

DRAFT INTERNATIONAL STANDARD

ISO/DIS 8896

ISO/TC 54

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Essential oil of caraway (*Carum carvi* L.)

Huile essentielle de carvi (Carum carvi L.)

ICS: 71.100.60

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Foreword

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ISO 8896 was prepared by Technical Committee ISO/TC 54, *Essential oils*.

This second edition cancels and replaces the first edition (ISO 8896:1987), which has been technically revised.

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Essential oil of caraway [*Carum carvi* L.]

1 Scope

This International Standard specifies certain characteristics of the oil of caraway [*Carum carvi* L.], in order to facilitate assessment of its quality.

2 Normative references

The following referenced documents are indispensable for the application 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/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 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 Term and definition

For the purposes of this document, the following term and definition apply:

3.1

essential oil of Caraway

essential oil obtained by steam distillation from the dried, ripe fruit of caraway [*Carum carvi* L. from Apiaceae family]

NOTE For information CAS number, see ISO/TR 21092^[2].

4 Requirements

4.1 Appearance

Clear mobile liquid.

4.2 Colour

Colourless to pale yellow.

4.3 Odour

Fresh, herbaceous and spicy.

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

Minimum: 0,900

Maximum: 0,920

4.5 Refractive index at 20 °C

Minimum: 1,484

Maximum: 1,490

4.6 Optical rotation at 20 °C

Between + 67° and + 80°.

4.7 Acid value

Maximum: 1,0

4.8 Miscibility in ethanol 80 % (volume fraction) at 20 °C

It shall not be necessary to use more than 3 volumes of ethanol 80 % (volume fraction) to obtain a clear solution with 1 volume of essential oil.

Sometimes opalescence can arise on continuing the addition of ethanol.

4.9 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. %
Myrcene	0,2	0,7
Limonene	33,0	45,0
<i>cis</i> -Dihydrocarvone	0,1	1,5
<i>cis</i> -Carveol	0,2	0,5
<i>trans</i> -Carveol	traces	0,5
Carvone	50,0	63,0
NOTE The chromatographic profile is normative, contrary to typical chromatograms given for information in Annex A.		

5 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 Acid value

Determine the optical rotation in accordance with ISO 1242.

7.5 Miscibility in ethanol 80 % (volume fraction) at 20 °C

Determine the miscibility in ethanol in accordance with ISO 875.

7.6 Chromatographic profile

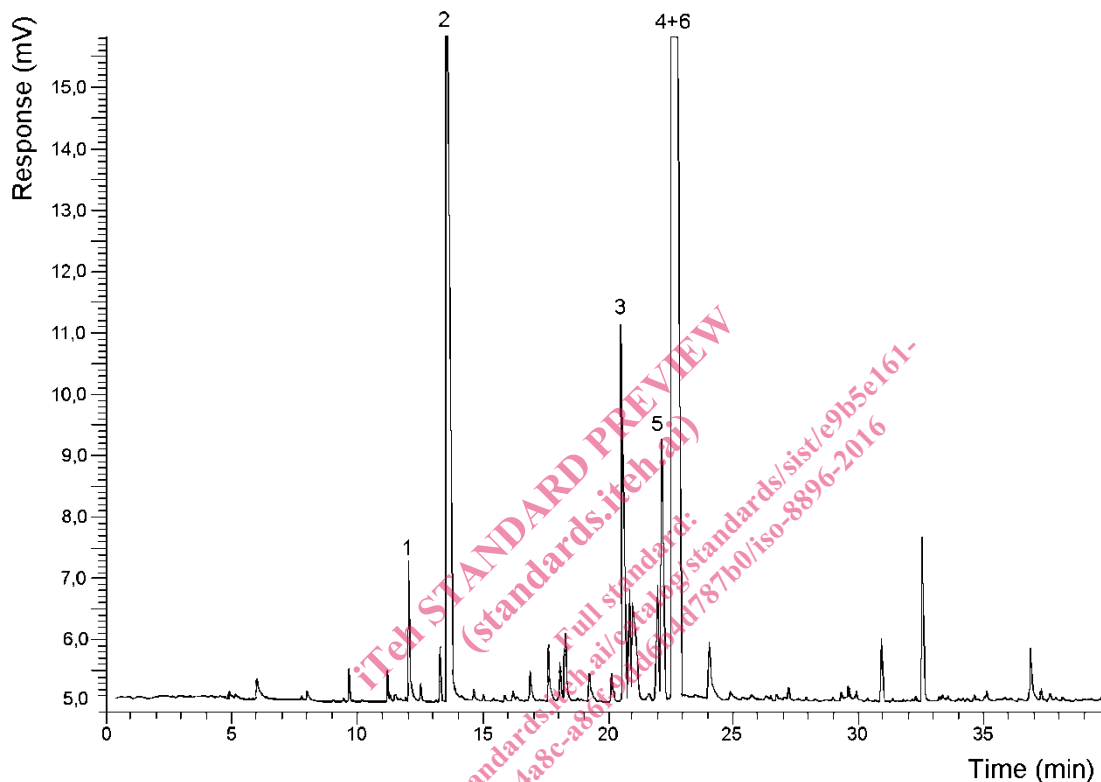
Determine the chromatographic profile in accordance with ISO 11024.

8 Packaging, labelling, marking and storage

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

Annex A (informative)

Typical chromatograms of the analysis by gas chromatography of the essential oil of caraway [*Carum carvi* L.]



Peak identification

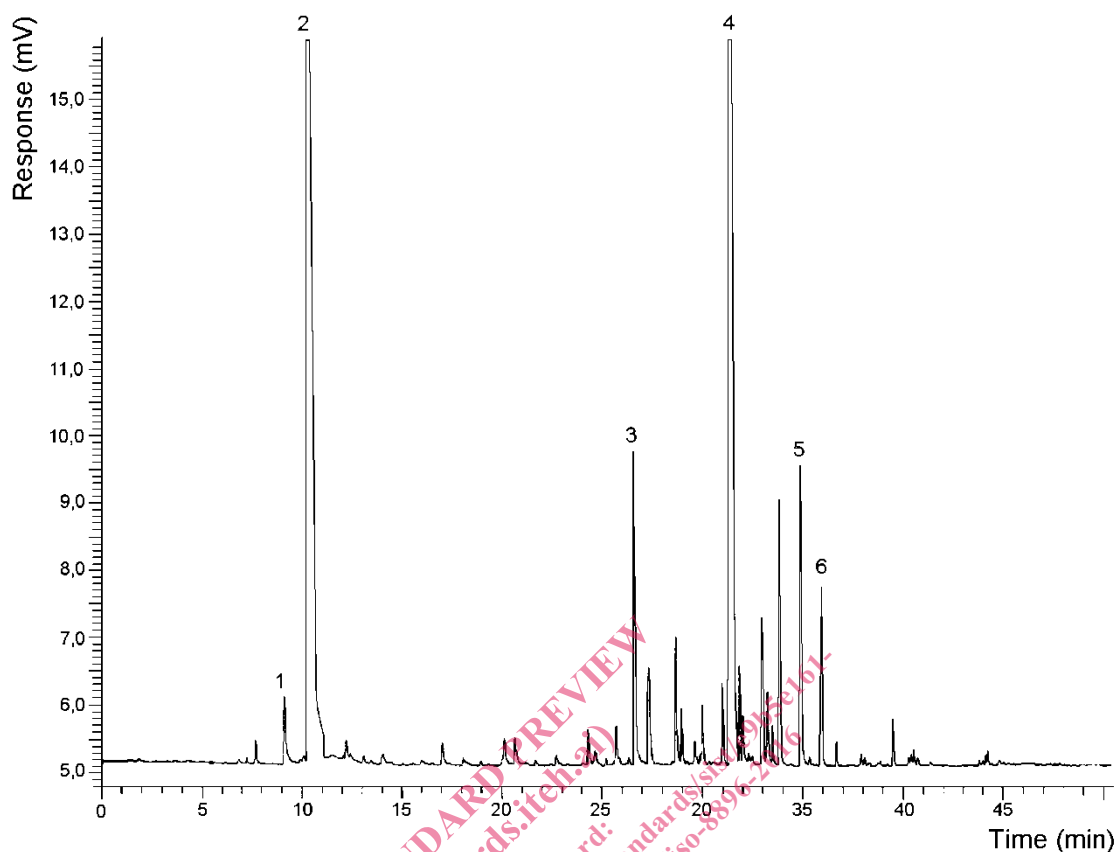
- 1 Myrcene
- 2 Limonene
- 3 *cis*-Dihydrocarvone
- 4 Carvone
- 5 *trans*-Carveol
- 6 *cis*-Carveol

Operating conditions

Column: fused capillary silica, 30 m length, 0,25 mm internal diameter
 Stationary phase: SPB™ –1 (SE-30)¹⁾
 Film thickness: 0,25 µm
 Oven temperature: programming temperature from 50 °C to 180 °C at a rate of 3 °C/min and 180 °C to 220 °C at a rate of 10 °C/min
 Injector temperature: 260 °C
 Detector temperature: 280 °C
 Detector: flame ionization type
 Carrier gas: helium
 Volume injected: 1 µl
 Carrier gas flow rate: 1 ml/min
 Split ratio: 1/50

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

1) SPB™ –1 (SE-30) 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.

**Peak identification**

- 1 Myrcene
- 2 Limonene
- 3 *cis*-Dihydrocarvone
- 4 Carvone
- 5 *trans*-Carveol
- 6 *cis*-Carveol

Operating conditions

Column: fused capillary silica, 30 m length, 0,25 mm internal diameter
 Stationary phase: Supelco Wax TM –10 ²⁾
 Film thickness: 0,25 μ m
 Oven temperature: programming temperature from 50 °C to 180 °C at a rate of 3 °C/min and 180 °C to 220 °C at a rate of 10 °C/min
 Injector temperature: 260 °C
 Detector temperature: 280 °C
 Detector: flame ionization type
 Carrier gas: helium
 Volume injected: 1 μ l
 Carrier gas flow rate: 1 ml/min
 Split ratio: 1/50

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

2) Supelco Wax TM –10 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.