INTERNATIONAL STANDARD

ISO 14717

Second edition
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Oil of origanum, Spanish type [*Coridothymus capitatus* (L.) Rchb.f.]

Huile essentielle d'origanum, type Espagne [Coridothymus capitatus *(L.) Rchb. f.*]

Reference number
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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.org
Web www.iso.org

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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 2.

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 document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 14717 was prepared by Technical Committee ISO/TC 54, *Essential oils*.

This second edition cancels and replaces the first edition (ISO 14717:1999), which has been technically revised.

Oil of origanum, Spanish type [*Coridothymus capitatus* (L.) Rchb.f.]

1 Scope

This International Standard specifies certain characteristics of the essential oil of origanum, Spanish type [*Coridothymus capitatus* (L.) Rchb. f.], with a view to facilitating the assessment of its quality.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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 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 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
essential oil of origanum, Spanish type
essential oil obtained by steam distillation of the flowering tops of *Coridothymus capitatus* (L.) Rchb. f., of the Lamiaceae family, growing mainly in Spain

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

4 Requirements

4.1 Appearance

Clear mobile liquid.

4.2 Colour

Yellow to dark brown, almost black.

4.3 Odour

Characteristic, aromatic, phenolic, with a slightly spicy base.

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

Minimum: 0,930.

Maximum: 0,955.

4.5 Refractive index at 20 °C

Minimum: 1,500.

Maximum: 1,513.

4.6 Optical rotation at 20 °C

Between −5° and +2°.

NOTE This value is difficult to measure when the oil is dark coloured.

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

It shall not be necessary to use more than 4 volumes of 70 % (volume fraction) ethanol to obtain a clear solution with 1 volume of essential oil.

NOTE Sometimes opalescence can appear.

4.8 Acid value

Maximum: 2,0.

4.9 Chromatographic profile

Analysis of the essential oil shall be carried out by gas chromatography. In the chromatogram obtained, the representative and characteristic components listed 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 %
α-Thujene	0,5	2,0
α-Pinene	0,5	2,0
Myrcene	1,0	3,0
α-Terpinene	0,5	2,5
γ-Terpinene	3,5	10,0
p-Cymene	5,5	9,0
Linalool	0,5	3,0
Terpinen-4-ol	0,5	2,0
Thymol	traces	5,0
Carvacrol	60,0	75,0
β-Caryophyllene	2,0	5,0
NOTE The chromatographic profile is normative, contrary to typical chromatograms given for information in Annex A.		

4.10 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 is sufficient for 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 with 70 % (volume fraction) ethanol at 20 °C

See ISO 875.

6.5 Acid value

See ISO 1242.

6.6 Chromatographic profile

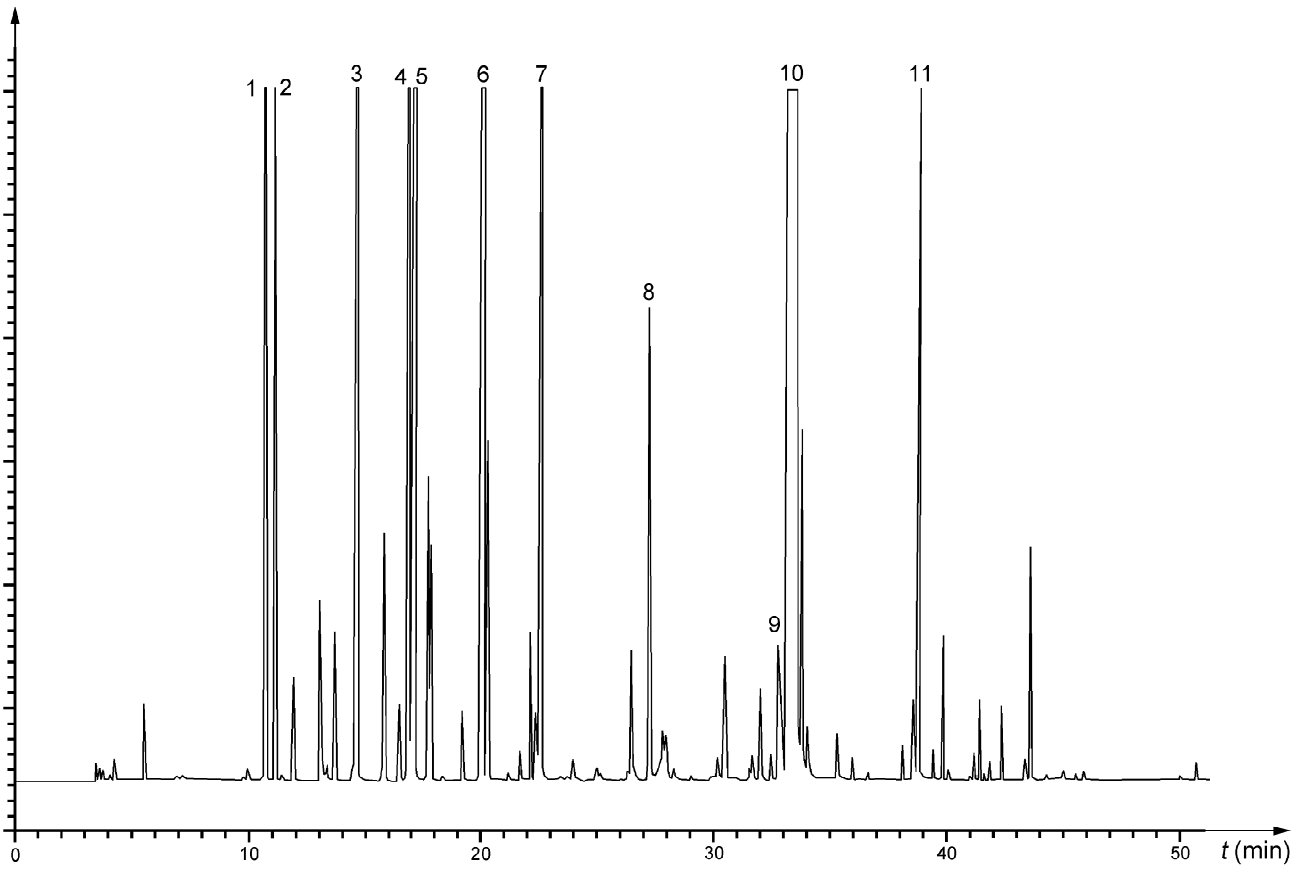
See ISO 11024-1 and ISO 11024-2.

7 Packaging, labelling, marking, and storage

See ISO/TR 210 and ISO/TR 211.

Annex A
(informative)

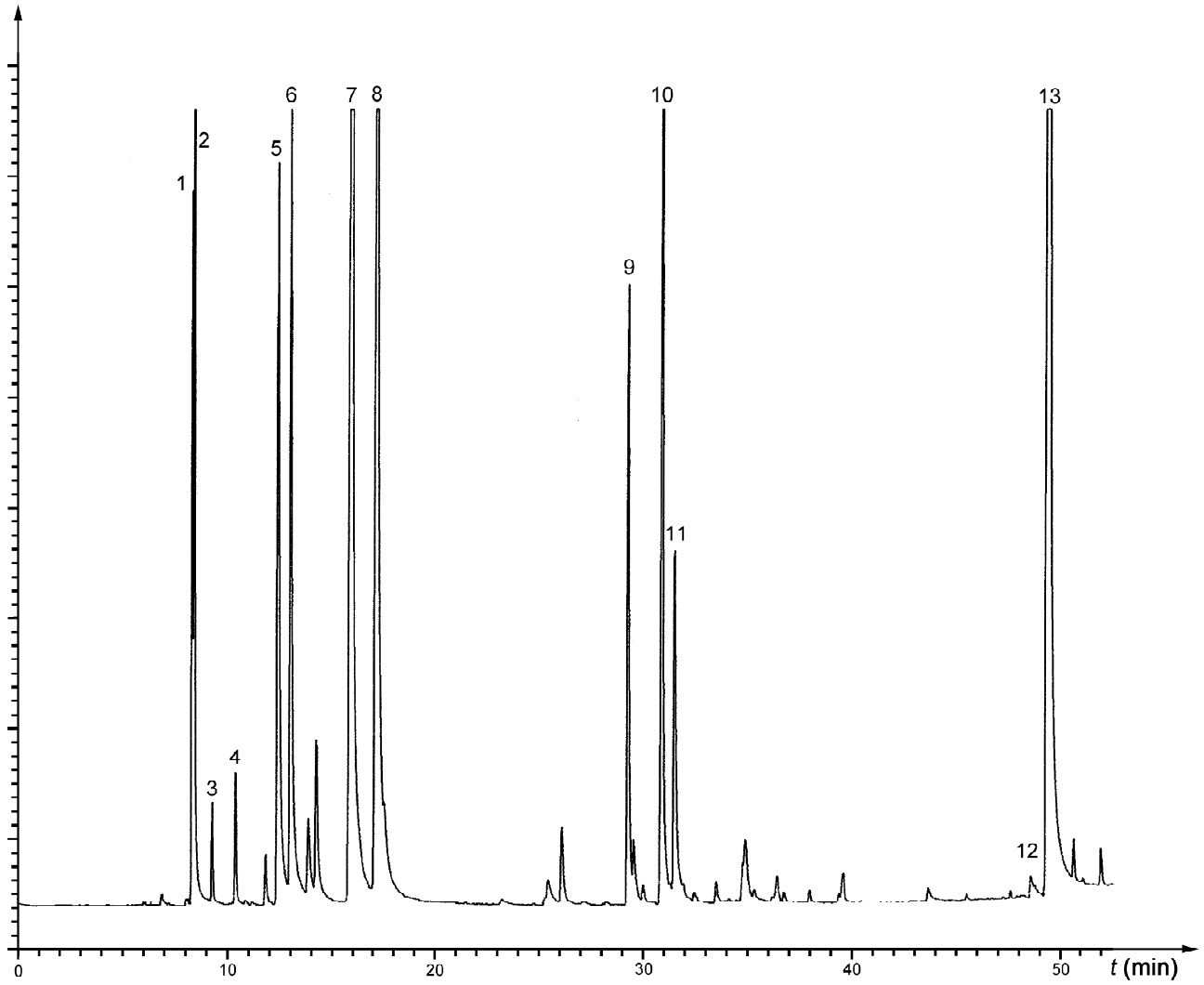
Typical chromatograms of the analysis by gas chromatography of the essential oil of origanum, Spanish type [*Coridothymus capitatus* (L.) Rchb. f.]



Peak identification		Operating conditions
1	α-Thujene	Column: fused silica capillary; length 60 m; internal diameter 250 µm
2	α-Pinene	Stationary phase: poly(methylsiloxane) [DB-1][1)]
3	Myrcene	Film thickness: 0,25 µm
4	α-Terpinene	Oven temperature: maintained at 75 °C for 15 min, then a programmed increase
5	*p*-Cymene	from 75 °C to 140 °C at a rate of 4 °C/min then a programmed increase from
6	γ-Terpinene	140 °C to 240 °C at a rate of 5 °C/min
7	Linalool	Injector temperature: 250 °C
8	Terpinen-4-ol	Detector temperature: 270 °C
9	Thymol	Detector: flame ionization type
10	Carvacrol	Carrier gas: helium
11	β-Caryophyllene	Volume injected: 0,05 µl
		Carrier gas flow rate: 1 ml/min
		Split ratio: 1/80

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

1) DB-1 is an example of a suitable product available commercially. This information is given for the convenience of users of this International Standard and does not constitute an endorsement by ISO of this product. Equivalent products may be used if they can be shown to lead to the same results.



Peak identification		Operating conditions
1	α-Thujene	Column: fused silica capillary; length 60 m; internal diameter 250 µm
2	α-Pinene	Stationary phase: poly(ethylene glycol) [Supelcowax-10][2)]
3	Camphene	Film thickness: 0,25 µm
4	Sabinene	Oven temperature: a programmed increase from 50 °C to 80 °C at a rate of 2 °C/min then a programmed increase from 80 °C to 230 °C at a rate of 4 °C/min
5	Myrcene	
6	α-Terpinene	Injector temperature: 250 °C
7	γ-Terpinene	Detector temperature: 250 °C
8	*p*-Cymene	Detector: flame ionization type
9	Linalool	Carrier gas: helium
10	β-Caryophyllene	Volume injected: 0,08 µl
11	Terpinen-4-ol	Carrier gas flow rate: 1 ml/min
12	Thymol	Split ratio: 1/80
13	Carvacrol	

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

2) Supelcowax-10 is an example of a suitable product available commercially. This information is given for the convenience of users of this International Standard and does not constitute an endorsement by ISO of this product. Equivalent products may be used if they can be shown to lead to the same results.

Annex B
(informative)

Flashpoint

B.1 General information

For safety reasons, transport companies, insurance companies, and people in charge of safety services 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[1]) concluded that it was difficult to recommend a single apparatus for standardization purposes, given that:

— there is a wide variation in the chemical composition of essential oils;

— the volume of the sample needed for certain requirements would be too costly for highly priced essential oils;

— as there are several different types of equipment which can be used for the determination, users cannot be expected to use one specified type only.

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

The equipment with which this value was obtained has to be specified.

For further information see ISO/TR 11018[1].

B.2 Flashpoint of the essential oil of origanum, Spanish type [*Coridothymus capitatus* (L.) Rchb. f.]

The mean value is +65 °C.

NOTE Obtained with "Setaflash"[3] equipment.

3) Equipment available commercially. This information is given for the convenience of users of this International Standard and does not constitute an endorsement by ISO of this product.

Bibliography

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

[2] ISO/TR 21092, *Essential oils — Characterization*

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