INTERNATIONAL STANDARD

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Essential oils — Determination of water content — Karl Fischer method

Huiles essentielles — Détermination de la teneur en eau — Méthode de Karl Fischer

Reference number
ISO 11021:1999(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. 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 3.

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.

International Standard ISO 11021 was prepared by Technical Committee ISO/TC 54, *Essential oils*.

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Essential oils — Determination of water content — Karl Fischer method

1 Scope

This International Standard specifies a method for the determination of the water content of essential oils by the Karl Fischer method.

2 Normative reference

The following normative document contains provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, this publication do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent edition of the normative document indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 760, *Determination of water content — Karl Fischer method (General method).*

3 Terms and definitions

For the purposes of this International Standard, the following term and definition apply.

3.1
water content
amount of water present in the essential oil considered, determined in accordance with the procedure specified in this International Standard

NOTE Water content is expressed as a mass fraction in percent [formerly designated as % (m/m)].

4 Principle

The water present in a test portion is absorbed with dried methanol. The water is allowed to react with the Karl Fischer reagent without pyridine, previously standardized by titration using a Karl Fischer apparatus. The endpoint of the reaction is obtained by an electrometric method.

5 Reactions

During the determination of water according to the Karl Fischer method, the water present in the sample reacts, in the presence of an amine and an alcohol, with iodine and sulfur dioxide:

$$H_2O + I_2 + SO_2 + ROH + 3R_nNH_{3-n} \rightarrow 2R_nNH_{3-n}HI + R_nNH_{3-n}HSO_4R$$

where R is an alkyl or alkoxyl group.

The endpoint of the reaction is obtained electrometrically by a surplus of iodine.