International Standard 3141

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION•МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ•ORGANISATION INTERNATIONALE DE NORMALISATION

Oil of clove leaf [*Syzygium aromaticum* (Linnaeus) Merrill et Perry syn. *Eugenia caryophyllus* (C. Sprengel) Bullock et Harrison]

Huile essentielle de feuilles de giroflier [Syzygium aromaticum *(Linnaeus) Merrill et Perry syn.* Eugenia caryophyllus *(C. Sprengel) Bullock et Harrison]*

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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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 3141 was prepared by Technical Committee ISO/TC 54, *Essential oils.*

This second edition cancels and replaces the first edition (ISO 3141-1975). Clauses 4 and 6 of which have been technically revised.

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

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Oil of clove leaf [*Syzygium aromaticum* (Linnaeus) Merrill et Perry syn. *Eugenia caryophyllus* (C. Sprengel) Bullock et Harrison]

1 Scope and field of application

This International Standard specifies certain characteristics of oil of clove leaf [*Syzygium aromaticum* (Linnaeus) Merrill et Perry syn. *Eugenia caryophyllus* (C. Sprengel) Bullock et Harrison], with a view to facilitating the assessment of its quality.

2 References

ISO/R 210, *Essential oils — Packing.*

ISO/R 211, *Essential oils — 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 709, *Essential oils — Determination of ester value.*

ISO 875, *Essential oils — Evaluation of miscibility in ethanol.*

ISO 1272, *Essential oils — Determination of phenols content.*

3 Definition

oil of clove leaf: The oil obtained by steam distillation of the leaves of *Syzygium aromaticum* (Linnaeus) Merrill et Perry syn. *Eugenia caryophyllus* (C. Sprengel) Bullock et Harrison.

4 Requirements

4.1 Appearance

Clear, mobile liquid.

4.2 Colour

Yellow to light brown; in contact with iron, the oil becomes dark purple-brown.

4.3 Odour

Spicy and reminiscent of eugenol.

4.4 Relative density at 20/20 °C

Minimum: 1,039

Maximum: 1,049

4.5 Refractive index at 20 °C

Minimum: 1,528 0

Maximum: 1,535 0

4.6 Miscibility with 70 % (*V*/*V*) ethanol at 20 °C

Not more than 2 volumes of 70 % (*V*/*V*) ethanol at 20 °C shall be required to give a clear solution with 1 volume of essential oil.

4.7 Phenols content

	Indonesia	Other origins
Minimum . . .	78 %	82 %

4.8 Chromatographic profile

Evaluate the quantities of the following characteristic constituents of the oil from the chromatographic profile obtained. The proportion of these constituents, calculated as a fraction of the sum of all peak areas, and taking all response factors as equal, shall lie within the following limits:

caryophyllene
eugenol
α-humulene
} (To be completed later.)

4.9 Flash point

117 °C[1)]

5 Sampling

See ISO 212.

Minimum volume of the final sample: 50 ml

6 Methods of test

6.1 Relative density at 20/20 °C

See ISO 279.

6.2 Refractive index at 20 °C

See ISO 280.

6.3 Miscibility with 70 % (*V*/*V*) ethanol at 20 °C

See ISO 875.

6.4 Phenols content

See ISO 1272.

6.5 Chromatographic profile

See annex.

6.6 Flash point

To be completed later.

7 Packing, labelling and marking

See ISO/R 210 and ISO/R 211.

1) Value given as an indication.

Annex

Typical chromatogram

(This annex does not form part of the standard.)

Sample : oil of clove leaf

Column : fused quartz capillary, length 50 m, internal diameter 0,3 mm
Stationary phase : polyethylene glycol 20 000
Temperature programming : from 70 to 180 °C at 2 °C/min
Injection temperature : 200 °C
Detection temperature : 230 °C
Volume injected : 0,1 µl
Carrier gas : helium
Carrier gas flowrate : 1,3 ml/min
Detector : flame ionization