

BS ISO 3527:2016



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Essential oil of parsley fruits (*Petroselinum sativum* Hoffm.)

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National foreword

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The UK participation in its preparation was entrusted to Technical Committee AW/54, Essential oils.

A list of organizations represented on this committee can be obtained on request to its secretary.

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Published by BSI Standards Limited 2016

ISBN 978 0 580 91684 7

ICS 71.100.60

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This British Standard was published under the authority of the Standards Policy and Strategy Committee on 30 April 2016.

Amendments/corrigenda issued since publication

Date	Text affected
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INTERNATIONAL
STANDARD

BS ISO 3527:2016

ISO
3527

Third edition
2016-04-01

Essential oil of parsley fruits
(*Petroselinum sativum* Hoffm.)

Huile essentielle de fruits de persil (Petroselinum sativum Hoffm.)



Reference number
ISO 3527:2016(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).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#).

The committee responsible for this document is ISO/TC 54, *Essential oils*.

This third edition cancels and replaces the second edition (ISO 3527:2000), of which it constitutes a minor revision.

Essential oil of parsley fruits (*Petroselinum sativum* Hoffm.)

1 Scope

This International Standard specifies certain characteristics of the essential oil of parsley fruits (*Petroselinum sativum* Hoffm.), in order to facilitate assessment of its quality.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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 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 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.

3.1

essential oil of parsley fruits

essential oil obtained by steam distillation of the ripe fruits of cultivated parsley (*Petroselinum sativum* Hoffm.) of the Apiaceae family

Note 1 to entry: Essential oil of parsley fruits is commercially known as “essential oil of parsley seed”.

Note 2 to entry: For information on CAS number, see ISO/TR 21092.

4 Requirements

4.1 Appearance

Clear liquid, sometimes crystallized.

4.2 Colour

Almost colourless to amber yellow.

4.3 Odour

Characteristic of the crushed fruit, but distinct from that of the green part of the plant.

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

Minimum: 1,043

Maximum: 1,083

4.5 Refractive index at 20 °C

Minimum: 1,513 0

Maximum: 1,522 0

4.6 Optical rotation at 20 °C

Between -10° and -4° .

4.7 Miscibility in 85 % ethanol (volume fraction) at 20 °C

It shall not be necessary to use more than six volumes of 85 % ethanol (volume fraction) to obtain a clear solution with one volume of essential oil.

4.8 Acid value

Maximum: 4

4.9 Ester value

Minimum: 1

Maximum: 10

4.10 Chromatographic profile

Carry out the analysis of the essential oil by gas chromatography. Identify in the chromatogram obtained, the representative and characteristic components shown in [Table 1](#). 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.

Table 1 — Chromatographic profile

Component	Min.	Max.
	%	%
α -Pinene	10	22
β -Pinene	7	15
Myristicin	25	50
Apiol	5	35
1,2,3,4-Tetramethoxy-5-allylbenzene	1	12
Elemicin	1	12

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

5 Additional information

5.1 Flashpoint

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

6 Sampling

Sampling shall be performed in accordance with ISO 212. Minimum volume of test sample: 25 ml.

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

7 Test methods

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

Determine the relative density in accordance with ISO 279.

7.2 Refractive index at 20 °C

Determine the refractive index in accordance with ISO 280.

7.3 Optical rotation at 20 °C

Determine the optical rotation in accordance with ISO 592.

7.4 Miscibility in 85 % ethanol (volume fraction) at 20 °C

Determine the miscibility in ethanol in accordance with ISO 875.

7.5 Acid value

Determine the acid value in accordance with ISO 1242.

7.6 Ester value

Determine the ester value in accordance with ISO 709.

Test sample: 2 g.

Saponification time: 1 h.

7.7 Chromatographic profile

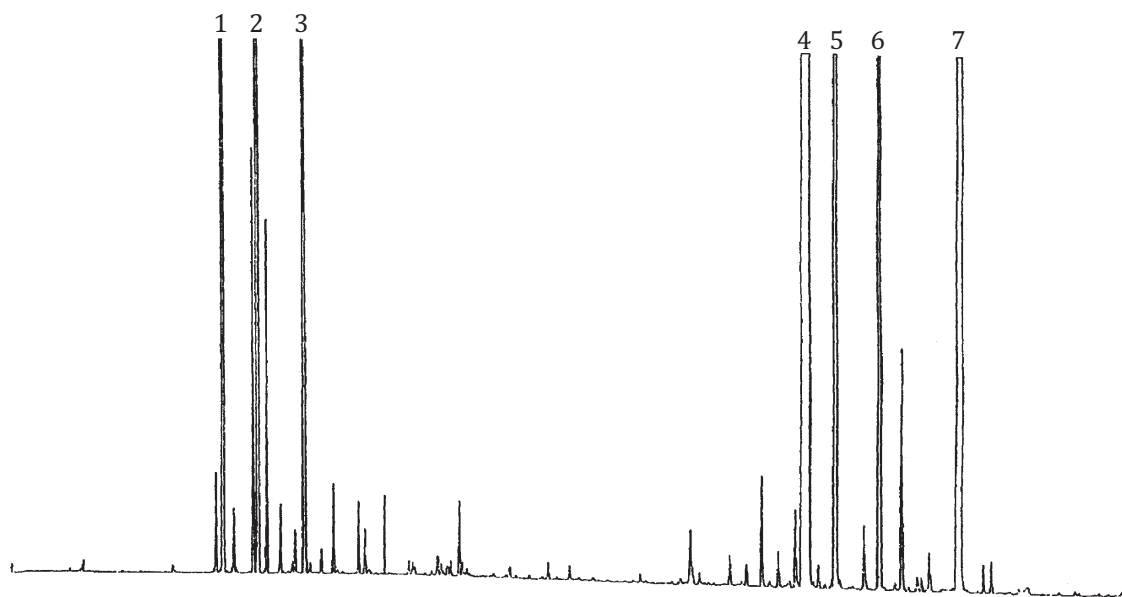
Determine the chromatographic profile in accordance with ISO 11024 (all parts).

8 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 parsley fruits (*Petroselinum sativum* Hoffm.)



Peak identification

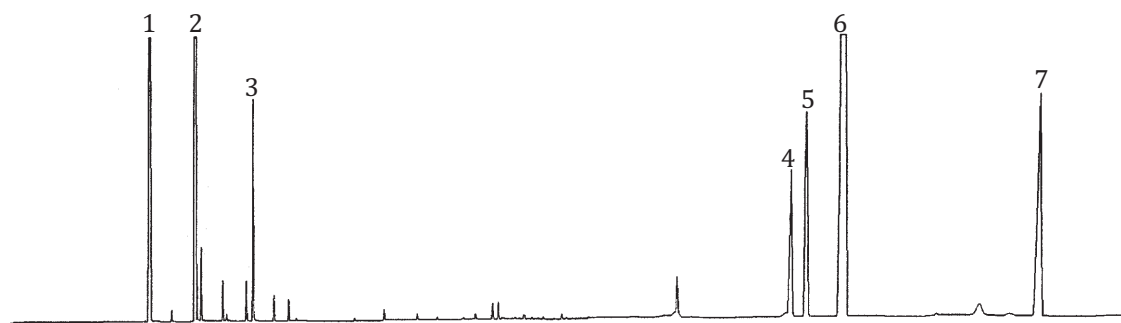
- 1 α -Pinene
- 2 β -Pinene
- 3 β -Phellandrene + limonene
- 4 Myristicin
- 5 Elemicin
- 6 1,2,3,4-Tetramethoxy-5-allylbenzene
- 7 Apiol

Operating conditions

Column: capillary, fused silica; length 50 m; internal diameter 0,25 mm
Stationary phase: polydimethyl siloxane (OV 101^a)
Film thickness: 0,25 μ m
Oven temperature: programmed from 60 °C to 200 °C at a rate of 2,5 °C/min
Injector temperature: 270 °C
Detector temperature: 280 °C
Detector: flame ionization type
Carrier gas: hydrogen
Volume injected: 0,05 μ l
Carrier gas flow rate: 2 ml/min
Split ratio: 1/60

^a OV 101 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 α -Pinene
- 2 β -Pinene
- 3 β -Phellandrene
- 4 1,2,3,4-Tetramethoxy-5-allylbenzene
- 5 Elemicin
- 6 Myristicin
- 7 Apiol

Operating conditions

Column: capillary, fused silica; length 20 m; internal diameter 0,1 mm
 Stationary phase: polyethylene glycol 20 000
 Film thickness: 0,20 μ m
 Oven temperature: 50 °C for 1 min, then programmed from 50 °C to 200 °C at a rate of 10 °C/min
 Injector temperature: 250 °C
 Detector temperature: 250 °C
 Detector: flame ionization type
 Carrier gas: hydrogen
 Volume injected: 0,2 μ l
 Carrier gas flow rate: 0,3 ml/min
 Split ratio: 1/350
 Pressure programming: 220,7 kPa^a for 20 s, then 34,5 kPa/min up to 310,3 kPa, then 310,3 kPa for 20 min
^a 1 kPa = 0,145 psi.

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

Annex B **(informative)**

Flashpoint

B.1 General information

For safety reasons, transport companies, insurance companies, and people in charge of safety services require information on the flashpoints of essential oils, which, in most cases, are flammable products.

A comparative study on the relevant methods of analysis (see ISO/TR 11018) concluded that it was difficult to recommend a single apparatus for standardization purposes, given that

- there is wide variation in the chemical composition of essential oils,
- the volume of the sample needed for certain requirements would be too costly for high-priced essential oils, and
- as there are several different types of equipment which can be used for the determination, users cannot be expected to use one specified type only.

Consequently, it was decided to give a mean value for the flashpoint in an informative annex in each International Standard, for information, in order to meet the requirements of the interested parties.

The equipment with which this value was obtained should be specified.

For further information, see ISO/TR 11018.

B.2 Flashpoint of essential oil of parsley fruits

The mean value is +50 °C.

NOTE Obtained with "Luchoire"¹⁾ equipment.

1) Equipment 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.

Bibliography

- [1] ISO 3218, *Essential oils — Principles of nomenclature*
- [2] ISO/TR 11018, *Essential oils — General guidance on the determination of flashpoint*
- [3] ISO/TR 21092, *Essential oils — Characterisation*

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