INTERNATIONAL STANDARD

ISO 3524

Second edition
2003-11-15

Oil of cinnamon leaf, Sri Lanka type (*Cinnamomum zeylanicum* Blume)

*Huile essentielle de feuilles de cannellier, type Sri Lanka (*Cinnamomum zeylanicum *Blume)*

Reference number
ISO 3524:2003(E)

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Published in Switzerland

Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. 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 document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 3524 was prepared by Technical Committee ISO/TC 54, *Essential oils*.

This second edition cancels and replaces the first edition (ISO 3524:1977), which has been technically revised.

Oil of cinnamon leaf, Sri Lanka type (*Cinnamomum zeylanicum* Blume)

1 Scope

This International Standard specifies certain characteristics of the oil of cinnamon leaf, Sri Lanka type (*Cinnamomum zeylanicum* Blume), 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 1272, *Essential oils — Determination of content of phenols*

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

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

3 Terms and definitions

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

3.1
oil of cinnamon leaf
essential oil obtained by steam distillation of the leaves of *Cinnamomum zeylanicum* Blume, of the Lauraceae family, growing mainly in Sri Lanka

NOTE For information on the CAS number, see ISO/TR 21092.

4 Requirements

4.1 Appearance

Clear, mobile liquid.

4.2 Colour

Light to dark amber.

4.3 Odour

Characteristic, spice-like odour reminiscent of eugenol.

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

Minimum: 1,037 0

Maximum: 1,053 0

4.5 Refractive index at 20 °C

Minimum: 1,527 0

Maximum: 1,540 0

4.6 Optical rotation at 20 °C

Between −2,5° and +2°.

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

It shall not be necessary to use more than 2 volumes of ethanol, 70 % (volume fraction), to obtain a clear solution with 1 volume of essential oil, sometimes with opalescence on dilution.

4.8 Content of phenols

Minimum: 75 % (volume fraction).

Maximum: 85 % (volume fraction).

4.9 Chromatographic profile

Analysis of the essential oil shall be carried out by gas chromatography. In the chromatogram obtained, the representative and characteristics 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.

Table 1 — Chromatographic profile

Component	Minimum %	Maximum %
trans-Cinnamic aldehyde	0,8	1,5
Eugenol	70,0	83,0
trans-Cinnamyl acetate	1,1	1,8
Eugenyl acetate	1,3	3,0
Benzyl benzoate	2,0	4,0
NOTE The chromatographic profile is normative, contrary to typical chromatograms given for information in Annex A.		

4.10 Flashpoint

Information on the flashpoint is given in Annex B.

5 Sampling

See 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}

See ISO 279.

6.2 Refractive index at 20 °C

See ISO 280.

6.3 Optical rotation at 20 °C

See ISO 592.

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

See ISO 875.

6.5 Content of phenols

See ISO 1272.

6.6 Chromatographic profile

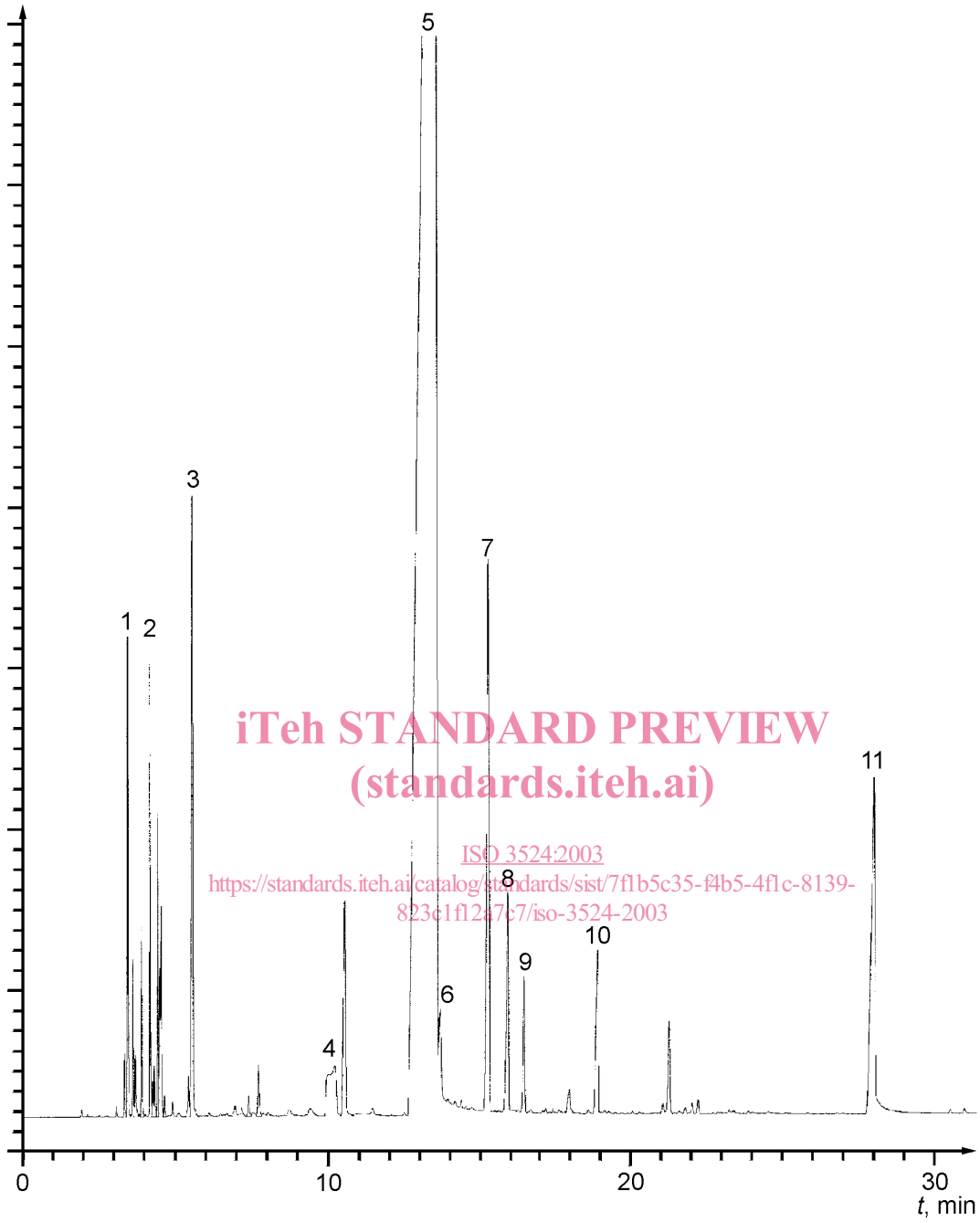
See ISO 11024-1 and ISO 11024-2.

7 Packaging, labelling, marking and storage

See ISO/TR 210 and ISO/TR 211.

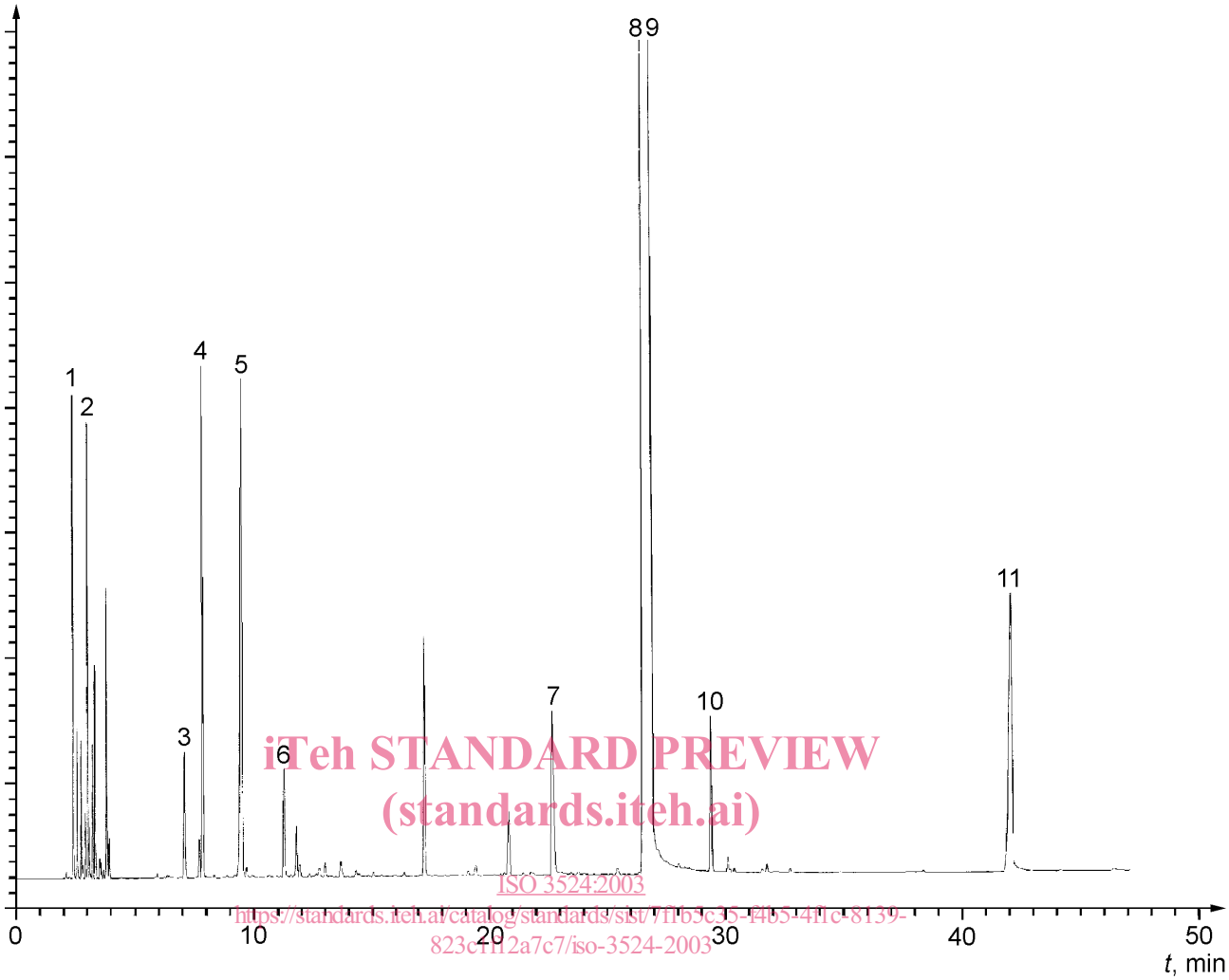
Annex A
(informative)

Typical chromatograms of the analysis by chromatography of the essential oil of cinnamon leaf, Sri Lanka type (*Cinnamomum zeylanicum* Blume)



Peak identification		Operating conditions
1	α-Pinene	Column: silica capillary; length 30 m; internal diameter 0,2 mm
2	α-Phellandrene	Thickness of film: 0,20 µm
3	Linalol	Stationary phase: poly(dimethyl siloxane) (SP5®)
4	*trans*-Cinnamic aldehyde	Oven temperature: 100 °C to 200 °C at a rate of 3 °C/min
5	Eugenol	Injector temperature: 250 °C
6	α-Copaene	Detector temperature: 250 °C
7	Cinnamyl acetate	Detector type: flame ionization type
8	β-Caryophellene	Carrier gas: helium
9	α-Humulene	Volume injected: 0,1 µl
10	Eugenyl acetate	Carrier gas flow rate: 3 ml/min
11	Benzyl benzoate	Split ratio: 1/100

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



Peak identification		Operating conditions
1	α-Pinene	Column: fused silica capillary; length 30 m; internal diameter 0,2 mm
2	α-Phellandrene	Thickness of film: 0,20 µm
3	α-Copaene	Stationary phase: poly(ethylene glycol) (SUPELCOWAX-10®)
4	Linalol	Oven temperature: 100 °C to 200 °C at a rate of 3 °C/min
5	β-Caryophellene	Injector temperature: 250 °C
6	α-Humulene	Detector temperature: 250 °C
7	*trans*-Cinnamic aldehyde	Detector: flame ionization type
8	Cinnamyl acetate	Carrier gas: helium
9	Eugenol	Volume injected: 0,1 µl
10	Eugenyl acetate	Carrier gas flow rate: 3 ml/min
11	Benzyl benzoate	Split ratio: 1/100

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