INTERNATIONAL STANDARD

ISO 3064

Second edition 2000-08-01

Oil of petitgrain, Paraguayan type (*Citrus aurantium* L. ssp. *aurantium*, syn. *Citrus aurantium* L. ssp. *amara* var. *pumilia*)

Huile essentielle de petitgrain, type Paraguay (Citrus aurantium L. ssp. aurantium, syn. Citrus aurantium L. ssp. amara var. pumilia)

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 3064 was prepared by Technical Committee ISO/TC 54, Essential oils.

This second edition cancels and replaces the first edition (ISO 3064:1977), which has been technically revised.

Annexes A and B of this International Standard are for information only.

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Oil of petitgrain, Paraguayan type (Citrus aurantium L. ssp. aurantium, syn. Citrus aurantium L. ssp. amara var. pumilia)

Scope

This International Standard specifies characteristics of the oil of petitgrain, Paraguayan type (Citrus aurantium L. ssp. aurantium, syn. Citrus aurantium L. ssp. amara var. pumilia), in order to facilitate assessment of its quality.

NOTE The specifications of the oil of bitter orange petitgrain are given in ISO 8901.

Normative references

The following normative documents contain provisions RD PREVIEW which, through reference in this text, constitute provisions of this International Standard For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International 0642 Standard are encouraged to investigate the possibility dards/s of applying the most recent editions of the normative fiso-303.12000 documents indicated below. For undated references. the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO/TR 210, Essential oils — General rules for packaging, conditioning and storage.

ISO/TR 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 709, Essential oils — Determination of ester value.

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

ISO 1242, Essential oils — Determination of acid value.

ISO 1271, Essential oils — Determination of carbonyl value — Free hydroxylamine method.

ISO 11024-1, Essential oils — General guidance on chromatographic profiles — Part 1: Preparation of chromatographic profiles for presentation standards.

ISO 11024-2, Essential oils — General guidance on chromatographic profiles - Part 2: Utilization of chromatographic profiles of samples of essential oils.

Term and definition

iten.ai) For the purposes of this International Standard, the following term and definition applies.

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oil of petitgrain, Paraguayan type

essential oil obtained by steam distillation of only the leaves and twigs of Citrus aurantium L. ssp. aurantium, syn. Citrus aurantium L. ssp. amara var. pumilia, mainly cultivated in Paraguay, of the Rutaceae family.

Requirements

Appearance

Clear liquid.

4.2 Colour

Colourless to pale yellow.

4.3 Odour

Characteristic, fresh, rustic, reminiscent of that of the flower of the orange tree.

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4.4 Relative density at 20 °C, d_{20}^{20}

Minimum: 0,882 0

Maximum: 0,893 0

4.5 Refractive index at 20 °C

Minimum: 1,455 0 Maximum: 1,463 0

4.6 Optical rotation at 20 °C

Between - 5 °C and - 1 °C.

4.7 Miscibility in 70 % ethanol (volume fraction) at 20 °C

It shall not be necessary to use more than 4 volumes of 70 % ethanol (volume fraction) to obtain a clear solution with 1 volume of essential oil.

Table 1 — Chromatographic profile

| Component | Minimum % | Maximum % |
|---------------------|--------------|--------------|
| β-Pinene | 0,5 | 2 |
| Myrcene | 1,3 | 2,7 |
| Sabinene | 0,1 | 0,5 |
| trans-β-Ocimene | 1 | 3 |
| Linalol | 15 | 30 |
| Linalyl acetate | 40 | 60 |
| α -Terpineol | 3,2 | 6,8 |
| Nerol | 0,5 | 2 |
| Geraniol | 2 | 4,5 |
| Neryl acetate | 1 | 3 |
| Geranyl acetate | 2 | 5 |
| β-Caryophyllene | 0,3 | 1,5 |

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

4.8 Acid value

Maximum: 1

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(standards iteh ai) Test methods

4.9 Ester value

Minimum: 122, corresponding to 39 % of ester 6.1 Relative density at 20 °C, d_{20}^{20} expressed as linally acetate. $\frac{ISO 3064 \cdot 2000}{cc4e2cf3b61f/iso-3064 \cdot 2000}$ See ISO 279.

Maximum: 190, corresponding to 67 % of ester expressed as linally acetate.

4.10 Chromatographic profile

Analysis of the essential oil shall be carried out by gas chromatography. In the chromatogram obtained, the representative and characteristic components shown in Table 1 shall be identified. The proportions of these components, indicated by the integrator, shall be as shown in Table 1. This constitutes the chromatographic profile of the essential oil.

4.11 Flashpoint

Information on the flashpoint is given in annex B.

5 Sampling

See ISO 212.

Minimum volume of test sample: 30 ml.

NOTE This volume allows each of the tests specified in this International Standard to be carried out at least once.

6.2 Refractive index at 20 °C

See ISO 280.

6.3 Optical rotation at 20 °C

See ISO 592.

6.4 Miscibility in 70 % ethanol (volume fraction) at 20 °C

See ISO 875.

6.5 Acid value

See ISO 1242.

6.6 Ester value

See ISO 709.

Test portion: 2 g.

Saponification time: 30 min.

Relative molecular mass of linalyl acetate: 196,29.

6.7 Chromatographic profile

See ISO 11024-1 and ISO 11024-2.

7 Packaging, labelling, marking and storage

See ISO/TR 210 and ISO/TR 211.

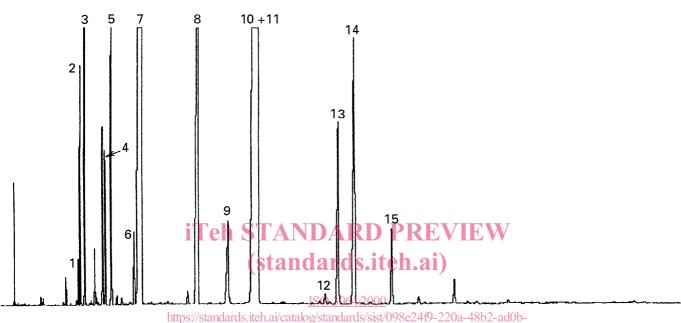
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Annex A (informative)

Typical chromatograms of the analysis by gas chromatography of the essential oil of petitgrain, Paraguayan type (*Citrus aurantium* L. spp. aurantium, syn. *Citrus aurantium* L. ssp. amara var. pumilia)



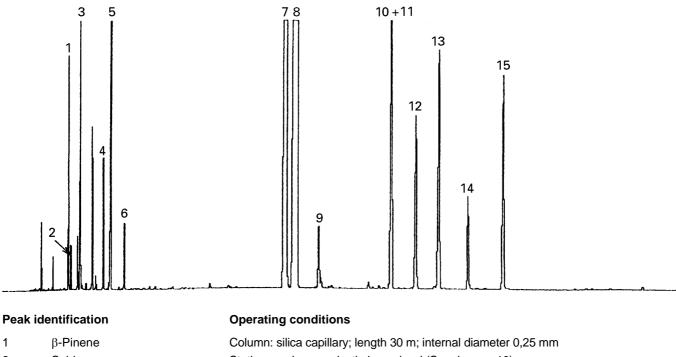
| Peak identification | | Operating conditions: 0-3064-2000 |
|---------------------|-----------------------|---|
| 1 | Sabinene | Column: silica capillary; length 30 m; internal diameter 0,25 mm |
| 2 | β -Pinene | Stationary phase: polydimethyl siloxane (SE 30) |
| 3 | Myrcene | Film thickness: 0,25 µm |
| 4 | <i>cis</i> -β-Ocimene | Oven temperature: temperature programmed from 70 °C to 250 °C at a rate of 2 °C/min |
| 5 | trans-β-Ocimene | Injector temperature: 250 °C |
| 6 | Terpinolene | Detector temperature: 250 °C |
| 7 | Linalol | Detector: flame ionization type |

 $\begin{array}{lll} 8 & \alpha\text{-Terpineol} & \text{Carrier gas: nitrogen} \\ 9 & \text{Nerol} & \text{Volume injected: 0,3 } \mu\text{l} \\ 10+11 & \text{Linalyl acetate + geraniol} & \text{Carrier gas flow rate: 1 ml/min} \end{array}$

Terpenyl acetate Split ratio:1/100

13 Neryl acetate
14 Geranyl acetate
15 β-Caryophyllene

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



| Peak identification | | entification | Operating conditions |
|---------------------|-------|--|---|
| | 1 | β-Pinene | Column: silica capillary; length 30 m; internal diameter 0,25 mm |
| | 2 | Sabinene | Stationary phase: polyethylene glycol (Supelcowax 10) |
| | 3 | Myrcene | Film thickness: 0,25 μm |
| | 4 | <i>cis</i> -β-Ocimene iTeh | Oven temperature: temperature programmed from 70 °C to 250 °C at a rate of 2 °C/min |
| | 5 | trans-β-Ocimene | Injector temperature: 250 °C |
| | 6 | Terpinolene | Detector temperature: 250 °C n. al) |
| | 7 | Linalol | Detector: flame ionization type |
| | 8 | Linalyl acetate | Carrier gas: nitrogen 4.2000 |
| | 9 | β-Caryophyllene https://standard | ds. iteh ai/catalog/standards/sist/098e24f9-220a-48b2-ad0b- Volume injected: 0.3 ul cate 2ct 3b6 1 l/so-3064-2000 |
| | 10+11 | α -Terpineol + terpenyl acetate | Carrier gas flow rate: 1 ml/min |
| | 12 | Neryl acetate | Split ratio:1/100 |
| | 13 | Geranyl acetate | |
| | 14 | Nerol | |
| | 15 | Geraniol | |
| | | | |

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

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