

# INTERNATIONAL STANDARD

**ISO**  
**9843**

Second edition  
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## **Oil of cedarwood, Chinese type (*Cupressus funeris* Endlicher)**

*Huile essentielle de bois de cèdre, type Chine (Cupressus funebris  
Endlicher)*

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Reference number  
ISO 9843:2002(E)

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Tel. + 41 22 749 01 11  
Fax + 41 22 749 09 47  
E-mail [copyright@iso.ch](mailto:copyright@iso.ch)  
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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 3.

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

ISO 9843 was prepared by Technical Committee ISO/TC 54, *Essential oils*.

This second edition cancels and replaces the first edition (ISO 9843:1991), which has been technically revised.

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

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# Oil of cedarwood, Chinese type (*Cupressus funebris* Endlicher)

## 1 Scope

This International Standard specifies certain characteristics of the oil of cedarwood, Chinese type (*Cupressus funebris* Endlicher), 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 terms and definitions apply.

### 3.1

#### oil of cedarwood, Chinese type

essential oil obtained by steam distillation of the wood of *Cupressus funebris* Endlicher, of the Cupressaceae family

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

## 4 Requirements

### 4.1 Appearance

Clear, mobile liquid.

### 4.2 Colour

Almost colourless to light yellow.

### 4.3 Odour

Characteristic, woody and sharp.

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

Minimum: 0,938

Maximum: 0,960

### 4.5 Refractive index at 20 °C

Minimum: 1,500 0

Maximum: 1,508 0

**4.6 Optical rotation at 20 °C**

Between -35° and -20°.

**4.7 Miscibility in ethanol 95 % (volume fraction) at 20 °C**

It shall not be necessary to use more than 5 volumes of ethanol 95 % (volume fraction) at 20 °C to obtain a clear solution with 1 volume of essential oil.

**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-Cedrene + β-funebrene	13	29
β-Cedrene	4	11
Thujopsene	18	39
Cuparene	1	3
Cedrol	10	20
Widdrol	0,5	3

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 95 % (volume fraction) at 20 °C**

See ISO 875.

**6.5 Chromatographic profile**

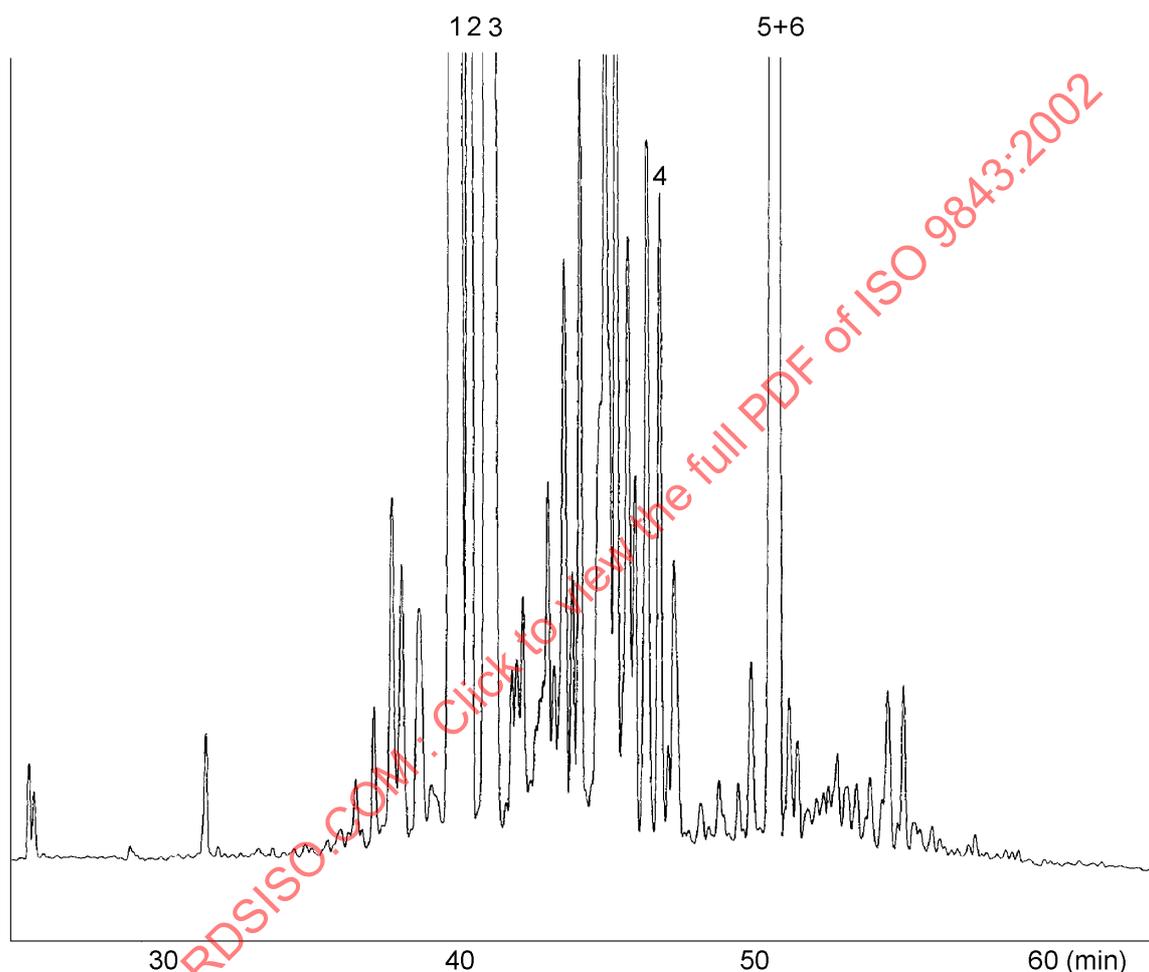
See ISO 11024-1 and ISO 11024-2.

**7 Packaging, labelling, marking and storage**

See ISO/TR 210 and ISO/TR 211.

## Annex A (informative)

### Typical chromatographs of the analysis by gas chromatography of the essential oil of cedarwood, Chinese type (*Cupressus funebris* Endlicher)



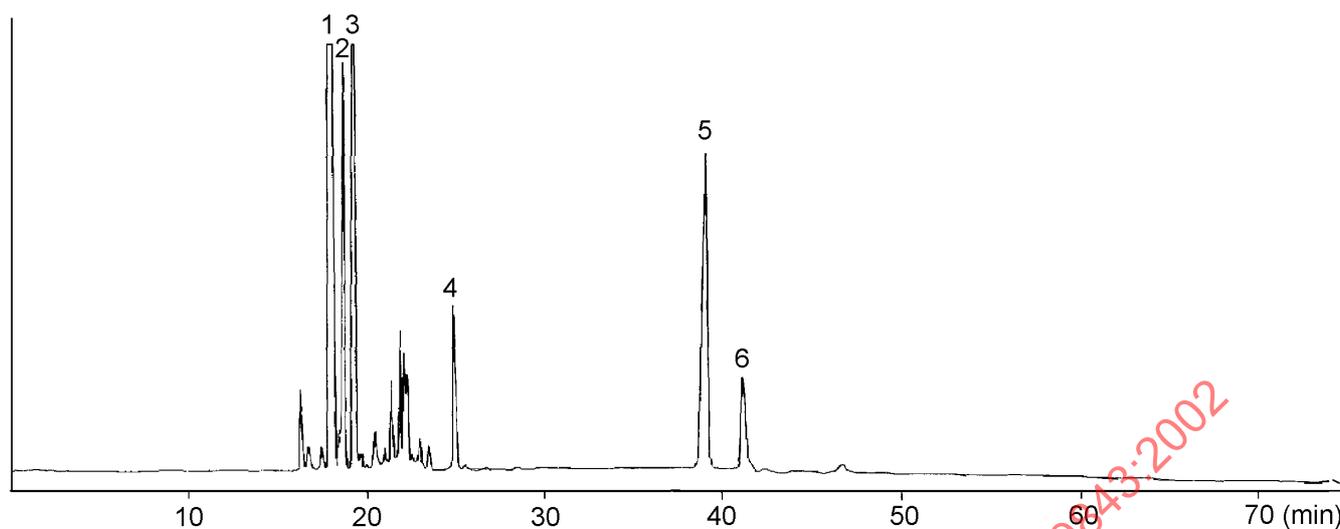
#### Peak identification

- |       |  |
|-------|--|
| 1     | $\alpha$ -Cedrene + $\beta$ -funebrene |
| 2     | $\beta$ -Cedrene                       |
| 3     | Thujopsene                             |
| 4     | Cuparene                               |
| 5 + 6 | Cedrol + widdrol                       |

#### Operating conditions

Column: silica capillary; length 30 m; internal diameter 0,32 mm  
 Stationary phase: 5 % phenyl methyl siloxane  
 Film thickness: 0,25  $\mu$ m  
 Oven temperature: isothermal at 70 °C for 10 min, then temperature programming from 70 °C to 220 °C at a rate of 2 °C/min, and isothermal at 220 °C for 20 min  
 Injector temperature: 250 °C  
 Detector temperature: 250 °C  
 Detector: flame ionization type  
 Carrier gas: nitrogen  
 Volume injected: 0,2  $\mu$ l  
 Carrier gas flow rate: 1,36 ml/min  
 Split ratio: 1/50

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



**Peak identification**

- 1  $\alpha$ -Cedrene +  $\beta$ -funebrene
- 2  $\beta$ -Cedrene
- 3 Thujopsene
- 4 Cuparene
- 5 Cedrol
- 6 Widdrol

**Operating conditions**

Column: capillary; length 50 m; internal diameter 0,24 mm  
 Stationary phase: polyethylene glycol 20 000 (Carbowax 20 M®)  
 Film thickness: 0,25  $\mu$ m  
 Oven temperature: temperature programming from 100 °C to 180 °C, at a rate of 4 °C/min  
 Injector temperature: 200 °C  
 Detector temperature: 200 °C  
 Detector: flame ionization type  
 Carrier gas: nitrogen  
 Carrier gas flowrate: 1 ml/min  
 Volume injected: 0,2  $\mu$ l  
 Split ratio: 1/100

**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 flashpoints 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 wide variation in the chemical composition of essential oils;
- the volume of the sample needed for 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 in an informative annex to each International Standard, for information, in order to meet the requirements of the interested parties.

The equipment with which this value was obtained should be specified.

For further information see ISO/TR 11018.

#### B.2 Flashpoint of oil of cedarwood, Chinese type (*Cupressus funebris* Endlicher)

The mean value is greater than +100 °C.

NOTE Value obtained with "Luchoire" equipment.