



**International  
Standard**

**ISO 3518**

**Essential oil of sandalwood  
(*Santalum album* L.)**

*Huile essentielle de bois de santal (Santalum album L.)*

**Fourth edition  
2025-01**

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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 document 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](http://www.iso.org/directives)).

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

This fourth edition cancels and replaces the third edition (ISO 3518:2022), which has been technically revised.

The main changes are as follows:

- in [Table 2](#), the range for Z-lanceol has changed and a superscript for the naming of components has been added;
- in [Figure A.2](#), some operating conditions have been modified;
- in [Figures A.1](#) and [A.2](#), a superscript for the naming of components has been added.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

# Essential oil of sandalwood (*Santalum album* L.)

## 1 Scope

This document specifies certain characteristics of the essential oil of sandalwood (*Santalum album* 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 210, *Essential oils — General requirements and guidelines for packaging, conditioning and storage*

ISO 211, *Essential oils — General requirements 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 709, *Essential oils — Determination of ester value*

ISO 875, *Essential oils — Evaluation of miscibility in ethanol*

ISO 11024 (all parts), *Essential oils — General guidance on chromatographic profiles*

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## 3 Terms and definitions

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

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

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

### 3.1

#### essential oil of sandalwood

essential oil obtained by steam distillation of the heartwood of *Santalum album* L., of the Santalaceae family

Note 1 to entry: For information on the characterization of this essential oil, see ISO/TR 21092.

## 4 Requirements

### 4.1 General requirements

Essential oil of sandalwood (*Santalum album* L.) shall meet the requirements and follow the test methods given in [Table 1](#).

**Table 1 — Requirements for essential oil of sandalwood (*Santalum album* L.)**

Characteristics	Requirements	ISO test method
Appearance	Clear, slightly viscous liquid	—
Colour	Almost colourless to golden yellow	—
Odour	Characteristic, sweet, woody and persistent	—
Relative density at 20 °C $d_{20}^{20}$	0,968 to 0,983	ISO 279
Refractive index at 20 °C	1,503 to 1,509	ISO 280
Optical rotation at 20 °C	Range from $-21^{\circ}$ to $-12^{\circ}$	ISO 592
Miscibility in ethanol	It shall not be necessary to use more than five volumes of ethanol 70 % (volume fraction) to obtain a clear solution with one volume of essential oil	ISO 875
Ester value	Maximum 10	ISO 709 Saponification time: 1 h Relative molecular mass of santalyl acetate: $M_r = 262,4$

## 4.2 Chromatographic profile

Carry out the analysis of the essential oil by gas chromatography. Determine the chromatographic profile in accordance with the ISO 11024 series. Identify in the chromatogram obtained 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**

Component <sup>a</sup>	Minimum	Maximum
	%	%
Z- $\alpha$ -Santalol	41,0	55,0
Z- $\beta$ -Santalol	16,0	24,0
E,E-Farnesol	n.d. <sup>b</sup>	1,0
Z-Lanceol	n.d. <sup>b</sup>	5,0

NOTE The chromatographic profile specified in this table is required, contrary to typical chromatograms given for information in [Annex A](#) (see [Figures A.1](#) and [A.2](#)).

<sup>a</sup> For the naming of the components, see ISO/TS 24106.

<sup>b</sup> n.d. Not detected.

## 5 Flashpoint

Information on the flashpoint is given in [Annex B](#).

## 6 Sampling

Sampling shall be performed in accordance with ISO 212. The minimum volume of the test sample is 25 ml.

NOTE This 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 210 and ISO 211.