INTERNATIONAL STANDARD

ISO 4716

Third edition
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Essential oil of vetiver [*Chrysopogon zizanioides* (L.) Roberty, syn. *Vetiveria zizanioides* (L.) Nash]

*Huile essentielle de vétiver [*Chrysopogon zizanioides *(L.) Roberty, syn.* Vetiveria zizanioides *(L.) Nash]*

Reference number
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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.

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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Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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

This third edition cancels and replaces the second edition (ISO 4716:2002), which has been technically revised.

Essential oil of vetiver [*Chrysopogon zizanioides* (L.) Roberty, syn. *Vetiveria zizanioides* (L.) Nash]

1 Scope

This International Standard specifies certain characteristics of the essential oil of vetiver [*Chrysopogon zizanioides* (L.) Roberty, syn. *Vetiveria zizanioides* (L.) Nash], growing in Reunion Island, China, Haiti, Indonesia, Madagascar, Brazil, and Comoros Island 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 875, *Essential oils — Evaluation of miscibility in ethanol*

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

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 vetiver
essential oil obtained by steam distillation of the roots of *Chrysopogon zizanioides* (L.) Roberty, syn. *Vetiveria zizanioides* (L.) Nash of the Poaceae family

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

4 Requirements

4.1 Appearance

Viscous liquid.

4.2 Colour

From yellowish brown to reddish brown.

4.3 Odour

Characteristic, woody and earthy.

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

Value	Bourbon type[a]	China	Haiti	Indonesia	Brazil
Minimum	0,990	0,985	0,980	0,980	0,990
Maximum	1,015	1,020	1,005	1,003	1,010
[a] Bourbon type includes: Reunion Island, Comoros Island and Madagascar origins.					

4.5 Refractive index at 20 °C

Value	Bourbon type[a]	China	Haiti	Indonesia	Brazil
Minimum	1,522	1,520	1,516	1,520	1,520
Maximum	1,530	1,528	1,527	1,530	1,530
[a] Bourbon type includes: Reunion Island, Comoros Island and Madagascar origins.					

4.6 Optical rotation at 20 °C

Value	Bourbon type[a]	China	Haiti	Indonesia	Brazil
Minimum	+19°	+17°	+22°	+17°	+15°
Maximum	+30°	+46°	+48°	+32°	+30°
[a] Bourbon type includes: Reunion Island, Comoros Island and Madagascar origins.					

4.7 Miscibility in ethanol 80 % volume fraction at 20 °C

It shall not be necessary to use more than 2 volumes of ethanol 80 % volume fraction to obtain a clear solution with 1 volume of essential oil.

NOTE A slight opalescence can sometimes be observed.

4.8 Acid value

Value	Bourbon type[a]	China	Haiti	Indonesia	Brazil
Minimum	4,5	10	1	10	30
Maximum	35	70	6	35	60
[a] Bourbon type includes: Reunion Island, Comoros Island and Madagascar origins.					

4.9 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.

Important — Due to the viscosity of this essential oil, it is necessary to dilute it with 1,8-cineole so that the final mass fraction of each component in the mixture is 50 %. It is also recommended to use a polyethylene glycol type polar column. There will be two integrations, with and without 1,8-cineole.