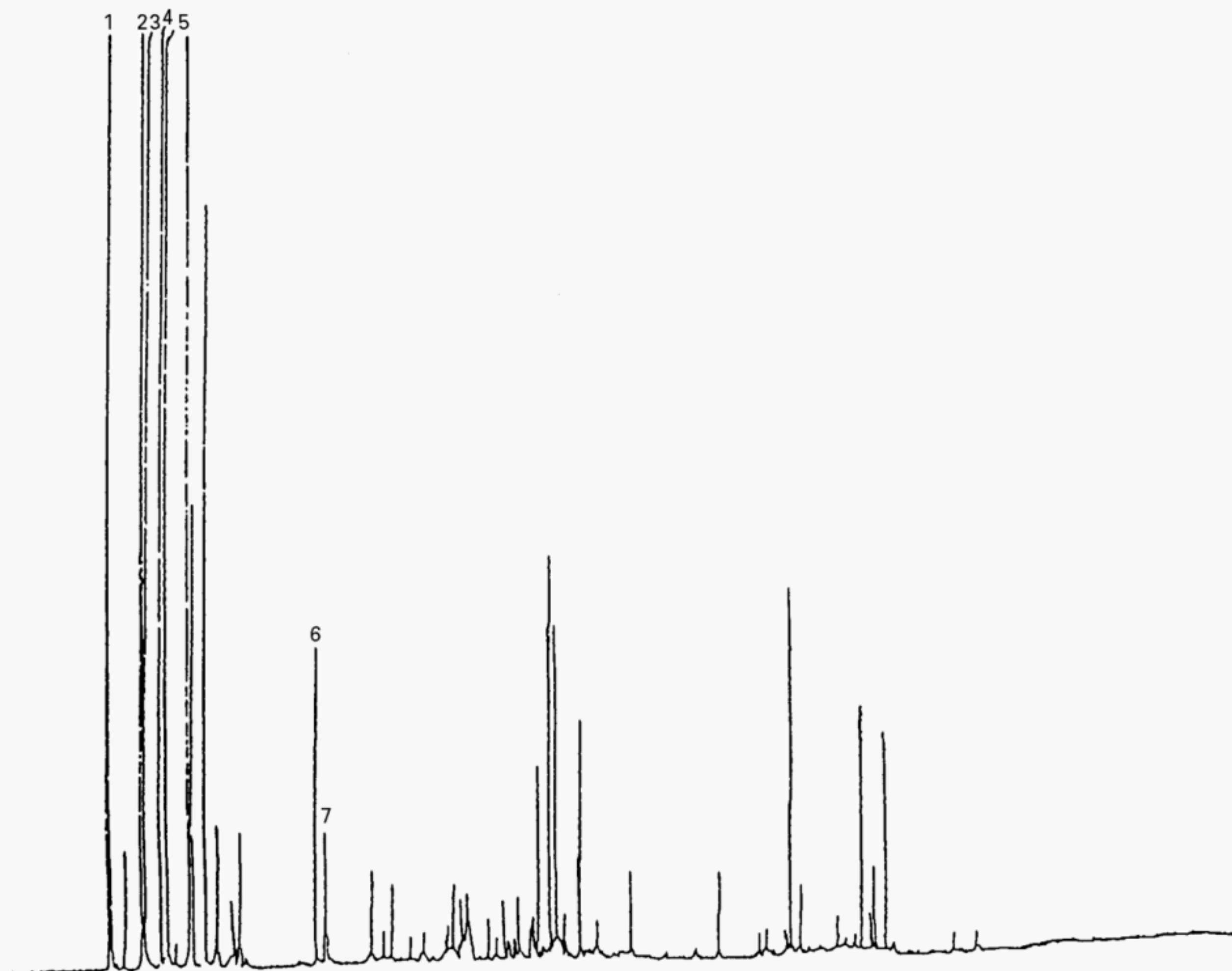
Table 1 — Chromatographic profile

| Component | Minimum % | Maximum % |
|--|--------------|--------------|
| α -Pinene | 5 | 21 |
| β -Pinene | 40 | 70 |
| Sabinene | 0,3 | 3 |
| δ -3-Carene | 2 | 16 |
| Myrcene | 2,5 | 3,5 |
| <i>trans-cis</i> -1,3,5-Undecatriene | 0,4 | 2 |
| Ratio of <i>trans-cis</i> -1,3,5-undecatriene to <i>trans-trans</i> -1,3,5-undecatriene | 2,0 to 5,5 | |
| NOTE The chromatographic profile is normative, contrary to typical chromatograms given for information in annex A. | | |

Annex A

(informative)

Typical chromatogram of the analysis by gas chromatography of the essential oil of galbanum (*Ferula galbaniflua* Boiss. et Buhse)



Peak identification

- 1 α -Pinene
- 2 β -Pinene
- 3 Sabinene
- 4 δ -3-Carene
- 5 Myrcene
- 6 *trans-cis*-1,3,5-Undecatriene
- 7 *trans-trans*-1,3,5-Undecatriene

Operating conditions

Column: capillary; fused silica; length 60 m; internal diameter 0,25 mm
Stationary phase: polyethylene glycol bonded (Supelcowax 10)
Film thickness: 0,25 μ m
Oven temperature: temperature programming from 60 °C to 230 °C at 2 °C/min
Injector temperature: 230 °C
Detector temperature: 250 °C
Detector: flame ionization type
Carrier gas: hydrogen
Volume injected: 0,2 μ l
Split ratio: 1/150

Figure A.1 — Typical chromatogram

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 11018¹⁾) 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 11018¹⁾.

B.2 Flashpoint of the essential oil of galbanum

The mean value is +43 °C.

NOTE Obtained with "Luchaire" equipment.

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

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

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