
**Essential oil of rose, Chinese Kushui
type (*Rosa sertata* × *Rosa rugosa*)**

Huile essentielle de rose, type chinois Kushui (*Rosa sertata* × *Rosa rugosa*)

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Foreword

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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, www.iso.org/directives.

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

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Essential oil of rose, Chinese Kushui type (*Rosa sertata* × *Rosa rugosa*)

1 Scope

This International Standard specifies certain characteristics of the essential oil of rose, Chinese Kushui type (*Rosa sertata* × *Rosa rugosa*) cultivated mainly in China, 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/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 (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 rose, Chinese Kushui type

essential oil obtained by steam distillation of the flowers of *Rosa sertata* × *Rosa rugosa* cultivated mainly in China

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

4 Requirements

4.1 Appearance

Liquid or more or less crystallized.

4.2 Colour

Light yellow or yellow brown.

4.3 Odour

Characteristic, full-bodied, floral, rose.

Relative density at 20 °C d_{20}^{20}

Minimum: 0,880.

Maximum: 0,930.

4.4 Refractive index at 20 °C

Minimum: 1,4680.

Maximum: 1,4798.

4.5 Optical rotation at 20 °C

Between $-10,3^{\circ}$ and $-0,5^{\circ}$.

4.6 Freezing point

Between 11 °C and 14 °C.

4.7 Ester value

Minimum: 18.

Maximum: 24.

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.

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.

Table 1 — Chromatographic profile

Components	Minimum %	Maximum %
Ethanol	n.d. ^a	1,0
<i>cis</i> -Rose oxide	n.d. ^a	0,5
Linalool	1,0	3,5
β-Phenylethyl alcohol	n.d. ^a	0,3
Citronellol	40,0	50,0
Nerol	2,0	5,5
Geraniol	6,0	18,0
Citronellyl acetate	2,5	4,5
Eugenol methyl ether	0,8	2,0
Farnesol	2,0	3,5
Heneicosane (paraffin C ₂₁)	0,6	2,0
Tricosane (paraffin C ₂₃)	0,6	2,0
NOTE The chromatographic profile is normative, contrary to typical chromatograms given for information in Annex A .		
a Not detectable.		

6 Test methods

Relative density at 20 °C d_{20}^{20}

Determine the relative density in accordance with ISO 279.

6.1 Refractive index at 20 °C

Determine the refractive index in accordance with ISO 280.

6.2 Optical rotation at 20 °C

Determine the optical rotation in accordance with ISO 592.

6.3 Freezing point

Determine the freezing point in accordance with ISO 1041.

6.4 Ester value

Determine the ester value in accordance with ISO 709.

6.5 Chromatographic profile

Determine the chromatographic profile in accordance with ISO 11024.

7 Packaging, labelling, marking and storage

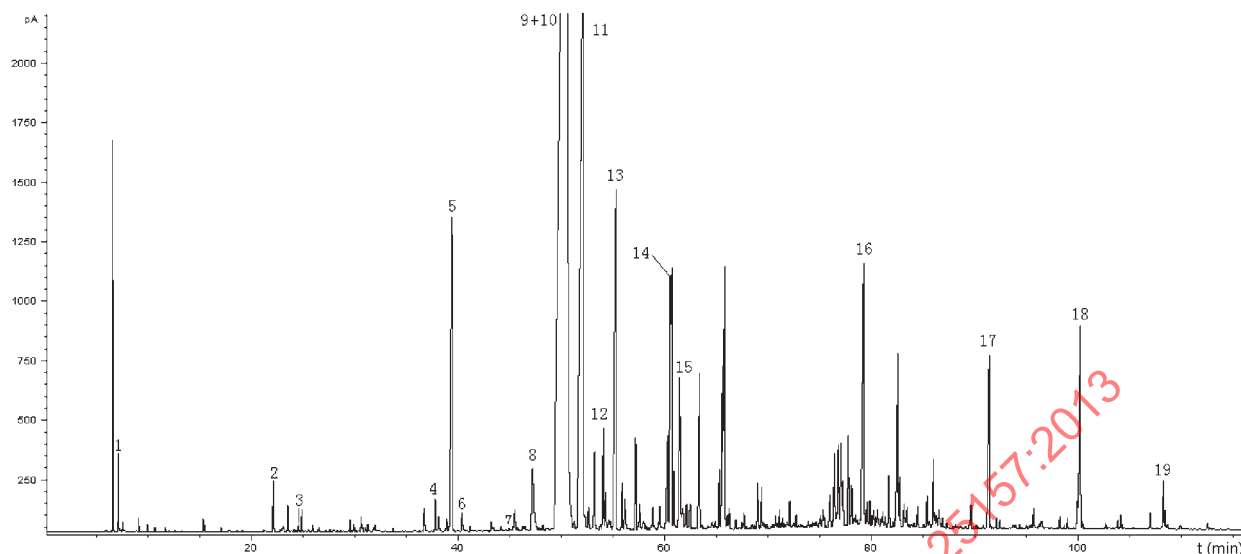
These items shall be in accordance with ISO/TR 210 and ISO/TR 211.

Annex A (informative)

Typical chromatograms of the analysis by gas chromatographic of essential oil of rose, Chinese Kushui type (*Rosa sertata* × *Rosa rugosa*)

The chromatogram in [Figure A.1](#) results from the use of a medium polar column and that in [Figure A.2](#) of a polar column.

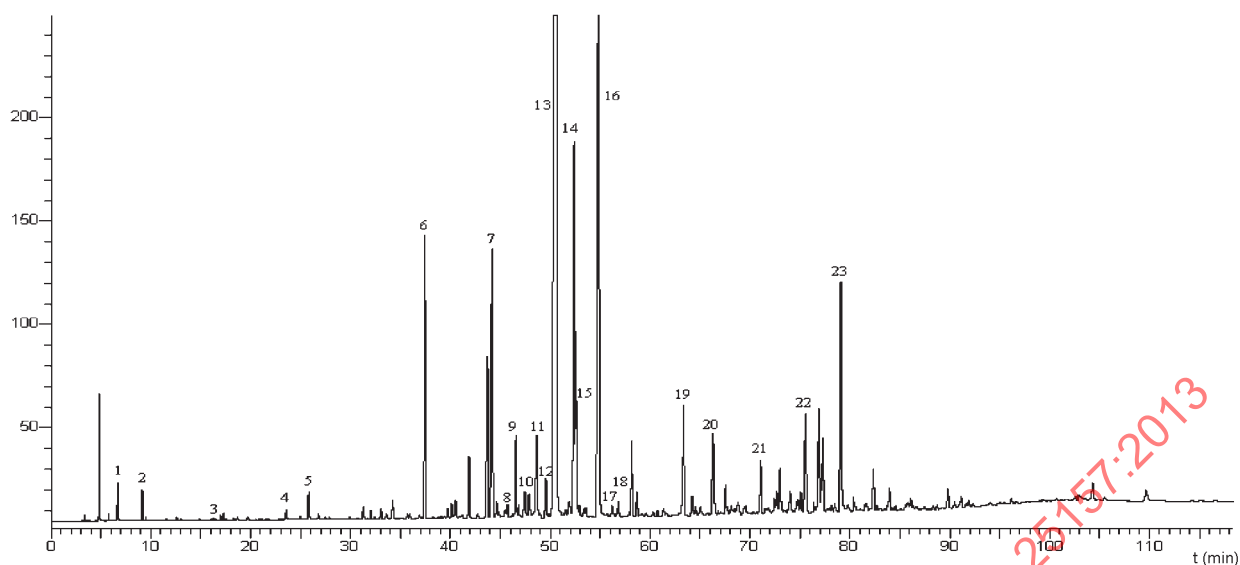
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Peak identification		Operating conditions
1	Ethanol	Column: fused capillary silica, 60 m length, 0,20 mm internal diameter Stationary phase: 7 %cyanic-propyl, 7 %phenyl, polydimethylsiloxane (OV1701@a) Film thickness: 0,33 µm Oven temperature: isothermal at 60 °C for 1 min, then programming temperature from 60 °C to 270 °C at a rate of 2 °C/min, isothermal at 270 °C for 10 min Injector temperature: 260 °C Detector temperature: 260 °C Detector: flame ionization type Carrier gas: nitrogen Volume injected: 1,0 µl Carrier gas flow rate: 0,8 ml/min Split ratio: 1/100
2	α-Pinene	
3	Heptanal	
4	(Z)-Rose oxide	
5	Linalool	 t time
6	Benzyl alcohol	
7	β-Phenylethyl alcohol	
8	α-Terpineol	
9+10	Citronellol + Nerol	
11	Geraniol	
12	Geranial	
13	Citronellyl acetate	
14	Eugenol	
15	Eugenol methyl ether	
16	Farnesol	
17	Henicosane (Paraffin C ₂₁)	
18	Tricosane (Paraffin C ₂₃)	
19	Pentacosane (Paraffin C ₂₅)	

a 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 a medium polar column

**Peak identification****Operating conditions**

1	Ethanol	Column: fused capillary silica, 60 m length, 0,25 mm internal diameter
2	α -Pinene	Stationary phase: polyethylene glycol (HP-Innowax ^a)
3	Heptanal	Film thickness: 0,50 μ m
4	2-Heptanol	Oven temperature: isothermal at 60 °C for 1 min, then programming temperature from 60 °C to 255 °C at a rate of 2 °C/min, isothermal at 255 °C for 20 min
5	(Z)-Rose oxide	
6	Linalool	Injector temperature: 260 °C
7	Citronellyl acetate	Detector temperature: 260 °C
8	Neral	Detector: flame ionization type
9	α -Terpineol	Carrier gas: nitrogen
10	Neryl acetate	Volume injected: 0,6 μ l
11	Geranial	Carrier gas flow rate: 0,8 ml/min
12	Geranyl acetate	Split ratio: 1/100
13	Citronellol	
14	Nerol	
15	2-Tridecanone	
16	Geraniol	
17	Nonadecane	
18	Benzyl alcohol	
19	Eugenol methyl ether	
20	Heneicosane	
21	Eugenol	
22	Tricosane	<i>t</i> time
23	Farnesol	

^a 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.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 11018¹⁾) concluded that it was difficult to recommend a single apparatus for standardization purposes, given that:

- there is a wide variation in the chemical composition of essential oils;
- the volume of the sample needed in certain requirements would be too costly for high-priced essential oils;
- 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 annexed to each International Standard, for information, in order to meet the requirements of the interested parties.

The equipment with which this value was obtained has to be specified.

For further information see ISO/TR 11018.¹⁾

B.2 Flashpoint of the essential oil of rose, Chinese Kushui type

The mean value is +61 °C.

NOTE Obtained with a semi-automatic closed cup flash tester NPM221.¹⁾

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.