INTERNATIONAL STANDARD

**ISO 9841**

Second edition
2007-08-01

# Oil of hyssop (*Hyssopus officinalis* L. ssp. *officinalis*)

*Huile essentielle d'hysope (*Hyssopus officinalis *L. ssp.* officinalis*)*



Reference number
ISO 9841:2007(E)



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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 9841 was prepared by Technical Committee ISO/TC 54, *Essential oils*.

This second edition cancels and replaces the first edition (ISO 9841:1991), which has been technically revised.

# Oil of hyssop (*Hyssopus officinalis* L. ssp. *officinalis*)

## 1 Scope

This International Standard specifies certain characteristics of essential oil of hyssop (*Hyssopus officinalis* L. ssp. *officinalis*), 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 degrees Celsius — 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 1242, *Essential oils — Determination of the 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 hyssop**
oil obtained by steam distillation of the leaves of *Hyssopus officinalis* L. ssp. *officinalis* of the Lamiaceae family

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

## 4 Requirements



### 4.1 Appearance

Clear, mobile liquid.

### 4.2 Colour

Pale yellow to brown yellow.

### 4.3 Odour

Characteristic.

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

Minimum: 0,920

Maximum: 0,950

### 4.5 Refractive index at 20 °C

Minimum: 1,475

Maximum: 1,486

### 4.6 Optical rotation at 20 °C

Between −25° and −10°.

### 4.7 Acid value

Less than or equal to 2,0.

### 4.8 Ester value

Minimum: 5

Maximum: 36

### 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 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**

| Components | Minimum % | Maximum % |
|---|---|---|
| α-Pinene | 0,4 | 1,5 |
| β-Pinene | 7,0 | 20,0 |
| Sabinene | 1,0 | 3,5 |
| Limonene | 0,6 | 4,0 |
| Myrtenyl methyl ether | 0,9 | 3,0 |
| Pinocamphone | 8,0 | 25 |
| *iso*-Pinocamphone | 25,0 | 45,0 |
| β-Bourbonene | 0,8 | 2,6 |
| β-Caryophyllene | 1,0 | 3,0 |
| *allo*-Aromadendrene | 1,0 | 3,0 |
| Germacrene D | 1,2 | 4,5 |
| Elemol | 0,2 | 2,5 |
| Spathulenol | 0,1 | 1,5 |
| 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: 50 ml.

NOTE This volume is sufficient to carry out all the tests specified in this International Standard 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.

### 6.5 Ester value

See ISO 709.

### 6.6 Chromatographic profile

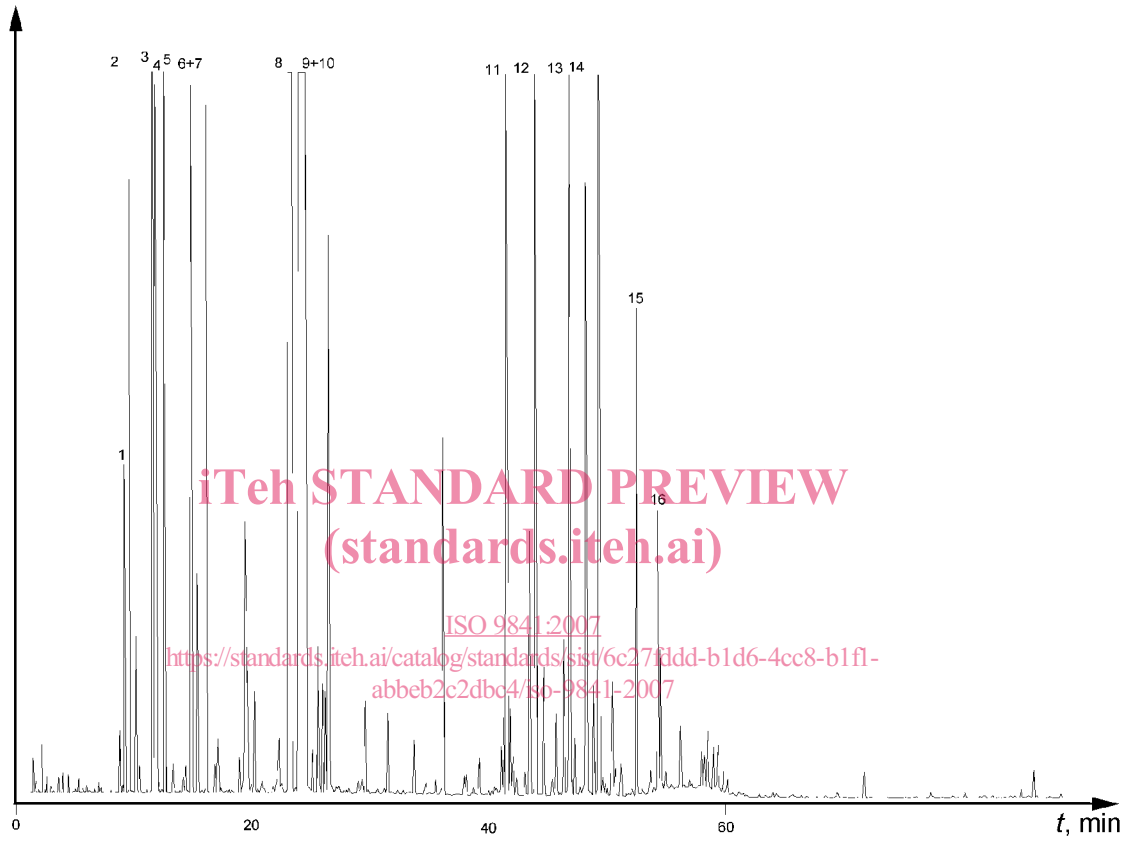
See ISO 11024-1 and ISO 11024-2.

## 7 Packaging, labelling, marking and storage

See ISO/TR 210 and ISO/TR 211.

# Annex A
(informative)

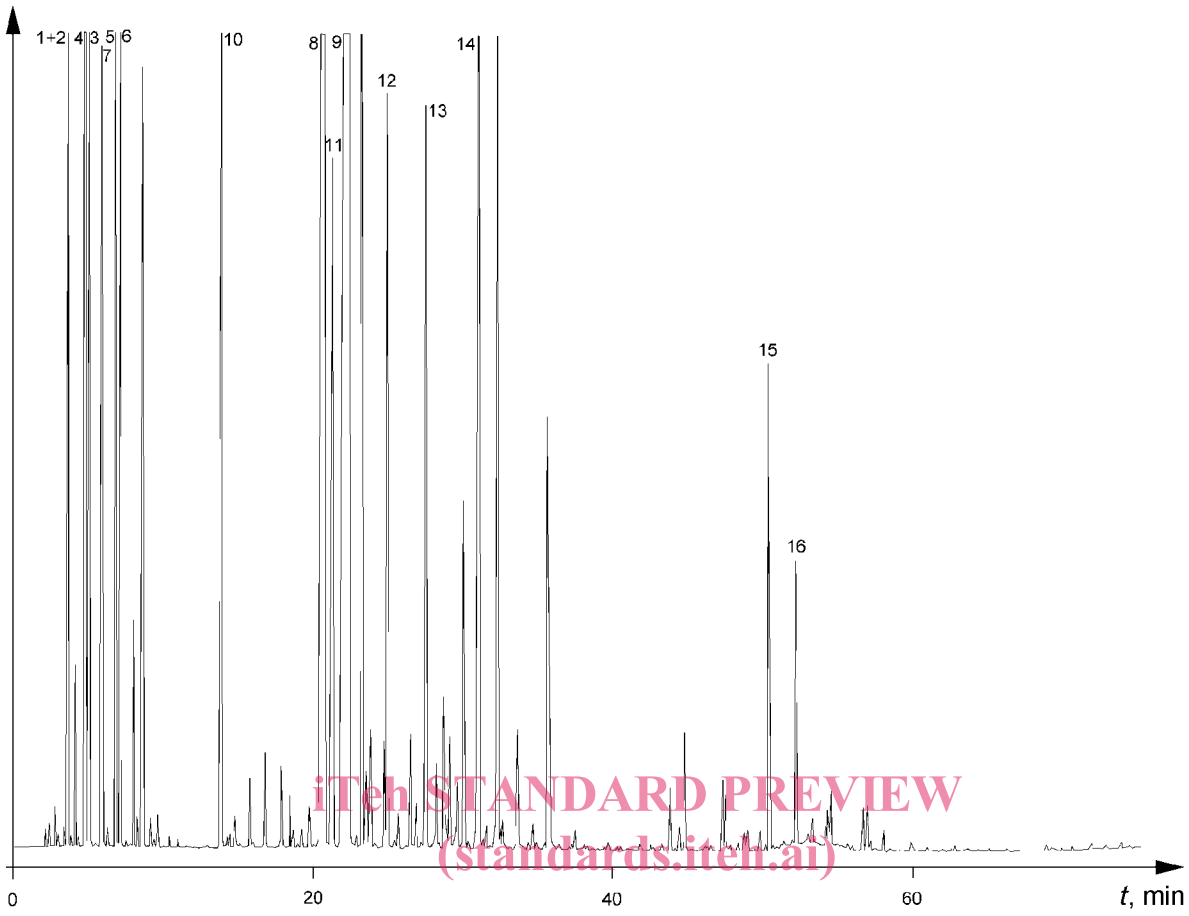
## Typical chromatograms of the analysis by gas chromatography of the essential oil of hyssop (*Hyssopus officinalis* L. ssp. *officinalis*)






| Peak identification | | Operating conditions |
|---|---|---|
| 1 | α-Thujene | Column: silica capillary; length 50 m; internal diameter 0,2 mm |
| 2 | α-Pinene | Stationary phase: poly(dimethyl siloxane) |
| 3 | Sabinene | Film thickness: 0,25 µm |
| 4 | β-Pinene | Oven temperature: 65 °C to 230 °C, at a rate of 2 °C/min |
| 5 | Myrcene | Injector temperature: 230 °C |
| 6 | 1,8-Cineole + β-phellandrene | Detector temperature: 250 °C |
| 7 | Limonene | Detector: flame ionization type |
| 8 | Pinocamphone | Carrier gas: hydrogen |
| 9 | *iso*-Pinocamphone | Volume injected: 0,2 µl |
| 10 | Myrtenyl methyl ether | Carrier gas flow rate: 1,1 ml/min |
| 11 | β-Bourbonene | Split ratio: 1/100 |
| 12 | β-Caryophyllene | |
| 13 | *allo*-Aromadendrene | |
| 14 | Germacrene D | |
| 15 | Elemol | |
| 16 | Spathulenol | |

**Figure A.1 — Typical chromatogram of oil of hyssop taken on an apolar column**






**Peak identification**

1 α-Thujene
2 α-Pinene
3 β-Pinene
4 Sabinene
5 Limonene
6 Myrcene
7 1,8-Cineole + β-phellandrene
8 Myrtenyl methyl ether
9 Pinocamphone
10 β-Bourbonene
11 *iso*-Pinocamphone
12 β-Caryophyllene
13 *allo*-Aromadendrene
14 Germacrene D
15 Elemol
16 Spathulenol

**Operating conditions**

Column: silica capillary; length 50 m; internal diameter 0,2 mm
Stationary phase: polyethylene glycol (Carbowax 20 M®)
Film thickness: 0,25 µm
Oven temperature: 65 °C to 230 °C, at a rate of 2 °C/min
Injector temperature: 230 °C
Detector temperature: 250 °C
Detector: flame ionization type
Carrier gas: hydrogen
Volume injected: 0,2 µl
Carrier gas flow rate: 1,1 ml/min
Split ratio: 1/100

**Figure A.2 — Typical chromatogram of oil of hyssop 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) 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.

## B.2 Flashpoint of the essential oil of hyssop (*Hyssopus officinalis* L. ssp. *officinalis*)

The mean value is +59 °C.

NOTE Obtained with “Luchaire” equipment.