DRAFT INTERNATIONAL STANDARD

ISO/DIS 13171

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Essential oil of oregano (Origanum vulgare L. ssp. hirtum)

Huile essentielle d'origan, (Origanum vulgare L. ssp. hirtum)

ICS: 71.100.60

Reference number
ISO/DIS 13171:2015(E)

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ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

Essential oil of oregano [*Origanum vulgare* L. subsp. *hirtum* (Link) letsw]

1 Scope

This International Standard specifies certain characteristics of the essential oil of oregano [*Origanum vulgare* L. subsp. *hirtum* (Link) letsw], with a view to facilitate 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/TS 210, *Essential oils — General rules for packaging, conditioning and storage*

ISO/TS 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 (all parts), *Essential oils — General guidance on chromatographic profiles*

3 Terms and definitions

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

3.1
essential oil of oregano
essential oil obtained by steam distillation of the flowering tops of *Origanum vulgare* L. subsp. *hirtum* (Link) letsw, of the Lamiaceae family, growing mainly in Germany, Netherlands and Hungary

NOTE For information on CAS number, see ISO/TR 21092[3].

4 Requirements

4.1 Appearance

Clear, mobile liquid.

4.2 Colour

Yellow to dark brownish red.

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°.

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

It shall not be necessary to use more than 2 volumes of ethanol, 80 % (volume fraction), to obtain a clear solution with 1 volume of essential oil.

Sometimes opalescence can arise on continuing the addition of ethanol.

4.8 Chromatographic profile

Carry out the analysis of the essential oil by gas chromatography. Identify in the chromatogram obtained, the representative and characteristic components shown in Table 1. 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	0,2	1,5
α-Pinene	0,2	2,5
Myrcene	0,5	3,0
α-Terpinene	0,5	2,0
p-Cymene	4,0	10,0
γ-Terpinene	3,0	9,0
Linalool	traces	3,0
Terpinene-4-ol	0,5	2,0
Thymol	0,5	5,0
Carvacrol	60,0	80,0
β-Caryophyllene	0,5	4,0
NOTE The chromatographic profile is normative, contrary to typical chromatograms given for information in Annex A.		

5 Additional information

5.1 Flash point

Information on the flash point is given in Annex B.

6 Sampling

Sampling shall be performed in accordance with 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.

7 Test methods

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

Determine the relative density in accordance with ISO 279.

7.2 Refractive index at 20 °C

Determine the refractive index in accordance with ISO 280.

7.3 Optical rotation at 20 °C

Determine the optical rotation in accordance with ISO 592.

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

Determine the miscibility in ethanol in accordance with ISO 875.

7.5 Chromatographic profile

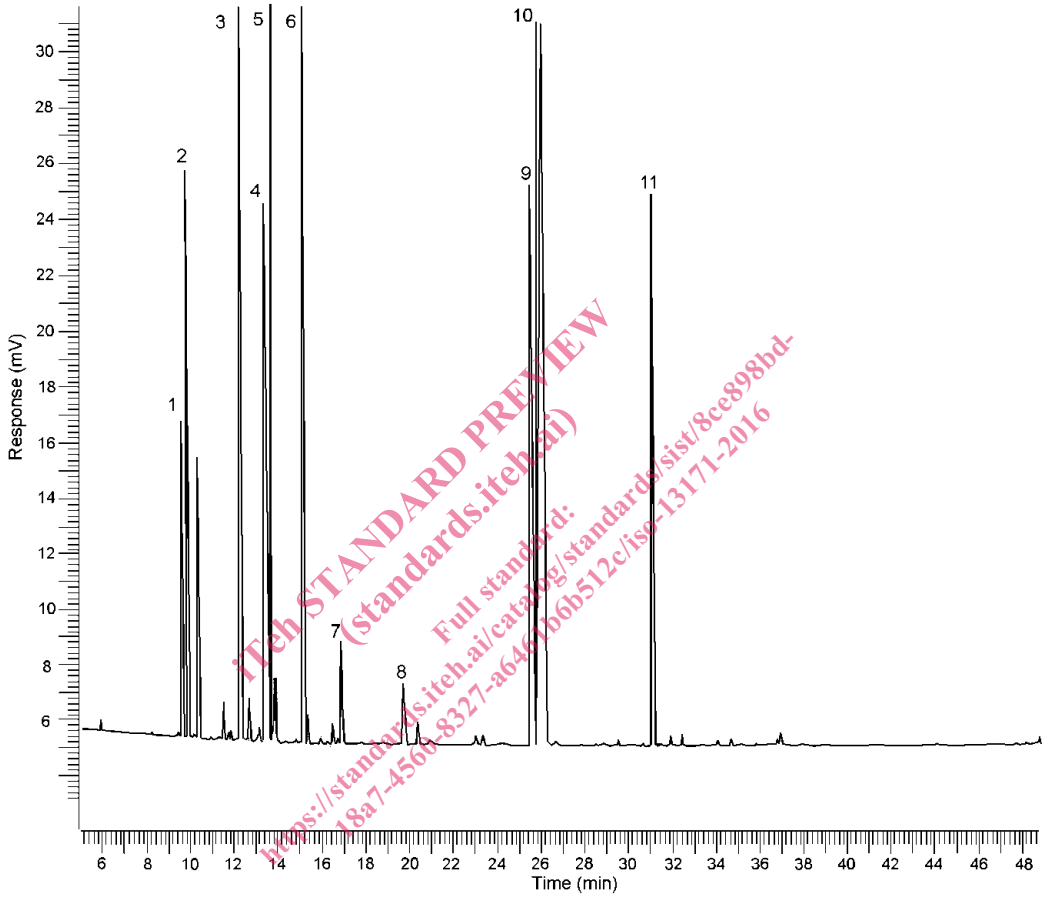
Determine the chromatographic profile in accordance with ISO 11024.

7.6 Packaging, labelling, marking and storage

These items shall be in accordance with ISO/TS 210 and ISO/TS 211.

Annex A
(informative)

Typical chromatograms of the analysis by gas chromatography of the essential oil of oregano [*Origanum vulgare* L. subsp. *hirtum* (Link) letsw]



Peak identification

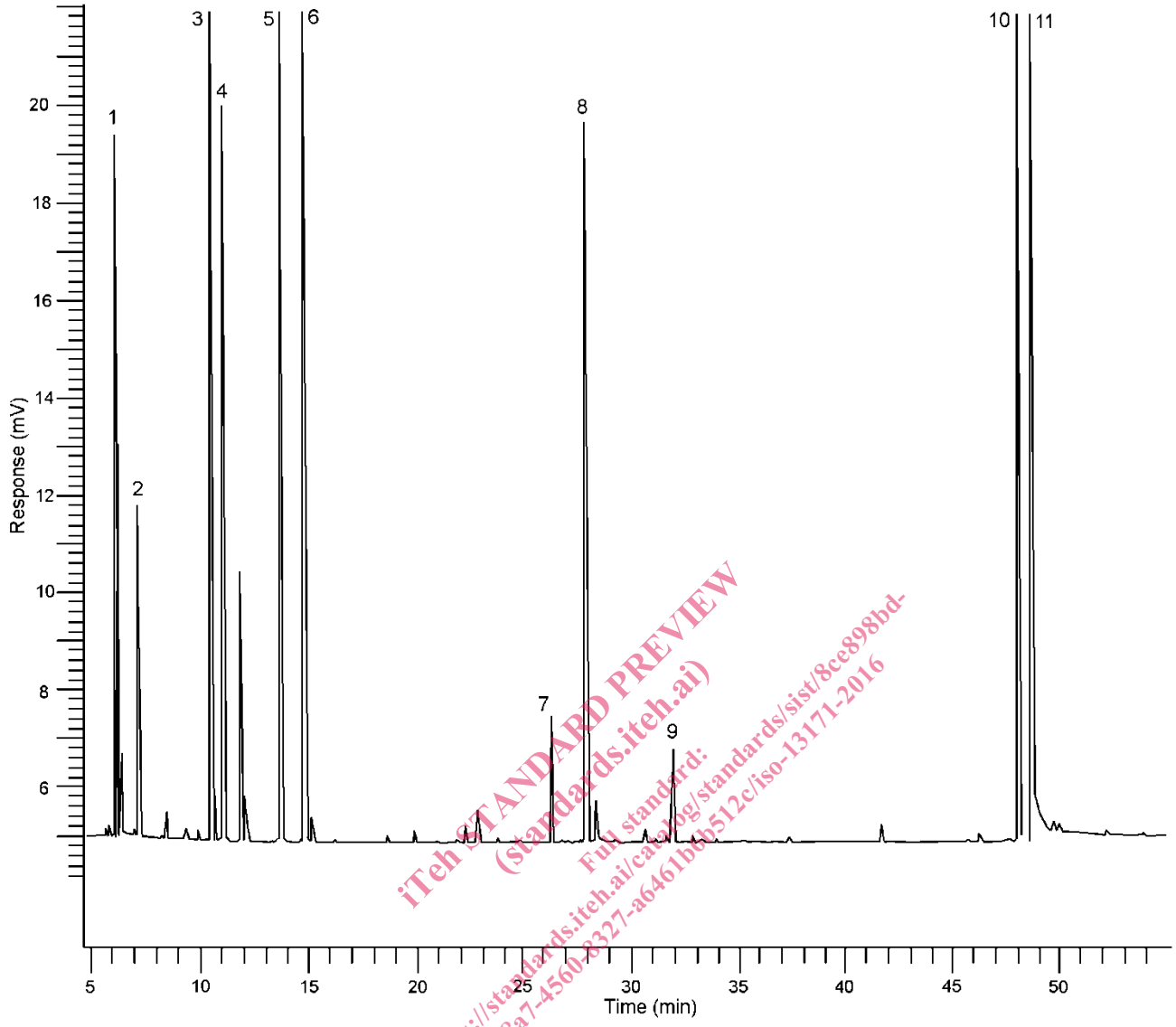
1	α-Thujene
2	α-Pinene
3	Myrcene
4	α-Terpinene
5	*p*-Cymene
6	γ-Terpinene
7	Linalool
8	Terpinene-4-ol
9	Thymol
10	Carvacrol
11	*β*-Caryophyllene

Operating conditions

Column: fused capillary silica, 30 m length, 0,25 mm internal diameter
Stationary phase: SPB™ –1 (SE-30) [a]
Film thickness: 0,25 µm
Oven temperature: programming temperature from 50 °C to 180 °C at a rate of 3 °C/min and 180 °C to 220 °C at a rate of 10 °C/min
Injector temperature: 260 °C
Detector temperature: 280 °C
Detector: flame ionization type
Carrier gas: helium
Volume injected: 1 µl
Carrier gas flow rate: 1 mL/min
Split ratio: 1/50

[a] SPB™ –1 (SE-30) is an example of a suitable product available commercially. This information is given for the convenience of users of this document and does not constitute an endorsement by ISO of this product.

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



Peak identification		Operating conditions
1	α-Pinene	Column: fused capillary silica, 30 m length, 0,25 mm internal diameter
2	α-Thujene	Stationary phase: Supelco Wax TM –10[a]
3	Myrcene	Film thickness: 0,25 µm
4	α-Terpinene	Oven temperature: programming temperature from 50 °C to 180 °C at a rate of 3 °C/min and 180 °C to 220 °C at a rate of 10 °C/min
5	*p*-Cymene	Injector temperature: 260 °C
6	γ–Terpinene	Detector temperature: 280 °C
7	Linalool	Detector: flame ionization type
8	*β*-Caryophyllene	Carrier gas: helium
9	Terpinene-4-ol	Volume injected: 1 µl
10	Thymol	Carrier gas flow rate: 1 mL/min
11	Carvacrol	Split ratio: 1/50

[a] Supelco Wax TM –10 is an example of a suitable product available commercially. This information is given for the convenience of users of this document and does not constitute an endorsement by ISO of this product.

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

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 flash points 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 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 in certain requirements would be too costly for high 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 annexed to each International Standard, for information, in order to meet the requirements of the interested parties.

The equipment with which this value was obtained has to be specified. For further information see ISO/TR 11018[2].

B.2 Flashpoint of the essential oil of oregano [*Origanum vulgare* L. subsp. *hirtum* (Link) letsw]

The mean value is + 65 °C.

NOTE Obtained with "closed cup"[1)] equipment.

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