
International Standard 7660

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Essential oils — Determination of ester value of oils containing difficult-to-saponify esters

Huiles essentielles — Détermination de l'indice d'ester des huiles contenant des esters difficilement saponifiables

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Foreword

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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.

International Standard ISO 7660 was developed by Technical Committee ISO/TC 54, *Essential oils*, and was circulated to the member bodies in March 1982.

It has been approved by the member bodies of the following countries :

Australia	Iraq	South Africa, Rep. of
Austria	Italy	Thailand
Canada	Mexico	USSR
Egypt, Arab Rep. of	Netherlands	
France	Portugal	

No member body expressed disapproval of the document.

Essential oils — Determination of ester value of oils containing difficult-to-saponify esters

1 Scope and field of application

This International Standard specifies a method of determining the ester value of essential oils containing difficult-to-saponify esters, to which the method specified in ISO 709¹⁾ is not applicable.

NOTE — Specifications for individual essential oils will state whether ISO 709 or this International Standard is to be used for the determination of the ester value.

2 References

ISO 212, *Essential oils — Sampling*.

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

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

3 Definition

ester value : The number of milligrams of potassium hydroxide required to neutralize the acids liberated by the hydrolysis of esters present in 1 g of the essential oil.

4 Principle

Hydrolysis of the esters present in a test portion by heating in the presence of a standard volumetric solution of potassium hydroxide in dimethylsulfoxide, and back-titration of the excess potassium hydroxide with a standard volumetric solution of sulfuric acid or hydrochloric acid.

5 Reagents

During the analysis, use only reagents of recognized analytical grade and only distilled water or water of equivalent purity.

5.1 Potassium hydroxide, standard volumetric solution in dimethylsulfoxide (DMSO), $c(\text{KOH}) = 0,5 \text{ mol/l}$.

In a 1 000 ml one-mark volumetric flask, dissolve 35 g of potassium hydroxide in pellet form in 117 ml of water.

Add 353 ml of 96 % (V/V) ethanol and dilute to the mark with DMSO.

The resulting solution shall be perfectly clear and free from any precipitate.

Determine the exact concentration by titration with a standard reference solution of sulfuric acid, $c(1/2 \text{ H}_2\text{SO}_4) = 0,5 \text{ mol/l}$.

Store the solution in a tightly stoppered flask. The use of glass stoppers is not recommended.

Test the solution every day and discard it (do not try to re-adjust) when its concentration becomes less than 0,45 mol/l.

5.2 Sulfuric acid or hydrochloric acid, standard volumetric solution, $c(1/2 \text{ H}_2\text{SO}_4)$ or $c(\text{HCl}) = 0,5 \text{ mol/l}$.

5.3 pH indicator.

5.3.1 Phenolphthalein, 2 g/l solution in 96 % (V/V) ethanol, or

5.3.2 Phenol red, 0,4 g/l solution in 96 % (V/V) ethanol, if the essential oil has components that contain phenol groups.

6 Apparatus

Ordinary laboratory apparatus, and

6.1 Burettes, of capacity 25 ml.

1) ISO 709, *Essential oils — Determination of ester value*.