

ISO/TC 54

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**Essential oil of lemon myrtle
(*Backhousia citriodora* F. Muell.), citral
type**

*Huile essentielle de myrte citronnée (Backhousia citriodora F. Muell.),
type citral*

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[ISO/FDIS 5093](#)

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

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 lemon myrtle (*Backhousia citriodora* F. Muell.), citral type

1 Scope

This document specifies certain characteristics of the essential oil of lemon myrtle (*Backhousia citriodora* F. Muell.), citral type, with a view to facilitating the 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 1271, *Essential oils — Determination of carbonyl value — Free hydroxylamine method*

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 lemon myrtle

essential oil obtained by steam distillation of the leaves and twigs of *Backhousia citriodora* F. Muell., citral type (lemon myrtle) of the Myrtaceae family

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

4 Requirements

4.1 General requirements

Essential oil of lemon myrtle (*Backhousia citriodora* F. Muell.), citral type shall meet the requirements as given in [Table 1](#).

Table 1 — Requirements for the essential oil of lemon myrtle (*Backhousia citriodora* F. Muell.), citral type

Characteristics	Requirements	ISO test method
Appearance	Clear, mobile at 20 °C	—
Colour	Pale yellow to yellow liquid	—
Odour	Characteristic lemon odour	—
Relative density at 20 °C d_{20}^{20}	0,880 to 0,910	ISO 279
Refractive index at 20 °C	1,484 to 1,491	ISO 280
Optical rotation at 20 °C	Range from -1,5° to +1,5°	ISO 592
Miscibility in ethanol	One volume of the essential oil of lemon myrtle (<i>Backhousia citriodora</i> F. Muell.), citral type shall completely dissolve in three volumes of 70 % (volume fraction) ethanol at 20 °C	ISO 875
Carbonyl value	Corresponding to 85 % minimum of carbonyl compounds content expressed as citral	ISO 1271

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	Min	Max
6-Methylhept-5-en-2-one	0,3	2,9
2,3-Dehydro-1,8-cineole	0,3	0,9
β -Myrcene	0,2	0,7
Linalool	0,5	1,0
<i>exo</i> -Isocitral	0,1	2,0
Citronellal	traces ^a	1,0
<i>cis</i> -Isocitral	0,2	2,7
<i>trans</i> -Isocitral	0,3	4,3
Neral	36,0	44,0
Geranial	44,0	56,0
Geraniol	0,5	2,5
Total Citral	80,6	98,0

^a < 0,01 %.

NOTE 1 Total citral is the addition of all 5 citral isomers.

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

5 Flash point

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

6 Sampling

Sampling shall be performed in accordance with ISO 212. The minimum test sample volume is 50 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

Packaging labelling, marking and storage shall be in accordance with ISO/TS 210 and ISO/TS 211.

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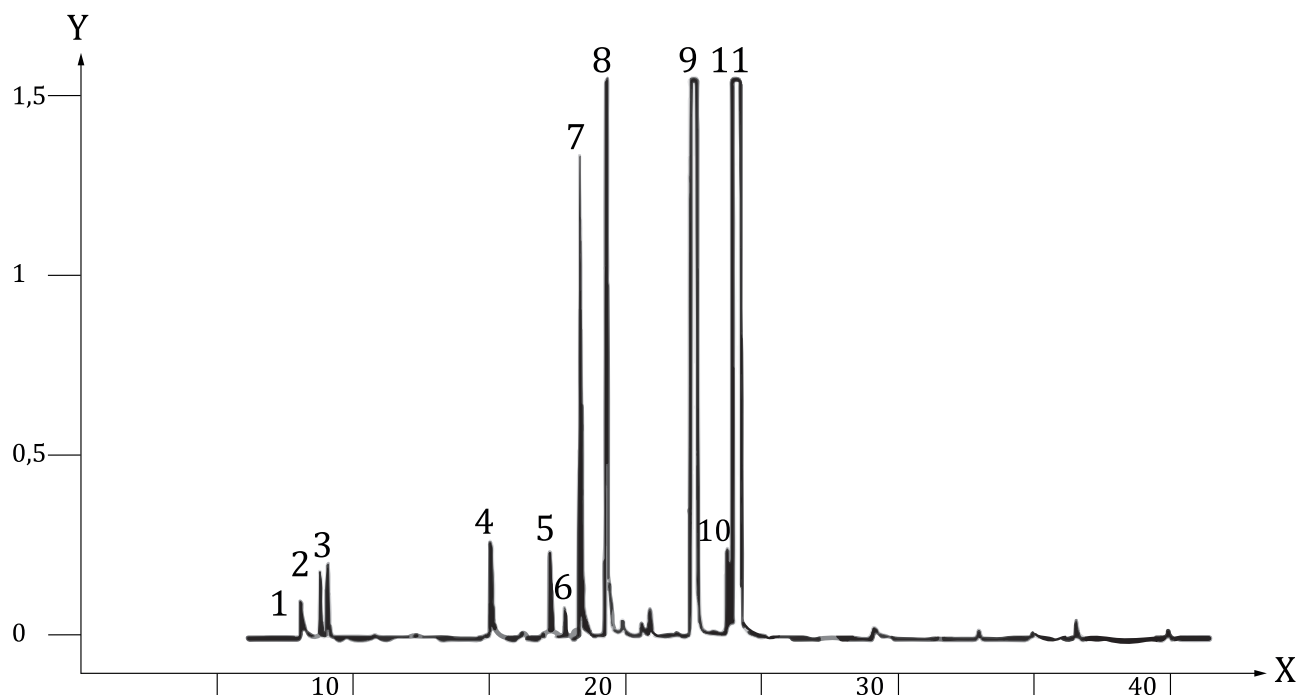
Annex A
(informative)

**Typical chromatograms of the analysis by gas chromatography of
the essential oil of lemon myrtle (*Backhousia citriodora* F. Muell.),
citral type**

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**Peak identification**

- 1 6-Methylhept-5-en-2-one
- 2 2,3-Dehydro-1,8-cineole
- 3 β -Myrcene
- 4 Linalool
- 5 *exo*-Isocitral
- 6 Citronellal
- 7 *cis*-Isocitral
- 8 *trans*-Isocitral
- 9 Neral + Nerol
- 10 Geraniol
- 11 Geranial

Key

- Y detector response (pA)
X time (min)

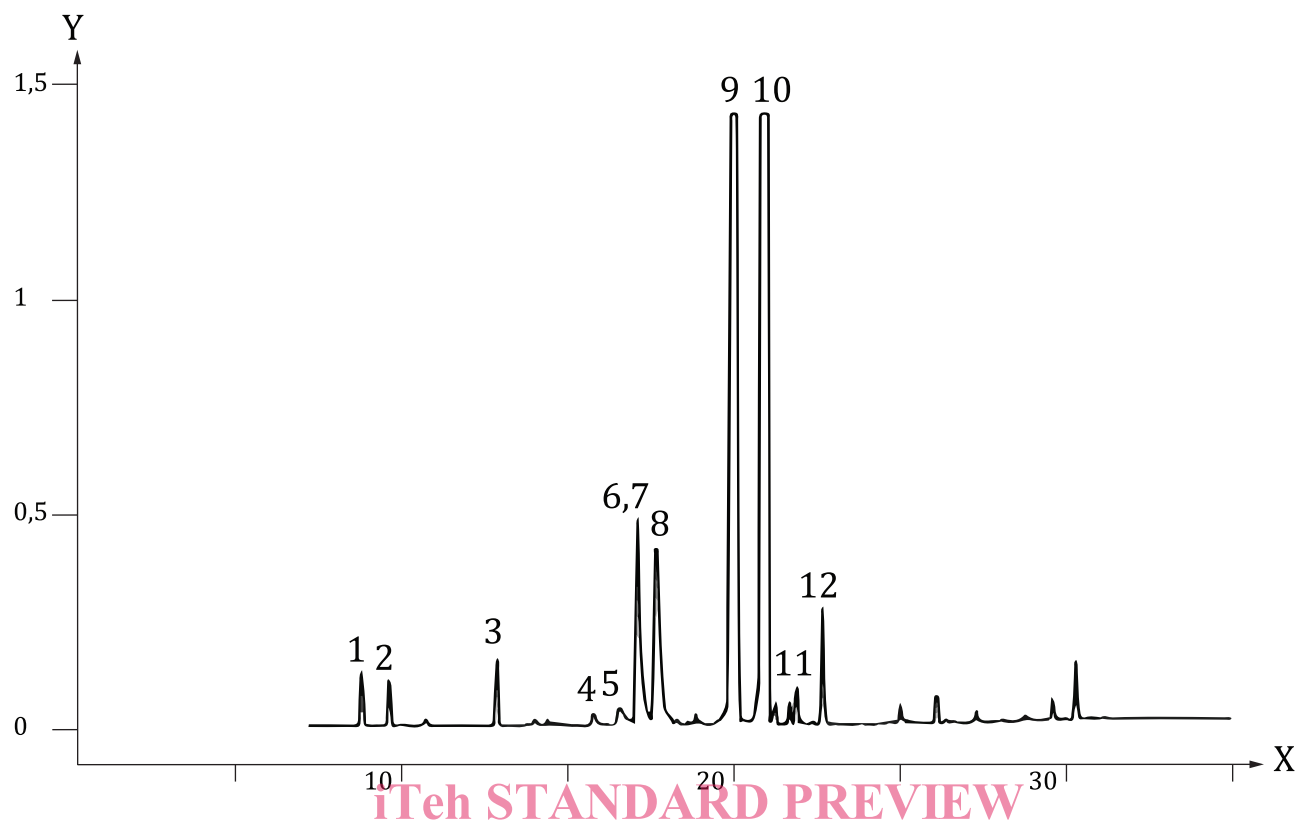
Operating conditions

- Column: FSOT, length 30 m, 0,25 mm
Stationary phase: BP1 Methyl Silicone^a
Film thickness: 0,2 μ m
Split ratio: 1:50
Detector: FID
Injector temperature: 200 °C
Detector temperature: 300 °C
Carrier gas: hydrogen
Oven temperature: initial: 40 °C for 1 min
Program rate: 9 °C/min
Final: 240 °C for 10 min
Linear velocity: 30 cm/s
Injected volume: 1,0 μ l (1 % solution^b)

^a BP1 Methyl Silicone 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.

^b Caution: Hexane and other non-alcoholic solvents are recommended as ethanol and methanol can form acetals and hemiacetals with citrals.

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



Peak identification

- 1 β -Myrcene
- 2 2,3-Dehydro-1,8-cineole
- 3 6-Methylhept-5-en-2-one
- 4 Citronellal
- 5 *exo*-Isocitral
- 6 *cis*-Isocitral
- 7 Linalool
- 8 *trans*-Isocitral
- 9 Neral
- 10 Geranial
- 11 Nerol
- 12 Geraniol

Key

- Y detector response (pA)
- X time (min)

Operating conditions

Column: FSOT, length 60 m, diameter 0,53 mm
 Stationary phase: J&W DB-Wax^a
 Film thickness: 1 μ m
 Split ratio: splitless
 Detector: FID
 Injector temperature: 210 °C
 Detector temperature: 250 °C
 Carrier gas: helium
 Oven temperature: initial: 50 °C for 5 min
 Program rate: 3 °C/min
 Final: 220 °C for 15 min
 Linear velocity: 33 cm/s
 Injected volume: 1,0 μ l (1 % solution^b)

^aJ&W DB-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.

^b Caution: Hexane and other non-alcoholic solvents are recommended as ethanol and methanol can form acetals and hemiacetals with citrals.

Figure A.2 — Typical chromatogram taken on a polar column