INTERNATIONAL STANDARD 1242

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

Essential oils — Determination of the acid value

First edition — 1973-12-15

UDC 668.5 : 543.852.1

Ref. No. ISO 1242-1973 (E)

Descriptors : essential oils, chemical analysis, determination of content, acidity, volumetric analysis.

Price based on 2 pages

FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO Member Bodies). The work of developing International Standards is carried out through ISO Technical Committees. Every Member Body interested in a subject for which a Technical Committee has been set up 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.

Prior to 1972, the results of the work of the Technical Committees were published as ISO Recommendations; these documents are now in the process of being transformed into International Standards. As part of this process, Technical Committee ISO/TC 54 has reviewed ISO Recommendation R 1242 and found it suitable for transformation. International Standard ISO 1242 therefore replaces ISO Recommendation R 1242-1971.

ISO Recommendation R 1242 was approved by the Member Bodies of the following countries :

Australia	Iran	South Africa, Rep. of
Belgium	Israel	Sweden
Bulgaria	Italy	Thailand
Canada	Japan	Turkey
Egypt, Arab Rep. of	Netherlands	United Kingdom
France	New Zealand	U.S.S.R.
Greece	Portugal	
India	Romania	

The Member Body of the following country has subsequently approved this Recommendation :

Philippines

Printed in Switzerland

Essential oils — Determination of the acid value

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a method of determining the content of free acids in essential oils. This method is not applicable to essential oils containing lactones.

2 REFERENCES

ISO 212, *Essential oils — Sampling.*

ISO/R 356, *Essential oils — Methods of test — Preparation of sample.*

ISO/R 709, *Determination of ester value and calculation of ester content of essential oils.*

3 DEFINITION

For the purpose of this International Standard, the following definition applies :

acid value, A.V. : The number of milligrams of potassium hydroxide required to neutralize the free acids contained in 1 g of the essential oils.

4 PRINCIPLE

Neutralization of the free acids using a standard volumetric alkali solution.

5 REAGENTS

5.1 Ethanol, 95 % (*V/V*) at 20 °C, freshly neutralized with the potassium hydroxide solution (5.2), using as indicator phenolphthalein (5.3), or phenol red (5.4) whenever the essential oil may have constituents containing phenolic groups.

5.2 Potassium hydroxide, 0,1 N standard volumetric ethanolic solution, checked during the 24 h preceding the determination of the acid value.

5.3 Phenolphthalein, 2 g/l solution in ethanol (5.1).

or

5.4 Phenol red, 0,4 g/l solution in neutralized 20 % (*V/V*) ethanol.

6 APPARATUS

6.1 Saponification flask, round-bottomed, of alkali-resistant glass, capacity 100 to 200 ml, and to which can be fitted a glass tube, at least 1 m in length and at least 1 cm internal diameter. The tube acts as a reflux cooler in the subsequent determination of the ester value.

6.2 Measuring cylinder, 5 ml capacity.

6.3 Burette graduated in tenths of a millilitre.

7 SAMPLING

See ISO 212.

8 PROCEDURE

8.1 Preparation of test sample

See ISO/R 356.

8.2 Determination

Weigh into the saponification flask (6.1) 2 ± 0,05 g of the essential oil, to the nearest 0,5 mg, and dissolve it in 5 ml of ethanol (5.1).

Add 5 drops of phenolphthalein solution (5.3) as indicator (except in the case of phenolic essential oils) and neutralize the liquid with the potassium hydroxide solution (5.2) contained in the burette (6.3). Reserve the flask and its contents (A) for the determination of ester value (see ISO/R 709).

If the essential oil under examination contains phenols or compounds with phenolic groups, use phenol red (5.4) as indicator instead of phenolphthalein. This shall be mentioned in the specification of the essential oil.

9 EXPRESSION OF RESULTS

9.1 Calculation

The acid value is given by the formula

$$\frac{5{,}61\ V}{m}$$

where

m is the mass, in grams, of the test portion;

V is the volume, in millilitres, of potassium hydroxide solution (5.2) used.

Express the result to one decimal place.

NOTE — If the volume of potassium hydroxide is less than 3 ml, repeat the test on a larger test portion.

9.2 Precision

9.2.1 *Repeatability*

The results of the test may be considered valid if the difference between two consecutive determinations carried out by the same operator is not greater than 0,2.

9.2.2 *Reproducibility*

The results obtained by two different laboratories may be considered to be in agreement if the difference between them is not greater than 0,5.

10 TEST REPORT

The test report shall include the following particulars :

a) the reference of the method used;

b) the results and the method of expression used;

c) any unusual features noted during the determination;

d) any operation not included in this International Standard, or regarded as optional.