International Standard

ISO 14714

Essential oils and aromatic extracts — Determination of benzene content

Huiles essentielles et extraits aromatiques — Détermination de la teneur en benzène

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Contents

Page

Foreword ... **iv**

1 Scope ... **1**

2 Normative references ... **1**

3 Terms and definitions ... **1**

4 Principle ... **1**

5 Reagents and products ... **1**

6 Apparatus ... **2**

7 Preparation of test sample ... **2**

8 Operating conditions ... **2**
8.1 Chromatographic operating conditions ... 2
8.1.1 Injector temperature ... 2
8.1.2 Oven temperature ... 2
8.1.3 Temperature of flame ionization detector ... 2
8.1.4 Flow rate of carrier gas and auxiliary gases ... 2
8.1.5 Mass spectrometric detector operating conditions ... 3
8.2 Static headspace sampler operating conditions ... 3
8.2.1 Thermostatization temperature ... 3
8.2.2 Thermostatization time ... 3

9 Quantitative analysis method ... **3**
9.1 External calibration curve ... 3
9.1.1 Preparation of standard solutions ... 3
9.1.2 Injection of vapour phase of standard solutions ... 3
9.1.3 Graph of the external calibration curve ... 3
9.1.4 Validation of the external calibration curve ... 3
9.2 Quantitative analysis ... 4
9.2.1 Sample preparation ... 4
9.2.2 Injection of the sample ... 4
9.2.3 Determination of the benzene content ... 4

10 Precision ... **4**
10.1 Results of the interlaboratory test ... 4
10.2 Repeatability ... 4
10.3 Reproducibility ... 4

11 Test report ... **4**

Annex A (informative) **Results of interlaboratory tests** ... **5**

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Foreword

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

This second edition cancels and replaces the first edition (ISO 14714:1998), which has been technically revised.

The main changes are as follows:

— in the title and scope, the word “residual” has been removed;

— the structure of the document has been changed;

— in the scope, “around 10 ppm” has been replaced by “from 1 to 10 mg/kg”;

— in 6.2, the type of the recommended column has been changed;

— in 6.3, the title of the subclause has been changed and additional information of the mass spectrometer has been added;

— in 9.1.3, precisions have been added for building the calibration curves with Flame ionization detector (FID) or by mass spectrometer detection;

— in 9.2.3, precisions have been added for determining benzene content by mass spectrometer detection.

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Essential oils and aromatic extracts — Determination of benzene content

1 Scope

This document describes a method for determining the traces of benzene in essential oils and aromatic extracts, using static head space gas chromatography.

It applies to contents from 1 mg/kg to 10 mg/kg in the analysed product.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 356, *Essential oils — Preparation of test samples*

ISO 7609, *Essential oils — Analysis by gas chromatography on capillary columns — General method*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
m/z
mass-to-charge ratio
dimensionless value formed by dividing the mass of an ion by its charge number in mass spectrometry

4 Principle

The sample is analysed by static headspace gas chromatography on a capillary column, either using a flame ionization detector or detection by means of mass spectrometry.

The benzene content is determined using an external standard calibration method.

5 Reagents and products

5.1 **Reference substance: benzene**, minimum purity 99 %, determined by gas chromatography.

5.2 **Diethyl phthalate**, which shall be free from any traces of benzene, as verified under test conditions.

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