

# INTERNATIONAL STANDARD

# ISO 14717

First edition  
1999-10-01

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## Oil of origanum, Spanish type [*Thymbra capitata* (L.) Cav.]

*Huile essentielle d'origanum, type Espagne [Thymbra capitata (L.) Cav.]*

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ISO 14717:1999

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Reference number  
ISO 14717:1999(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 14717 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 origanum, Spanish type [*Thymbra capitata* (L.) Cav.]

## 1 Scope

This International Standard specifies certain characteristics of the oil of origanum, Spanish type [*Thymbra capitata* (L.) Cav.], 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 origanum, Spanish type

essential oil obtained by steam distillation of the flowering tops of *Thymbra capitata* (L.) Cav., of the Lamiaceae family, growing mainly in Spain

## 4 Requirements

### 4.1 Appearance

Clear, mobile liquid.

### 4.2 Colour

Yellowish to dark brown, almost black.

### 4.3 Odour

Characteristic, aromatic, phenolic, spicy.

### 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 0

Maximum: 1,513 0

### 4.6 Optical rotation at 20 °C

Between  $-5^{\circ}$  and  $+2^{\circ}$ .

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

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

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

NOTE Sometimes opalescence is observed on dilution.

**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.

**Table 1 — Chromatographic profile**

Component	Minimum %	Maximum %
α-Thujene	0,5	2
α-Pinene	0,5	1,5
Myrcene	1	3
α-Terpinene	0,5	2,5
γ-Terpinene	3,5	8,5
p-Cymene	5,5	9
Linalool	0,5	3
Terpinen-4-ol	0,5	2
Thymol	0	5
Carvacrol	60	75
β-Caryophyllene	2	5

NOTE The chromatographic profile is normative, contrary to typical chromatograms 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**

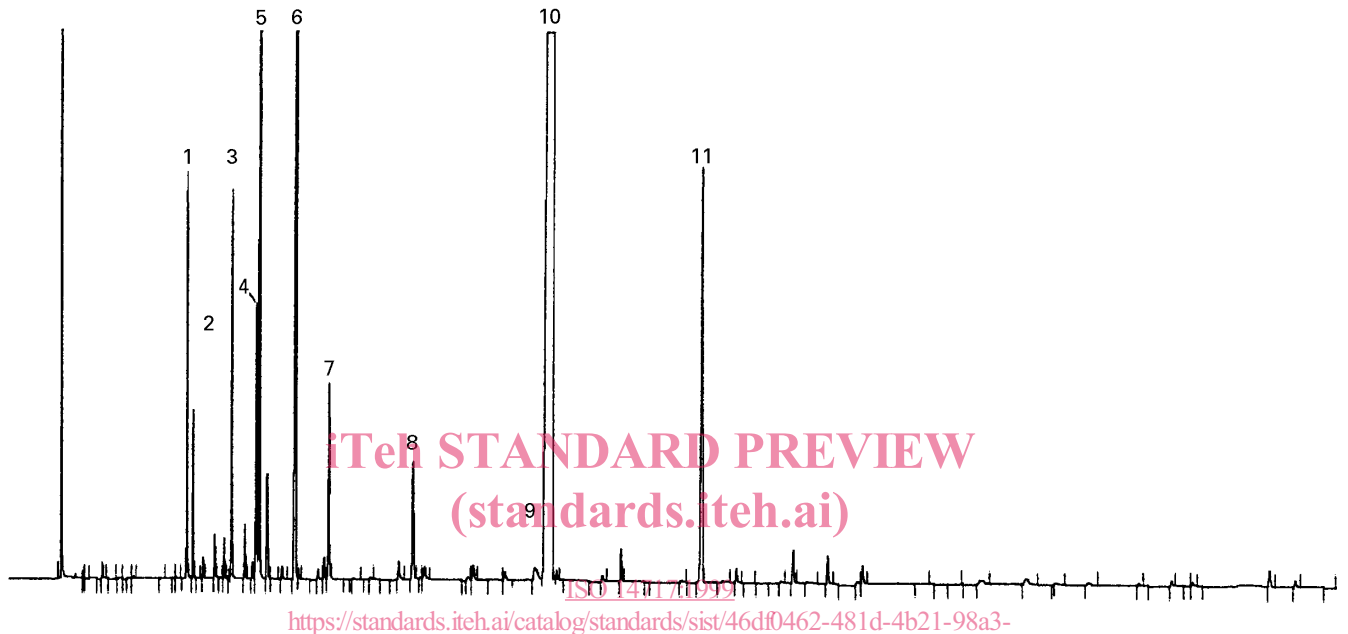
See ISO 11024-1 and ISO 11024-2.

**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 oil of origanum, Spanish type [*Thymbra capitata* (L.) Cav.]



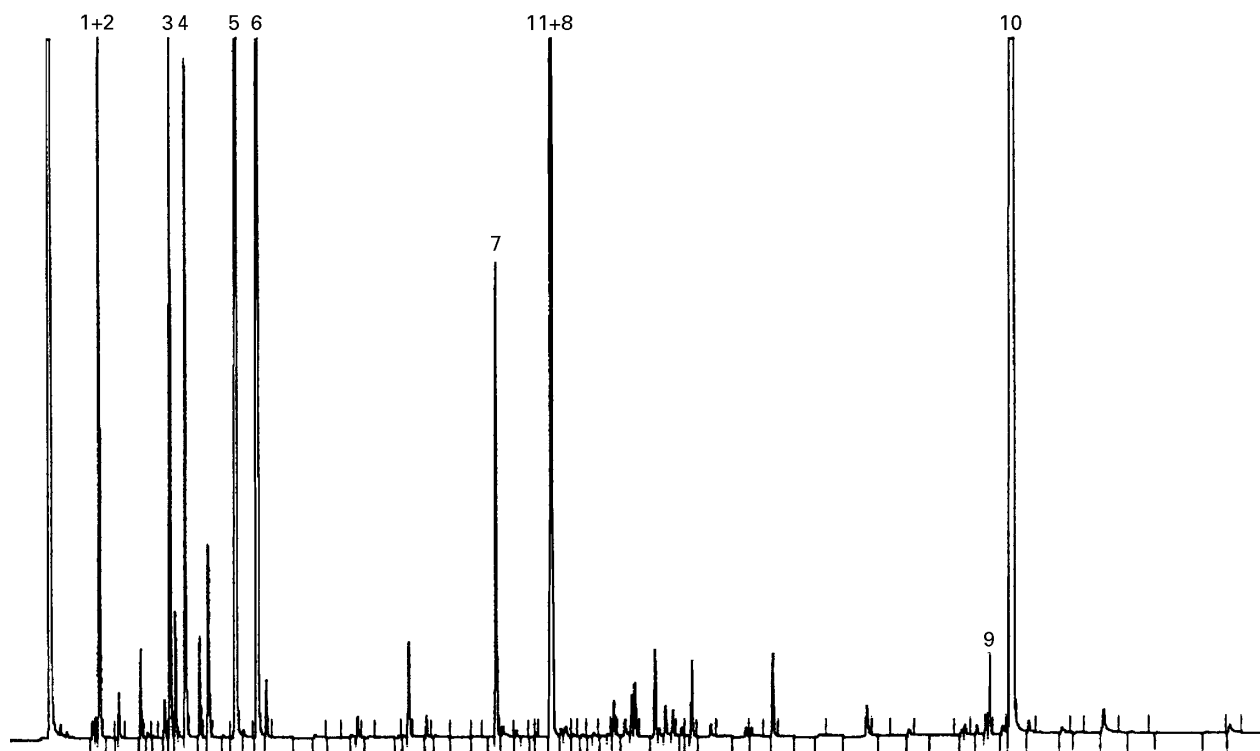
#### Peak identification

- |    |                        |
|----|------------------------|
| 1  | $\alpha$ -Thujene      |
| 2  | $\alpha$ -Pinene       |
| 3  | Myrcene                |
| 4  | $\alpha$ -Terpinene    |
| 5  | $p$ -Cymene            |
| 6  | $\gamma$ -Terpinene    |
| 7  | Linalool               |
| 8  | Terpinen-4-ol          |
| 9  | Thymol                 |
| 10 | Carvacrol              |
| 11 | $\beta$ -Caryophyllene |

#### Operating conditions

Column: fused silica capillary; length 30 m; internal diameter 0,25 mm  
 Stationary phase: polydimethylsiloxane  
 Film thickness: 0,25  $\mu$ m  
 Oven temperature: temperature programming from 70 °C to 220 °C at 3 °C/min  
 Injector temperature: 250 °C  
 Detector temperature: 250 °C  
 Detector: flame ionization type  
 Carrier gas: helium  
 Volume injected: 0,2  $\mu$ l  
 Linear velocity of carrier gas: 0,20 m/s approx.

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

**Peak identification**

1	$\alpha$ -Thujene
2	$\alpha$ -Pinene
3	Myrcene
4	$\alpha$ -Terpinene
5	$\gamma$ -Terpinene
6	<i>p</i> -Cymene
7	Linalool
8	Terpinen-4-ol
9	Thymol
10	Carvacrol
11	$\beta$ -Caryophyllene

**Operating conditions**

Column: fused silica capillary; length 30 m; internal diameter 0,25 mm  
 Stationary phase: polyethyleneglycol 20 000  
 Film thickness: 0,25  $\mu$ m  
 Oven temperature: temperature programming from 70 °C to 220 °C at 3 °C/min  
 Injector temperature: 250 °C  
 Detector temperature: 250 °C  
 Detector: flame ionization type  
 Carrier gas: helium  
 Volume injected: 0,2  $\mu$ l  
 Linear velocity of carrier gas: 0,20 m/s approx.  
 Split ratio: 1/100

**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<sup>1)</sup>) 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<sup>1)</sup>.

#### B.2 Flashpoint of the essential oil of origanum, Spanish type [*Thymbra capitata* (L.) Cav.]

The mean value is +65 °C

NOTE Obtained with "Setaflash" equipment.

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

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