INTERNATIONAL STANDARD

ISO 4727

Second edition
2021-05

Essential oil of palmarosa [*Cymbopogon martini* (Roxb.) W. Watson var. *motia*]

Huile essentielle de palmarosa [Cymbopogon martini *(Roxb.) W. Watson var.* motia*]*

Reference number
ISO 4727:2021(E)

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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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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

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 second edition cancels and replaces the first edition (ISO 4727:1988), which has been technically revised.

The main changes to the previous edition are as follows:

— the title has been changed;

— the structure of the document has been revised;

— subclauses 4.8 to 4.11 have been replaced with a chromatographic profile (Table 2);

— editorial corrections have been made.

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 palmarosa [*Cymbopogon martini* (Roxb.) W. Watson var. *motia*]

1 Scope

This document specifies certain characteristics of the essential oil of palmarosa [*Cymbopogon martini* (Roxb.) W. Watson var. *motia*], 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 degrees 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 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 palmarosa
essential oil obtained by steam distillation of the grass of [*Cymbopogon martini* (Roxb.) W. Watson var. *motia*] of the Poaceae family, collected in flowering stage

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

4 Requirements

4.1 General requirements

Essential oil of palmarosa [*Cymbopogon martini* (Roxb.) W. Watson var. *motia*] shall meet the requirements as given in Table 1.

Table 1 — Requirements for the essential oil of palmarosa [*Cymbopogon martini* (Roxb.) W. Watson var. *motia*]

Characteristics	Requirements	ISO test method
Appearance	Clear mobile liquid	—
Colour	Pale yellow to yellow	—
Odour	Rose-like with grassy note	—
Relative density at 20 °C, d_{20}^{20}	0,880 to 0,894	ISO 279
Refractive index at 20 °C	1,471 to 1,478	ISO 280
Optical rotation	Between −1° and +3°	ISO 592
Miscibility in ethanol 70 % (volume fraction), at 20 °C	The solubility in a volume fraction of 70 % ethanol shall be one volume in not more than two volumes to give a clear solution.	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	Minimum	Maximum
	%	%
Myrcene	0,1	0,5
Limonene	0,1	1,0
(E)-β-Ocimene	0,2	2,0
Linalool	1,5	4,0
Nerol	0,2	1,0
Neral	0,05	0,3
Geraniol	77,0	85,0
Geranial	0,1	0,6
Geranyl acetate	5,0	13,0
β-Caryophyllene	1,0	2,5
(E,E)-Farnesol	traces[a]	1,5
Geranyl hexanoate	0,2	1,0

[a] < 0,01 %.

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

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 50 ml.

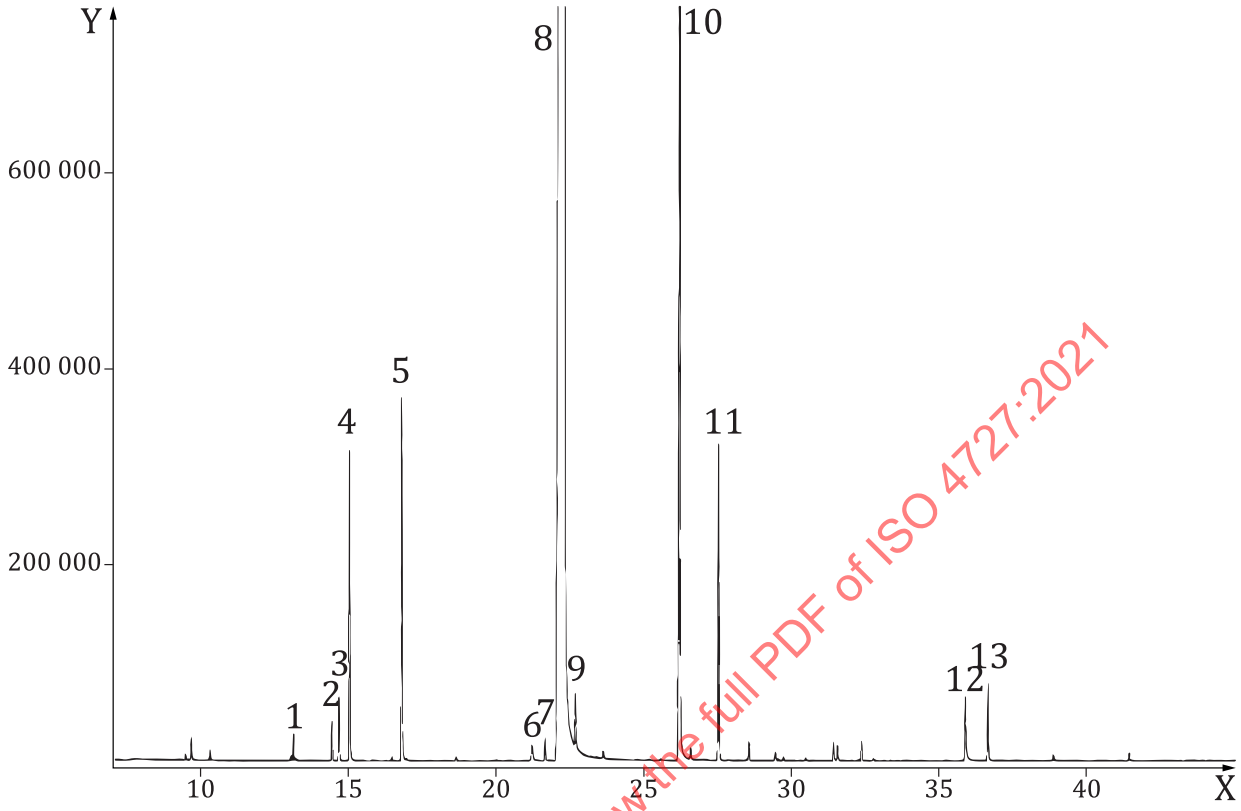
NOTE The volume allows each of the tests specified in this document to be carried out at least once.

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 palmarosa [*Cymbopogon martini* (Roxb.) W. Watson var. *motia*]



Peak identification

1 Myrcene

2 Limonene

3 *(Z)*-β-Ocimene

4 *(E)*-β-Ocimene

5 Linalool

6 Nerol

7 Neral

8 Geraniol

9 Geranial

10 Geranyl acetate

11 β-Caryophyllene

12 *(E,E)*-Farnesol

13 Geranyl hexanoate

Operating conditions

Column: fused silica capillary; length 60 m; internal diameter 0,25 mm

Stationary phase: 5 % diphenyl, 95 % dimethyl polysiloxane (RTX-5®)[a]

Film thickness: 0,10 µm

Oven temperature: temperature programming from 45 °C to 240 °C at a rate of 4 °C/min, hold for 11,25 min

Injector temperature: 230 °C

Detector temperature: 250 °C

Detector: flame ionization type

Carrier gas: helium

Volume injected: 0,1 µl

Carrier gas flow rate: 1 ml/min

Split ratio: 1/100

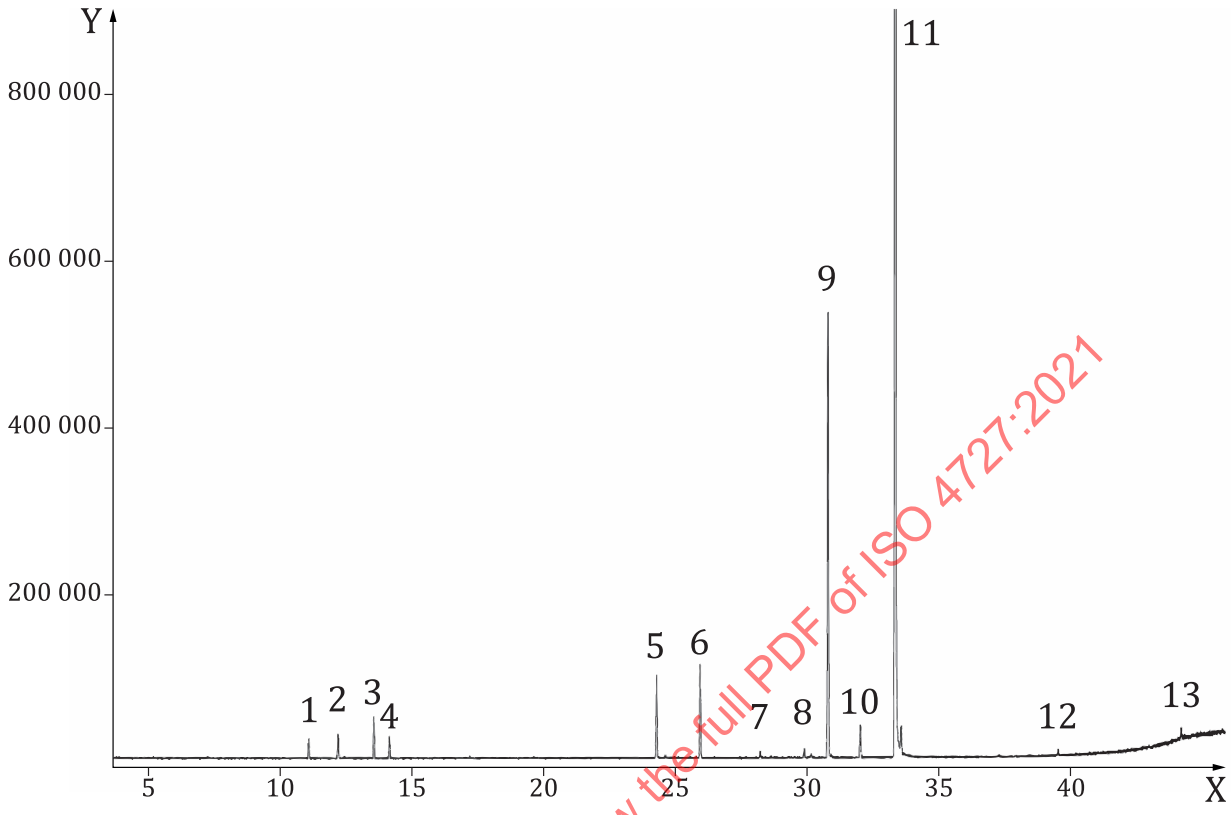
Key

Y detector response (pA)

X time (min)

[a] RTX-5 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.1 — Typical chromatogram taken on an apolar column



Peak identification

1 Myrcene

2 Limonene

3 *(Z)*-β-Ocimene

4 *(E)*-β-Ocimene

5 Linalool

6 β-Caryophyllene

7 Neral

8 Geranial

9 Geranyl acetate

10 Nerol

11 Geraniol

12 Geranyl hexanoate

13 *(E,E)*-Farnesol

Operating conditions

Column: capillary; length 60 m; internal diameter 0,32 mm

Stationary phase: crossbond carbowax polyethylene glycol (RTX-Wax®)[a]

Thickness of film: 0,25 µm

Oven temperature: isothermal period at 45 °C for 3 min, then temperature programming from 45 °C to 180 °C at a rate of 4 °C/min, then 180° to 240° at a rate of 8 °C/min, hold for 15 min

Injector temperature: 240 °C

Detector temperature: 260 °C

Detector: flame ionization type

Carrier gas: helium

Volume injected: 0,1 µl

Carrier gas flow rate: 2 ml/min

Split ratio: 1/100

Key

Y detector response (pA)

X time (min)

[a] RTX-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