INTERNATIONAL STANDARD

ISO 4716

First edition
1987-12-01

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

Oil of vetiver [*Vetiveria zizanioides* (Linnaeus) Nash]

Huile essentielle de vétiver [Vetiveria zizanioides *(Linnaeus) Nash*]

Reference number
ISO 4716 : 1987 (E)

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 4716 was prepared by Technical Committee ISO/TC 54, *Essential oils.*

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.

Printed in Switzerland

Oil of vetiver [*Vetiveria zizanioides* (Linnaeus) Nash]

1 Scope and field of application

This International Standard specifies certain characteristics of oil of vetiver [*Vetiveria zizanioides* (Linnaeus) Nash], growing in Reunion and Haiti 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 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 875, *Essential oils — Determination of miscibility in ethanol.*

ISO 1241, *Essential oils — Determination of ester value after acetylation and evaluation of free alcohols and total alcohols content.*

ISO 1242, *Essential oils — Determination of the acid value.*

ISO 1271, *Essential oils — Determination of carbonyl value — Free hydroxylamine method.*

ISO 3793, *Essential oils — Estimation of primary and secondary free alcohols content by acetylation in pyridine.*

ISO 3794, *Essential oils (containing tertiary alcohols) — Estimation of free alcohols content by determination of ester value after acetylation.*

3 Definition

oil of vetiver : The oil obtained by steam distillation of the roots of *Vetiveria zizanioides* (Linnaeus) Nash, of the family graminaceae.

4 Requirements

4.1 Appearance

Viscous liquid.

4.2 Colour

Brown to reddish brown.

4.3 Odour

Characteristic.

4.4 Relative density at 20/20 °C

	Reunion	Haiti
Minimum...	0,990	0,986
Maximum...	1,015	0,998

4.5 Refractive index at 20 °C

Minimum...	1,522 0	1,521 0
Maximum...	1,530 0	1,526 0

4.6 Optical rotation at 20 °C

Minimum...	+19°	+22°
Maximum...	+30°	+38°

4.7 Miscibility in 80 % (V/V) ethanol at 20 °C

1 volume of the oil shall not require more than 2 volumes of 80 % (V/V) ethanol at 20 °C to give a clear solution. A slight opalescence may sometimes appear.

4.8 Acid value

	Reunion	Haiti
Maximum...	35	14

4.9 Ester value

Minimum...	5	5
Maximum...	16	16

4.10 Ester value after acetylation[1], determined according to ISO 1241

Minimum...	115	120
Maximum...	145	165

4.11 Ester value after acetylation, determined according to ISO 3794

Minimum...	145	158
Maximum...	190	190

4.12 Carbonyl value

Minimum...	44 corresponding to 17 % of ketones (M_r = 218)	23 corresponding to 9 % of ketones (M_r = 218)
Maximum...	68 corresponding to 26,5 % of ketones (M_r = 218)	59 corresponding to 23 % of ketones (M_r = 218)

4.13 Estimation of primary and secondary free alcohols content, expressed as alcohols of relative molecular mass M_r = 220

Minimum...	21 %	40 %
Maximum...	50 %	60 %

4.14 Establishment of chromatographic profile

See the annex (for information only).

5 Sampling

See ISO 212.

Minimum volume of final sample : 40 ml

NOTE — This volume is sufficient to allow all of the tests specified in this International Standard to be carried out at least once.

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 Optical rotation at 20 °C

See ISO 592.

10 % solution in 95 % (V/V) ethanol.

6.4 Miscibility in 80 % (V/V) ethanol at 20 °C

See ISO 875.

6.5 Acid value

See ISO 1242.

6.6 Ester value

See ISO 709.

Test portion : 5 g

Saponification time : 3 h

6.7 Ester value after acetylation

See ISO 1241.

Test portion : 1 g

Saponification time : 3 h

See ISO 3794.

Test portion : 1 g

Acetylation time : 16 h

Saponification time : 3 h

1) The results may be erroneously high in the presence of a high concentration of ketones.

6.8 Carbonyl value

See ISO 1271.

Test portion : 2 g

Standing time : 2 h

6.9 Primary and secondary free alcohols content

See ISO 3793.

M_r = 220

6.10 Chromatographic profile

See the annex (for information only).

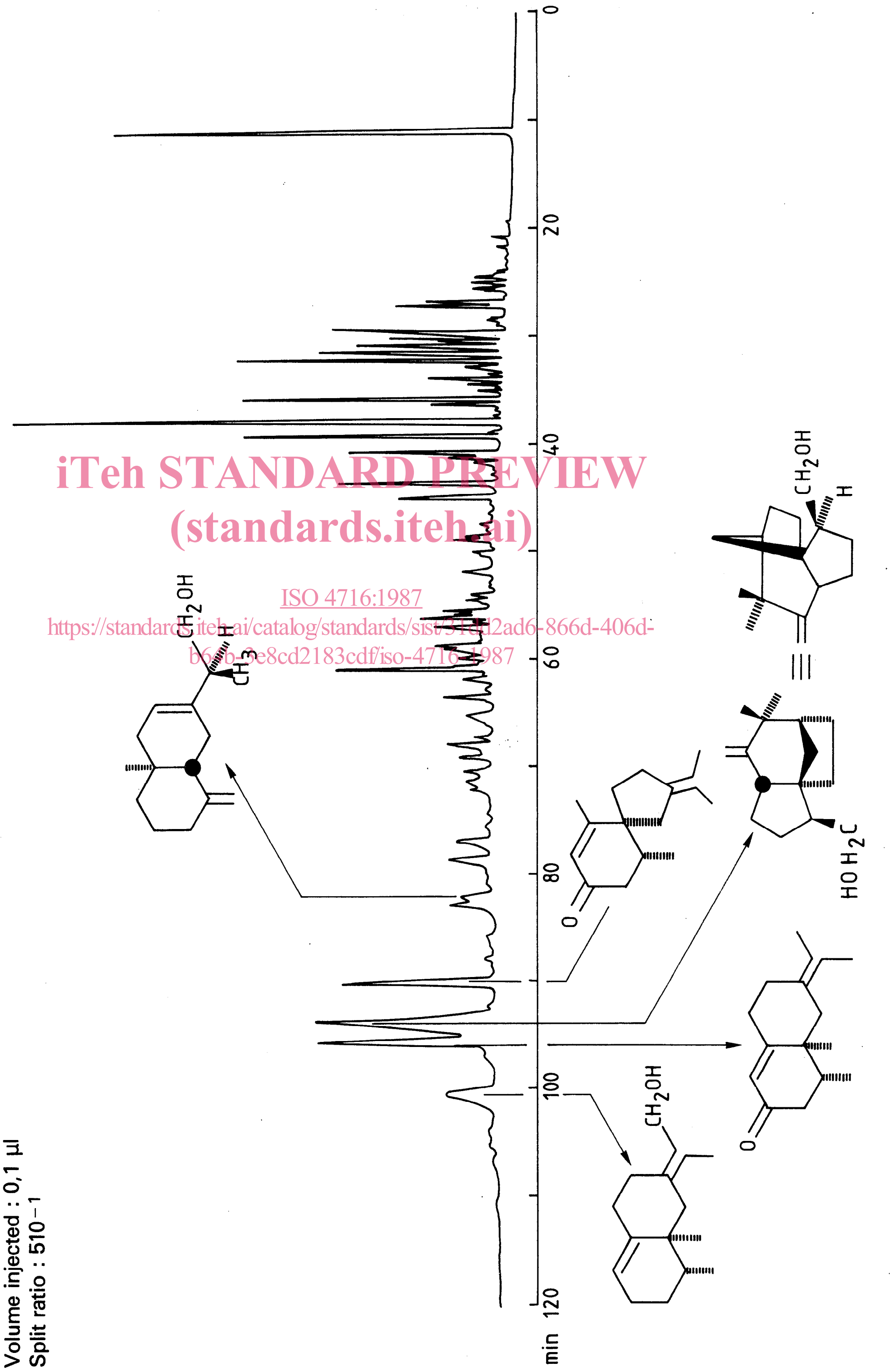
7 Packing, labelling and marking

See ISO/R 210 and ISO/R 211.

Annex

Typical chromatograms

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

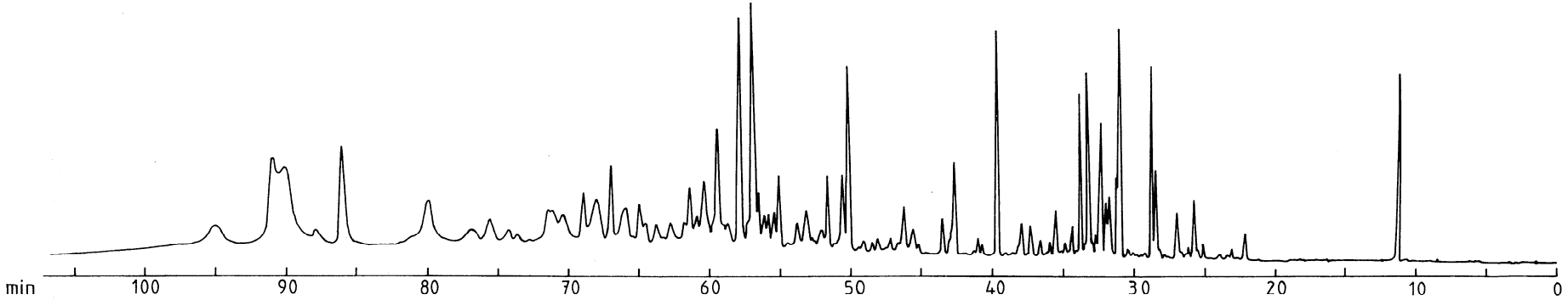


Sample : oil of vetiver, Bourbon

Column : glass capillary, length 82 m, internal diameter 0,3 mm
Stationary phase : polyethylene glycol 20 000
Oven temperature : temperature programme 100 to 180 °C, at 2 °C/min
Injection temperature : 235 °C
Detector : flame ionization
Carrier gas : helium
Flow rate 0,5 ml/min
Volume injected : 0,1 µl
Split ratio : 510−1

Sample : oil of vetiver, Haiti

Column : glass capillary, length 100 m, internal diameter 0,5 mm
Stationary phase : polyethylene glycol 20 000
Oven temperature : temperature programme 100 to 180 °C, at 2 °C/min
Injection temperature : 220 °C
Detector : flame ionization
Carrier gas : helium
Flow rate 2 ml/min
Volume injected : 0,2 µl
Split ratio : 180^{-1}



UDC 665.524.27

Descriptors : essential oils, vetiver, specifications.

Price based on 5 pages