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**Essential oil of molle (*Schinus  
areira* L.), Argentinean type**

*Huile essentielle de baie rose (*Schinus areira* L.), type Argentine*

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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](http://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](http://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 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*.

## Introduction

This International Standard considers the requirements that the essential oil obtained by water vapor distillation of the fruits of molle (*Schinus areira* L.) Argentinean type shall meet.

It is a natural product with an intraspecific variability characterized by the preponderance of phellandrenes and limonene as major components. The table of essential oil composition reflects this feature.

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# Essential oil of molle (*Schinus areira* L.), Argentinean type

## 1 Scope

This International Standard specifies certain characteristics of the essential oil of molle (*Schinus areira* L.), Argentinean type, intended for facilitating the 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 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*

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*

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

### 3.1

#### **essential oil of molle (*Schinus areira* L.)**

essential oil obtained by steam distillation of the fruits of *Schinus areira* L., of the Anacardiaceae family

Note 1 to entry: For information on CAS number, see ISO/TR 21092<sup>[2]</sup>.

## 4 Requirements

### 4.1 Appearance

Clear mobile liquid.

### 4.2 Colour

Light yellow.

### 4.3 Odour

Fresh and characteristic of phellandrene.

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

Minimum: 0,850

Maximum: 0,885

#### 4.5 Refractive index at 20 °C

Minimum: 1,475 0

Maximum: 1,488 0

#### 4.6 Optical rotation at 20 °C

Between +30° and +75°.

#### 4.7 Miscibility in ethanol 90 % (volume fraction) at 20 °C

It shall not be necessary to use less than 4,5 volumes or more than 6,5 volumes of ethanol 90 % (volume fraction) to obtain a clear solution with 1 volume of essential oil.

#### 4.8 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	Minimum %	Maximum %
Myrcene	1,0	14,0
Phellandrene ( $\alpha+\beta$ )	35,0	60,0
Limonene	10,0	25,0
Sabinene	n.d. <sup>a</sup>	8,0
Terpinen-4-ol	n.d. <sup>a</sup>	1,5
$\alpha$ -Cadinol	0,5	3,0
Germacrene D	0,2	0,5
$\alpha$ -Humulene	0,0	0,5
Elemol	0,0	0,5

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

<sup>a</sup> Not detectable.

#### 4.9 Flashpoint

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

### 5 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.

## 6 Test methods

### 6.1 Relative density at 20 °C, $d_{20}^{20}$

Determine the relative density in accordance with ISO 279.

### 6.2 Refractive index at 20 °C

Determine the refractive index in accordance with ISO 280.

### 6.3 Optical rotation at 20 °C

Determine the optical rotation in accordance with ISO 592.

### 6.4 Miscibility in ethanol 90 % (volume fraction) at 20 °C

Determine the miscibility in ethanol in accordance with ISO 875.

### 6.5 Chromatographic profile

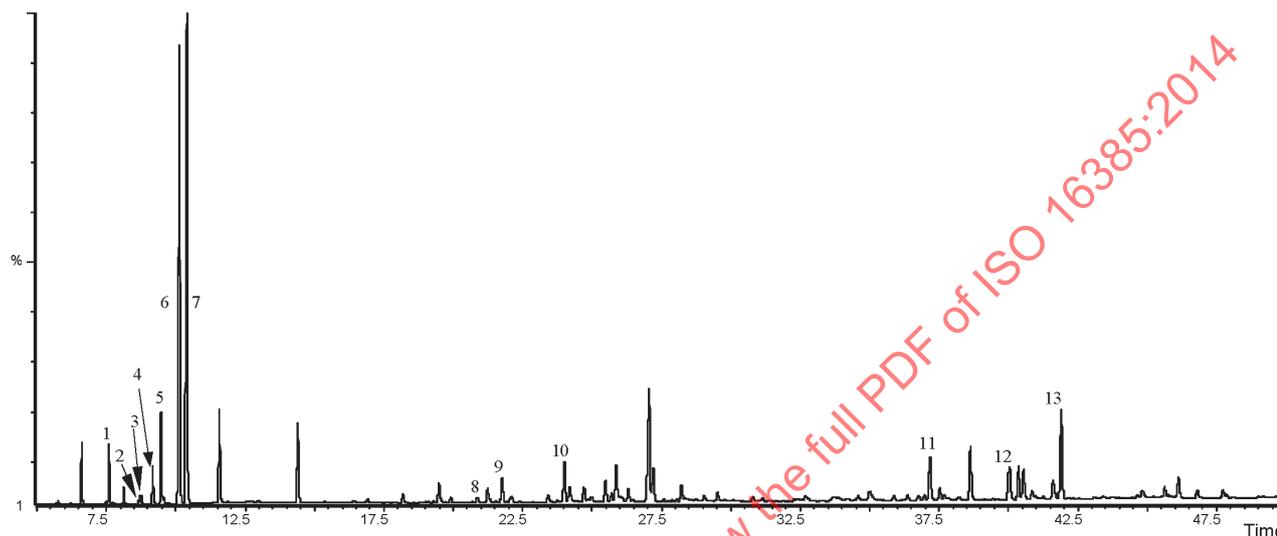
Determine the chromatographic profile in accordance with ISO 11024.

## 7 Packaging, labelling, marking, and storage

These items shall be in accordance with ISO/TR 210 and ISO/TR 211.

## Annex A (informative)

### Typical chromatogram of the analysis by gas chromatography of the essential oil of molle (*Schinus areira* L.) Argentinean type



#### Peak identification

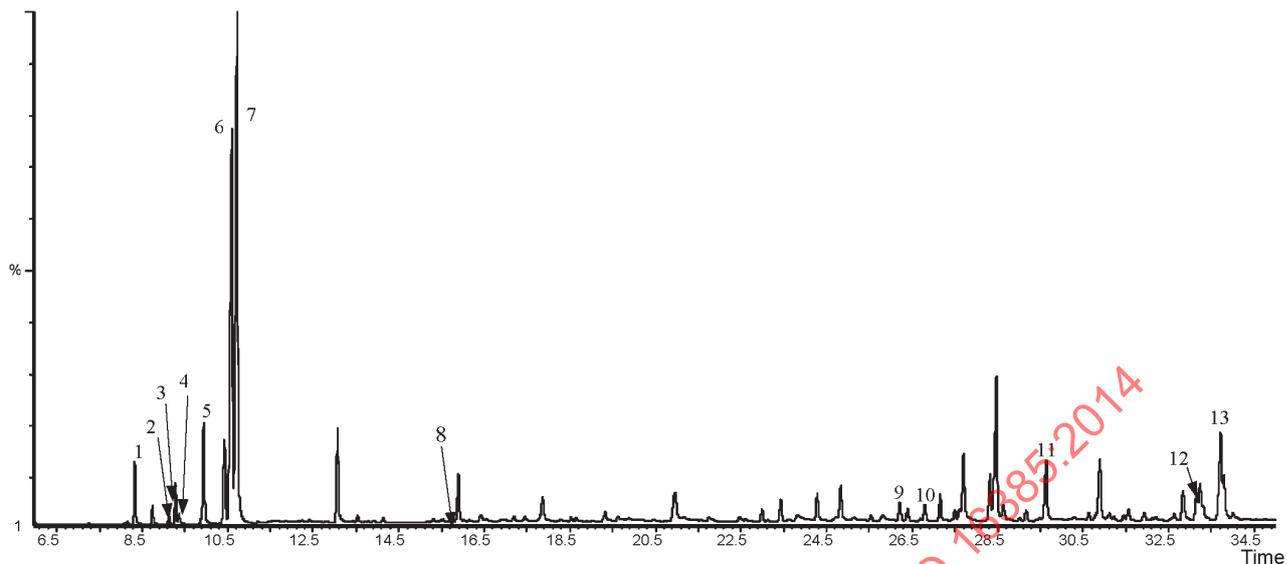
- 1  $\alpha$ -Pinene
- 2  $\beta$ -Pinene
- 3 Sabinene
- 4 Myrcene
- 5  $\alpha$ -Phellandrene
- 6 Limonene
- 7  $\beta$ -Phellandrene
- 8 Terpinen-4-ol
- 9  $\alpha$ -Humulene
- 10 Germacrene D
- 11 Elemol
- 12 Epi- $\alpha$ -Cadinol
- 13  $\alpha$ -Cadinol

#### Operating conditions

Column: capillary, fused silica, length 60 m, internal diameter 0,25 mm  
 Stationary phase: polyethylene glycol [SP-20 000<sup>a</sup>]  
 Film thickness: 0,25  $\mu$ m  
 Oven temperature: temperature programming from 90 °C to 225 °C at a rate of 3 °C/  
 min  
 Injector temperature: 255 °C  
 Detector temperature: 275 °C  
 Detector: flame ionization type  
 Carrier gas: Helium  
 Volume injected: 0,2  $\mu$ l of a 10 % dilution in ethanol  
 Carrier gas flow rate: 1,87 ml/min  
 Split ratio: 1/100

<sup>a</sup> SP-20 000 is an example of a suitable product available commercially. This information is given for the convenience of users of this International Standard and does not constitute an endorsement by ISO of this product.

**Figure A.1 — Typical chromatogram taken on a polar column**

**Peak identification**

- 1  $\alpha$ -Pinene
- 2 Sabinene
- 3 Myrcene
- 4  $\beta$ -Pinene
- 5  $\alpha$ -Phellandrene
- 6 Limonene
- 7  $\beta$ -Phellandrene
- 8 Terpinen-4-ol
- 9  $\alpha$ -Humulene
- 10 Germacrene D
- 11 Elemol
- 12 Epi- $\alpha$ -Cadinol
- 13  $\alpha$ -Cadinol

**Operating conditions**

Column: capillary, fused silica, length 60 m, internal diameter 0,25 mm  
 Stationary phase: 5 % phenyl –95 % methyl silicone  
 Film thickness: 0,25  $\mu$ m  
 Oven temperature: temperature programming from 90  $^{\circ}$ C to 225  $^{\circ}$ C at a rate of 3  $^{\circ}$ C/  
 min  
 Injector temperature: 255  $^{\circ}$ C  
 Detector temperature: 275  $^{\circ}$ C  
 Detector: flame ionization type  
 Carrier gas: Helium  
 Volume injected: 0,2  $\mu$ l of a 10 % dilution in ethanol  
 Carrier gas flow rate: 1,87 ml/min  
 Split ratio: 1/100

**Figure A.2 — Typical chromatogram taken on an apolar column**