
**Essential oil of cypress (*Cupressus
sempervirens* L.)**

Huile essentielle de cyprès (Cupressus sempervirens L.)





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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

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

Essential oil of cypress (*Cupressus sempervirens* L.)

1 Scope

This document specifies certain characteristics of the essential oil of cypress (*Cupressus sempervirens* L.) in order to facilitate assessment of its quality.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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*

ISO 18321, *Essential oils — Determination of peroxide value*

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at <https://www.iso.org/obp>

— IEC Electropedia: available at <http://www.electropedia.org/>

3.1

essential oil of cypress

essential oil obtained by steam distillation of branches and leaves of *Cupressus sempervirens* L.

Note 1 to entry: For information on CAS number, see ISO/TR 21092.

4 Requirements

4.1 Essential oil of cypress (*Cupressus sempervirens* L.) shall meet the requirements as given in Table 1.

Table 1 — Requirements for the essential oil of cypress (*Cupressus sempervirens* L.)

Characteristics	Requirements	ISO test method
Appearance	Clear mobile liquid	—
Colour	Pale yellow to yellow	—
Odour	Characteristic, terpenic, fresh, sweet	—
Relative density at 20 °C, d_{20}^{20}	0,863 to 0,885	ISO 279
Refractive index at 20 °C	1,468 to 1,478	ISO 280
Optical rotation	Between +15° and +30°	ISO 592
Peroxide value	0 mmol/l to 20 mmol/l	ISO 18321
Miscibility in ethanol 90 % (volume fraction), at 20 °C	It shall not be necessary to use more than eight volumes of ethanol 90% (volume fraction) to obtain a limpid solution with one volume of essential oil. A slight opalescence is sometimes observed.	ISO 875
Miscibility in ethanol 95 % (volume fraction), at 20 °C	It should not be necessary to use more than two volumes of ethanol 95% (volume fraction) to obtain a limpid solution with one volume of essential oil. A slight opalescence is sometimes observed.	ISO 875

4.2 Chromatographic profile

Carry out the analysis of the essential oil by gas chromatography. Determine the chromatographic profile in accordance with ISO 11024 (all parts). In the chromatogram obtained, identify the representative and characteristic components shown in Table 2. The proportions of these components, indicated by the integrator, shall be as shown in Table 2. This constitutes the chromatographic profile of the essential oil.

Table 2 — Chromatographic profile

Components	Spanish type		French type	
	Min. %	Max. %	Min. %	Max. %
α -Pinene	40,0	60,0	40,0	65,0
α -Thujene	0,5	2,0	0,2	1,2
α -Fenchene	0,5	2,0	0,3	1,2
β -Pinene	0,5	3,0	0,5	3,0
Sabinene	0,5	2,0	0,4	2,6
δ -3-Carene	16,0	27,0	12,0	25,0
Myrcene	1,0	3,5	1,0	3,5
Limonene	2,0	5,0	1,8	5,0
Terpinen-4-ol	0,5	2,0	0,2	2,0

NOTE The chromatographic profile is normative, contrary to typical chromatograms given for information in Annex A.

Table 2 (continued)

Components	Spanish type		French type	
	Min. %	Max. %	Min. %	Max. %
α -Pinene	40,0	60,0	40,0	65,0
α -Terpinyl acetate	1,0	4,0	1,0	4,5
Germacrene-D	0,2	1,0	0,5	4,0
Cedrol	0,5	3,0	0,8	7,0

NOTE The chromatographic profile is normative, contrary to typical chromatograms given for information in Annex A.

5 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 is 50 ml.

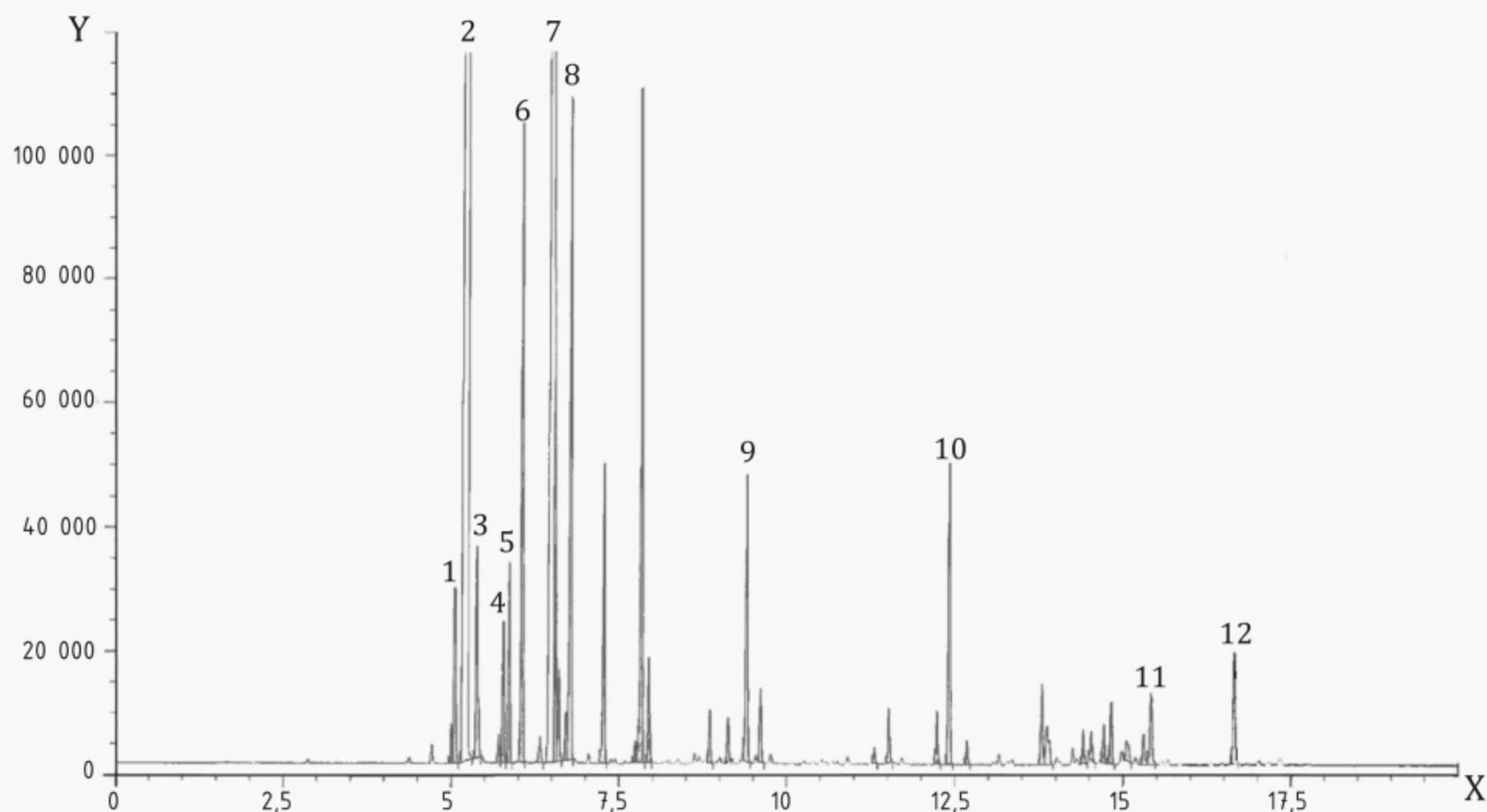
NOTE The volume allows each of the tests specified in this document to be carried out at least once.

7 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 cypress (*Cupressus sempervirens* L.)



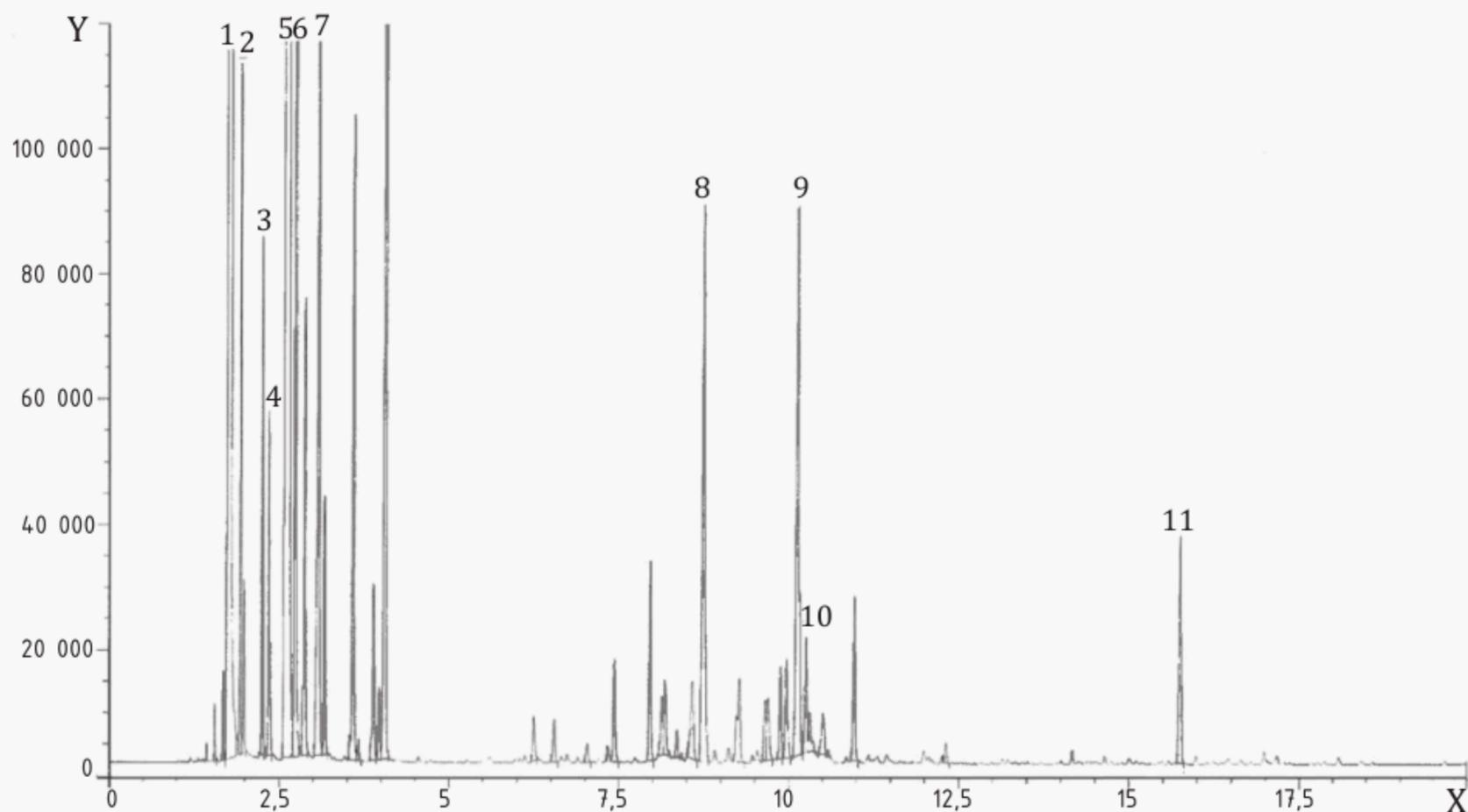
Peak identification

- | | |
|----|----------------------------|
| 1 | α -Thujene |
| 2 | α -Pinene |
| 3 | α -Fenchene |
| 4 | Sabinene |
| 5 | β -Pinene |
| 6 | Myrcene |
| 7 | δ -3-Carene |
| 8 | Limonene |
| 9 | Terpinen-4-ol |
| 10 | α -Terpinyl acetate |
| 11 | Germacrene-D |
| 12 | Cedrol |

Operating conditions

Column: FSOT, length 30 m, diameter 0,32 mm
 Stationary phase: 100 % dimethyl polysiloxane
 Film thickness: 0,25 μ m
 Oven temperature: programming temperature from 60 °C to 210 °C at a rate of 8 °C/min
 Injector temperature: 250 °C
 Detector temperature: 250 °C
 Detector: FID
 Carrier gas: helium
 Volume injected: 0,2 μ
 Carrier gas flow rate: 3 ml/min
 Split ratio: 1/50

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

**Peak identification**

- 1 α -Pinene + α -Thujene
- 2 α -Fenchene
- 3 β -Pinene
- 4 Sabinene
- 5 δ -3-Carene
- 6 Myrcene
- 7 Limonene
- 8 Terpinen-4-ol
- 9 α -Terpinyl acetate
- 10 Germacrene-D
- 11 Cedrol

Operating conditions

Column: FSOT, length 30 m, diameter 0,32 mm
 Stationary phase: polyethylene glycol (WAX^a)
 Film thickness: 0,25 μ m
 Oven temperature: programming temperature from 60 °C to 210 °C at a rate of 8 °C/min
 Injector temperature: 250 °C
 Detector temperature: 250 °C
 Detector: FID
 Carrier gas: helium
 Volume injected: 0,2 μ l
 Carrier gas flow rate: 3 ml/min
 Split ratio: 1/50

^a WAX 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) 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 document, for information, in order to meet the requirements of the interested parties.

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

For further information, see ISO/TR 11018.

B.2 Flashpoint of the essential oil of cypress

The mean value is +48 °C.

NOTE Obtained with Pensky-Martens¹⁾ equipment.

1) Equipment is 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.

Bibliography

- [1] ISO 3218, *Essential oils — Principles of nomenclature*
- [2] ISO/TR 11018, *Essential oils — General guidance on the determination of flashpoint*
- [3] ISO/TR 21092, *Essential oils — Characterization*

