INTERNATIONAL STANDARD

ISO 9842

Second edition
2003-09-01

Oil of rose (*Rosa* × *damascena* Miller)

*Huile essentielle de rose (*Rosa × damascena *Miller)*

Reference number
ISO 9842:2003(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.

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 9842 was prepared by Technical Committee ISO/TC 54, *Essential oils*.

This second edition cancels and replaces the first edition (ISO 9842:1991), which has been technically revised.

Oil of rose (*Rosa* × *damascena* Miller)

1 Scope

This International Standard specifies certain characteristics of the oil of rose (*Rosa* × *damascena* Miller) cultivated in Turkey, Morocco and Bulgaria, of the Rosaceae family, 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 709, *Essential oils — Determination of ester value*

ISO 1041, *Essential oils — Determination of freezing point*

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

ISO 11024-2, *Essential oils — 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 rose
essential oil obtained by steam distillation of the flowers of *Rosa* × *damascena* Miller, of the Rosaceae family, cultivated in Turkey, Morocco and Bulgaria

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

4 Requirements (all origins)

4.1 Appearance

Liquid or more or less crystallized.

4.2 Colour

Light yellow.

4.3 Odour

Floral, rose.

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

Minimum: 0,848
Maximum: 0,880

4.5 Refractive index at 20 °C

Minimum: 1,452 0
Maximum: 1,470 0

4.6 Optical rotation at 20 °C

Between −5° and −1,8°.

4.7 Freezing point

Between +16 °C and +23,5 °C.

4.8 Ester value

Minimum: 7
Maximum: 24

4.9 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.

4.10 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 Freezing point

See ISO 1041.

6.5 Ester value

See ISO 709.

Time of saponification: 1 h

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.

Table 1 — Chromatographic profile

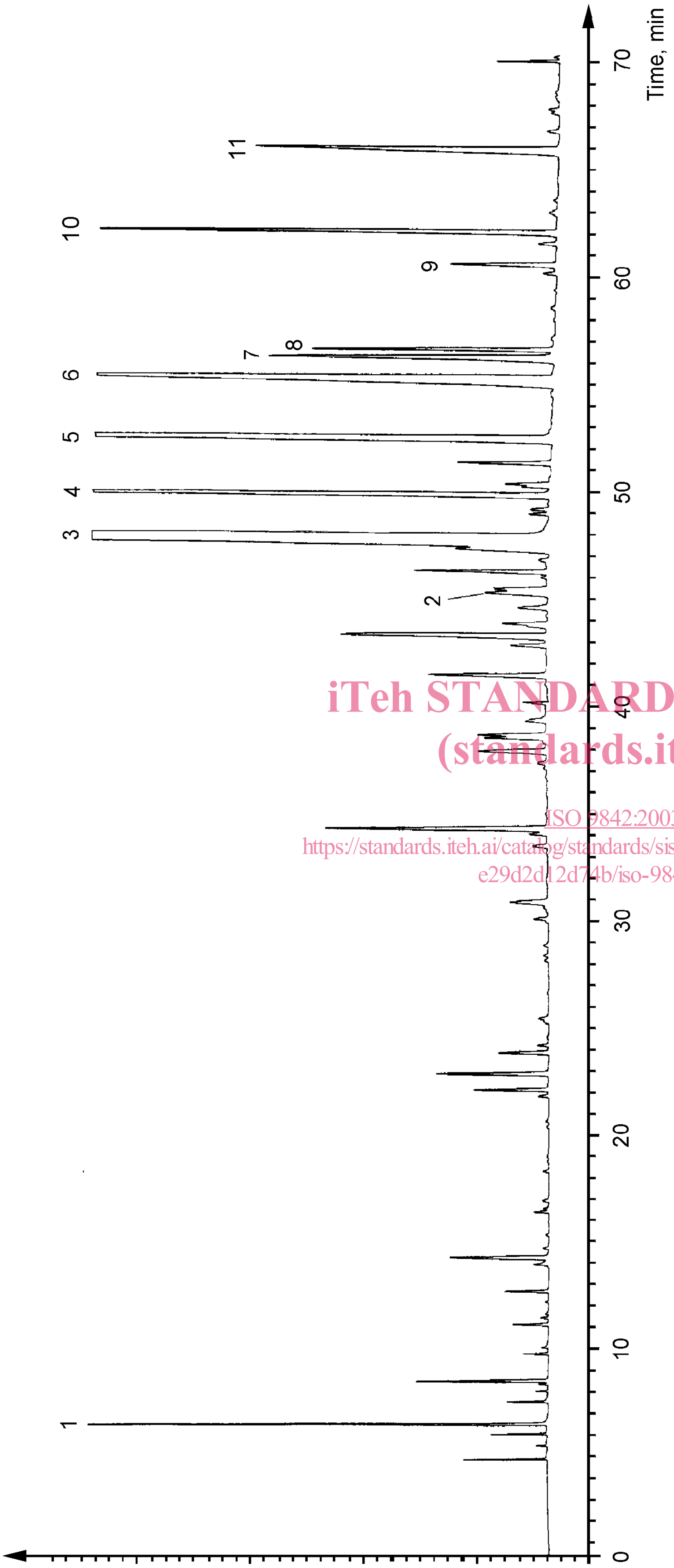
Values in percent

Component	Bulgaria		Turkey		Morocco		Turkey ("peasant" type)	
	min.	max.	min.	max.	min.	max.	min.	max.
Ethanol	—	2,0	—	7	—	3	—	2,0
Citronellol	20,0	34,0	34,0	49,0	30,0	47,0	26	40,0
Nerol	5,0	12,0	3,0	11,0	3,0	11,0	6,0	12,0
Geraniol	15,0	22,0	8,0	20,0	6,0	23,0	12,0	29,0
β-Phenylethanol	—	3,5	—	3,0	—	3,0	—	3,0
Heptadecane (Paraffin C_{17})	1,0	2,5	0,8	3,0	0,6	4,0	0,7	3,0
Nonadecane (Paraffin C_{19})	8,0	15,0	6,0	13,0	7,0	16,0	6,0	8,5
Heneicosane (Paraffin C_{21})	3,0	5,5	2,0	4,0	2,0	5,5	1,5	4,0
NOTE The chromatographic profile is normative, contrary to typical chromatograms given for information in Annex A.								

Annex A
(informative)

Typical chromatograms of the analysis by gas chromatography of the essential oil of rose (*Rosa* × *damascena* Miller)

NOTE Only chromatograms taken on polar column are proposed, as on an apolar column nerol is coeluted with citronellol.



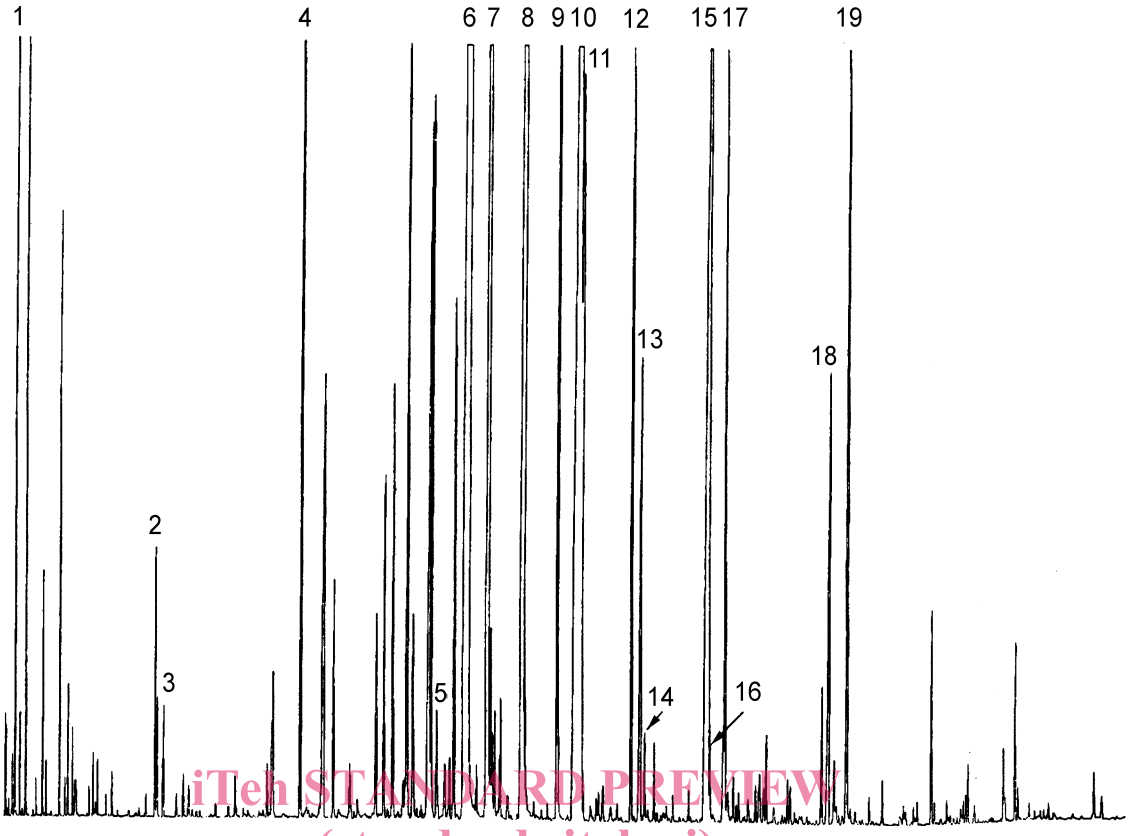
Peak identification

1 Ethanol
2 Heptadecane (Paraffin C_{17})
3 Citronellol
4 Nerol
5 Geraniol
6 Nonadecane (Paraffin C_{19})
7 (Z)-9-Nonadecene (Paraffin C'_{19})
8 β-Phenylethanol
9 Eicosane (Paraffin C_{20})
10 Methyleugenol
11 Heneicosane (Paraffin C_{21})

Operating conditions

Column: silica capillary; length 60 m; internal diameter 0,32 mm
Stationary phase: bonded poly(ethylene glycol) (INNOWAX®)
Film thickness: 0,5 µm
Oven temperature: isothermal at 80 °C for 5 min, then temperature programming from 80 °C to 220 °C at a rate of 2 °C/min
Injector temperature: 250 °C
Detector temperature: 250 °C
Detector: flame ionization type
Carrier gas: nitrogen
Volume injected: 0,2 µl
Carrier gas flow rate: 0,5 ml/min
Split ratio: 1/30

Figure A.1 — Typical chromatogram taken on a polar column (origin: Turkey)



Peak identification

1 Ethanol
2 *cis*-Rose oxide
3 *trans*-Rose oxide
4 Linalol
5 Heptadecane (Paraffin C_{17})
6 Citronellol
7 Nerol
8 Geraniol
9 β-Phenylethanol
10 Nonadecane (Paraffin C_{19})
11 *n*-Nonadecene (Alkene *n*-C'_{19})
12 Methyleugenol
13 Eicosane (Paraffin C_{20})
14 Alkene *n*-C_{20}
15 Heneicosane (Paraffin C_{21})
16 Alkene *n*-C_{21}
17 Eugenol
18 Alkane *n*-23
19 (*E*,*E*)-Farnesol

Operating conditions

Column: capillary; length 50 m; internal diameter 0,2 mm
Stationary phase: poly(ethylene glycol) (CARBOWAX 20 M®)
Film thickness: 0,25 µm
Oven temperature: temperature programming from 65 °C to 230 °C at a rate of 2 °C/min
Injector temperature: 230 °C
Detector temperature: 230 °C
Detector flame ionization type
Carrier gas: hydrogen
Volume injected: 0,2 µl
Carrier gas flow rate: 1,1 ml/min
Split ratio: 100/1

Figure A.2 — Typical chromatogram taken on a polar column (origin: Bulgaria)