FINAL DRAFT International Standard

ISO/FDIS 4730

Essential oil of *Melaleuca*, terpinen-4-ol type (tea tree oil)

ISO/TC **54**

Secretariat: **UNE**

Voting begins on:
2025-03-31

Voting terminates on:
2025-05-26

Reference number
ISO/FDIS 4730:2025(en)

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Published in Switzerland

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Foreword

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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).

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For an explanation of 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 www.iso.org/iso/foreword.html.

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

This fourth edition cancels and replaces the third edition (ISO 4730:2017), which has been technically revised. It also incorporates the Amendment ISO 4730:2017/Amd 1:2018.

The main changes compared to the previous edition are as follows:

— inclusion of enantiomeric distribution parameters for α-terpineol.

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.

Essential oil of *Melaleuca*, terpinen-4-ol type (tea tree oil)

1 Scope

This document specifies certain characteristics of the essential oil of *Melaleuca*, terpinen-4-ol type (tea tree oil), 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 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.

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 *Melaleuca*, terpinen-4-ol type
tea tree oil
essential oil obtained by steam distillation of the leaves and terminal branchlets of *Melaleuca alternifolia* (Maiden et Betche) Cheel or of *M. linariifolia* Sm

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

4 Requirements

4.1 General

Essential oil of *Melaleuca*, terpinen-4-ol type (tea tree oil) shall meet the requirements and follow the test methods given in Table 1.

Table 1 — Requirements for the essential oil of *Melaleuca*, terpinen-4-ol type (tea tree oil)

Characteristics	Requirements	ISO test method
Appearance	Clear, mobile liquid	—
Colour	Colourless to pale yellow	—
Odour	Characteristic	—
Relative density at 20 °C, d_{20}^{20}	0,885 to 0,906	ISO 279
Refractive index at 20 °C	1,475 to 1,482	ISO 280
Optical rotation	Between +7° and +12°	ISO 592
Miscibility in ethanol 85 % (volume fraction) at 20 °C	No more than 2 volumes of ethanol 85 % (volume fraction), shall be used to obtain a clear solution with 1 volume of essential oil	ISO 875

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 [b]	Min.	Max.
	%	%
α-Pinene	1,0	4,0
Sabinene	traces [a]	3,5
α-Terpinene	6,0	12,0
Limonene	0,5	1,5
p-Cymene	0,5	8,0
1,8-Cineole	traces [a]	10,0
γ-Terpinene	14,0	28,0
Terpinolene	1,5	5,0
Terpinen-4-ol	35,0	48,0
α-Terpineol	2,0	5,0
Aromadendrene	0,2	3,0
Ledene (syn. viridiflorene)	0,1	3,0
δ-Cadinene	0,2	3,0
Globulol	traces [a]	1,0
Viridiflorol	traces [a]	1,0

NOTE The chromatographic profile in this table is required, contrary to typical chromatograms given for information in Annex A (see Figures A.1 to A.3).

[a] Traces: < 0,01 %.

[b] For the naming of the components, see ISO/TS 24106.

5 Additional information

5.1 Flashpoint

Information on the flashpoint is given in Annex B.