BRITISH STANDARD

BS ISO
14715:2010

Oil of thyme containing thymol, Spanish type [*Thymus zygis* (Loefl.) L.]

ICS 71.100.60

BSi
British Standards

National foreword

This British Standard is the UK implementation of ISO 14715:2010.

The UK participation in its preparation was entrusted to Technical Committee AW/54, Essential oils.

A list of organizations represented on this committee can be obtained on request to its secretary.

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INTERNATIONAL STANDARD

ISO 14715

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2010-02-01

Oil of thyme containing thymol, Spanish type [*Thymus zygis* (Loefl.) L.]

Huile essentielle de thym à thymol, type Espagne [Thymus zygis *(Loefl.) L.*]

Reference number
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Foreword

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Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 14715 was prepared by Technical Committee ISO/TC 54, *Essential oils*.

This second edition cancels and replaces the first edition (ISO 14715:1999), which has been technically revised.

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INTERNATIONAL STANDARD **ISO 14715:2010(E)**

Oil of thyme containing thymol, Spanish type [*Thymus zygis* (Loefl.) L.]

1 Scope

This International Standard specifies certain characteristics of the essential oil of thyme containing thymol, Spanish type [*Thymus zygis* (Loefl.) L.], with a view to facilitating the assessment of its quality.

2 Normative references

The following referenced documents are indispensable for the application 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/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 11024-1, *Essential oils — General guidance on chromatographic profiles — Part 1: Preparation of chromatographic profiles for presentation in standards*

ISO 11024-2, *Essential oils — General guidance on chromatographic profiles — Part 2: Utilization of chromatographic profiles of samples of essential oils*

3 Terms and definitions

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

3.1
essential oil of thyme containing thymol, Spanish type
essential oil obtained by steam distillation of the flowering tops of *Thymus zygis* (Loefl.) L., of the Lamiaceae family, growing mainly in Spain

NOTE For information on the CAS number, see ISO/TR 21092[2].

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4 Requirements

4.1 Appearance

Mobile liquid.

4.2 Colour

Yellowish to red.

NOTE The essential oil obtained by steam distillation in a stainless steel kettle would have a much lighter colour than that distilled in other materials. The rectification of red thyme leads to the so called “white thyme” with similar characteristics.

4.3 Odour

Characteristic, aromatic, phenolic (thymol), with a slightly spicy base.

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

Minimum: 0,910.

Maximum: 0,937.

4.5 Refractive index at 20 °C

Minimum: 1,494.

Maximum: 1,504.

4.6 Optical rotation at 20 °C

Between 0° and –6°.

NOTE Generally laevorotatory. Most frequently impossible to measure due to its colour.

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

It shall not be necessary to use more than 3 volumes of 80 % (volume fraction) ethanol to obtain a clear solution with 1 volume of essential oil.

4.8 Chromatographic profile

Carry out the analysis of the essential oil by gas chromatography. Identify in the chromatogram obtained the representative and characteristic components listed 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.

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Table 1 — Chromatographic profile

Component	Minimum %	Maximum %
α-Thujene	0,2	1,5
α-Pinene	0,5	2,5
Myrcene	1,0	2,8
α-Terpinene	0,9	2,6
γ-Terpinene	4,0	11,0
p-Cymene	14,0	28,0
trans-Sabinene hydrate	traces	0,5
Linalool	3,0	6,5
Terpinen-4-ol	0,1	2,5
Methyl ether of carvacrol	0,1	1,5
Thymol	37,0	55,0
Carvacrol	0,5	5,5
β-Caryophyllene	0,5	2,0
NOTE The chromatographic profile is normative, contrary to the typical chromatograms given for information in Annex A.		

4.9 Flashpoint

Information on the flashpoint is given in Annex B.

5 Sampling

See ISO 212.

Minimum volume of test sample: 25 ml.

NOTE This volume allows each of the tests specified in this International Standard to be carried out at least once.

6 Test methods

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

See ISO 279.

6.2 Refractive index at 20 °C

See ISO 280.

6.3 Optical rotation at 20 °C

See ISO 592.

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6.4 Miscibility in 80 % (volume fraction) ethanol at 20 °C

See ISO 875.

6.5 Chromatographic profile

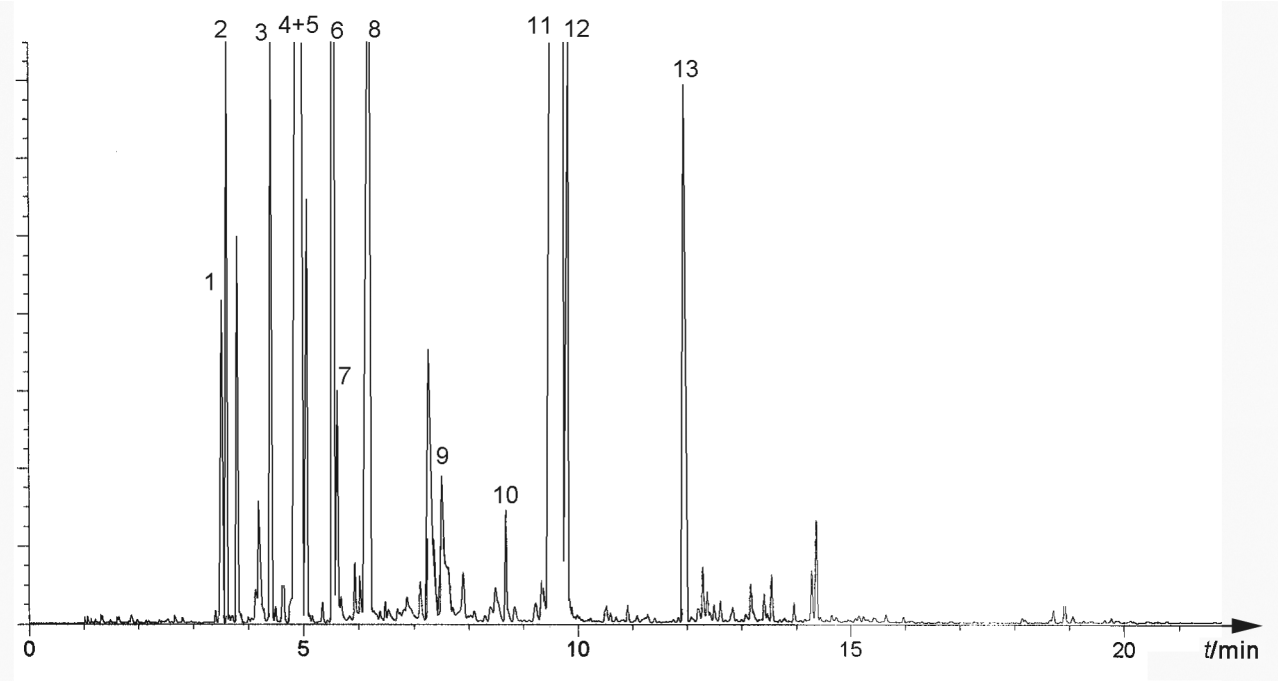
See ISO 11024-1 and ISO 11024-2.

7 Packaging, labelling, marking and storage

See ISO/TR 210 and ISO/TR 211.

Annex A
(informative)

Typical chromatograms of the analysis by gas chromatography of the essential oil of thyme, containing thymol, Spanish type [*Thymus zygis* (Loefl.) L.]



Peak identification		Operating conditions
1	α-Thujene	Column: capillary, fused silica, length 50 m, internal diameter 0,30 mm
2	α-Pinene	Stationary phase: poly(methylsiloxane)
3	Myrcene	Film thickness: 0,25 µm
4	α-Terpinene	Oven temperature: temperature programming from 65 °C to 220 °C at a rate of 2 °C/min
5	*p*-Cymene	Injector temperature: 230 °C
6	γ-Terpinene	Detector temperature: 250 °C
7	*trans*-Sabinene hydrate	Detector: flame ionization type
8	Linalool	Carrier gas: hydrogen
9	Terpinen-4-ol	Volume injected: 0,2 µl
10	Methyl ether of carvacrol	Carrier gas flow rate: 0,35 m/s aprox.
11	Thymol	Split ratio: 1:100
12	Carvacrol	t time
13	β-Caryophyllene	

Figure A.1 — Typical chromatogram taken on an apolar column

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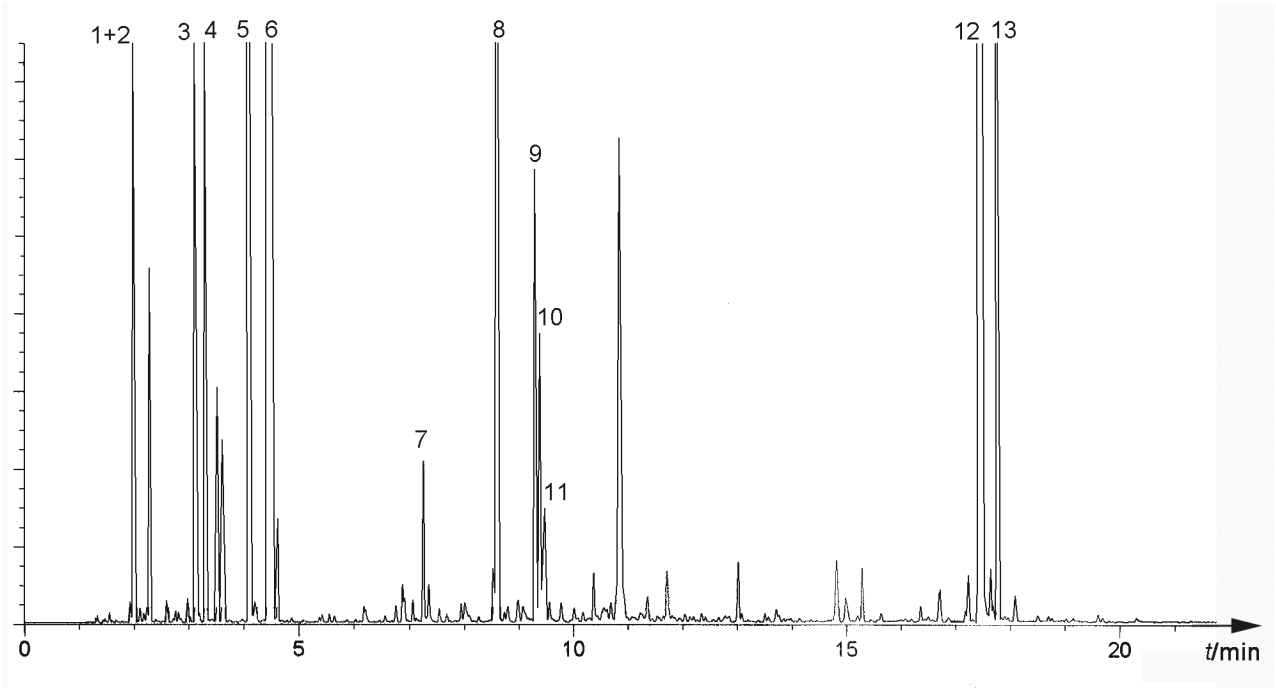

Peak identification		**Operating conditions**
1	α-Thujene	Column: capillary, fused silica, length 25 m, internal diameter 0,20 mm
2	α-Pinene	Stationary phase: polyethylene glycol [SP-20 000[1)]]
3	Myrcene	Film thickness: 0,25 µm
4	α-Terpinene	Oven temperature: temperature programming from 65 °C to 200 °C at a rate of 5 °C/min
5	γ-Terpinene	Injector temperature: 240 °C
6	*p*-Cymene	Detector temperature: 250 °C
7	*trans*-Sabinene hydrate	Detector: flame ionization type
8	Linalool	Carrier gas: hydrogen
9	β-Caryophyllene	Volume injected: 0,2 µl
10	Terpinen-4-ol	Carrier gas flow rate: 0,35 m/s aprox.
11	Methyl ether of carvacrol	Split ratio: 1:100
12	Thymol	t time
13	Carvacrol	

Figure A.2 — Typical chromatogram taken on a polar column

1) SP-20 000 is an example of a suitable product available commercially. This information is given for the convenience of users of this International Standard and does not constitute an endorsement by ISO of this product.

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Annex B
(informative)

Flashpoint

B.1 General information

For safety reasons, transport companies, insurance companies, and people in charge of safety services require information on the flashpoints of essential oils, which in most cases are flammable products.

A comparative study on the relevant methods of analysis (see ISO/TR 11018[1]) concluded that it was difficult to recommend a single apparatus for standardization purposes, given that:

— there is a wide variation in the chemical composition of essential oils;

— the volume of the sample needed for certain test equipment is incompatible with the high price of essential oils;

— as there are different types of equipment which can be used for the determination, users cannot be expected to use one specified type only.

Consequently, it was decided to give a mean value for the flashpoint annexed to each International Standard, for information, in order to meet the request of the interested parties.

The equipment with which this value was obtained has to be specified.

For further information, see ISO/TR 11018[1].

B.2 Flashpoint of the essential oil of thyme, containing thymol, Spanish type [*Thymus zygis* (Loefl.) L.]

The mean value is +60 °C.

NOTE Value obtained with Setaflash[2)] equipment.

2) Equipment available commercially. This information is given for the convenience of users of this International Standard and does not constitute an endorsement by ISO of this product.

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Bibliography

[1] ISO/TR 11018, *Essential oils — General guidance on the determination of flashpoint*

[2] ISO/TR 21092, *Essential oils — Characterization*

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