INTERNATIONAL STANDARD ISO 1843/IV

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Higher alcohols for industrial use — Methods of test — Part IV : Determination of bromine number — Titrimetric method in the presence of mercury(II) chloride

Alcools supérieurs à usage industriel — Méthodes d'essai — Partie IV : Détermination de l'indice de brome — Méthode titrimétrique en présence de chlorure de mercure(II)

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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 in the process of being transformed into International Standards. As part of this process, Technical Committee ISO/TC 47, *Chemistry,* has reviewed ISO Recommendation R 1848-1970 and found it technically suitable for transformation. Number 1848, however, has been changed to 1843/IV. International Standard ISO 1843/IV therefore replaces ISO Recommendation R 1848-1970, to which it is technically identical.

ISO Recommendation R 1848 had been approved by the member bodies of the following countries :

Australia	Hungary	Romania
Austria	India	South Africa, Rep. of
Belgium	Iran	Spain
Brazil	Israel	Switzerland
Czechoslocakia	Italy	Turkey
Egypt, Arab Rep. of	Netherlands	United Kingdom
France	Peru	U.S.S.R.
Germany	Poland	
Greece	Portugal	

No member body had expressed disapproval of the Recommendation.

The member body of the following country disapproved the transformation of the Recommendation into an International Standard :

Netherlands

Printed in Switzerland

Higher alcohols for industrial use — Methods of test — Part IV : Determination of bromine number — Titrimetric method in the presence of mercury(II) chloride

1 SCOPE AND FIELD OF APPLICATION

This part of ISO 1843 specifies a titrimetric method for the determination of the bromine number, in the presence of mercury(II) chloride, of C_6 to C_{13} alcohols for industrial use.

This document should be read in conjunction with part I (see the annex).

2 DEFINITION

bromine number : The number of grams of bromine consumed by 100 g of the sample under the conditions of test.

3 PRINCIPLE

Titration of a test portion with standard volumetric potassium bromide/bromate solution in the presence of mercury(II) chloride, using methyl orange as indicator.

4 REAGENTS

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

4.1 Mercury(II) chloride, 20 g/l acid solution.

Dissolve 20 g of mercury(II) chloride ($HgCl_2$) in water. Add to this solution 15 ml of hydrobromic acid, ρ approximately 1,46 g/ml, and 170 ml of hydrochloric acid, ρ approximately 1,19 g/ml. Dilute to 1 000 ml.

4.2 Potassium bromide/bromate, 0,1 N standard volumetric solution.

Dissolve 10 g of potassium bromide (KBr) and 2,784 g of potassium bromate ($KBrO_3$) in water and dilute to the mark in a 1 000 ml one-mark volumetric flask.

4.3 Methyl orange, 0,4 g/l ethanolic solution.

Dissolve 0,04 g of methyl orange in water, add 80 ml of 95 % (*V*/*V*) ethanol and dilute to 100 ml with water.

5 APPARATUS

Ordinary laboratory apparatus and

5.1 Microburette, of capacity 10 ml, graduated in 0,02 ml divisions.

6 PROCEDURE

6.1 Test portion

Transfer 100 ml of the laboratory sample by means of a pipette to a 250 ml conical flask.

6.2 Blank test

Carry out a blank test at the same time as the determination, following the same procedure but omitting the test portion.

6.3 Determination

Add 25 ml of the mercury(II) chloride solution (4.1) to the conical flask containing the test portion (6.1) and mix. Add 2 or 3 drops of the methyl orange solution (4.3) and titrate with the potassium bromide/bromate solution (4.2) from the microburette (5.1), until the indicator is decolorized.

7 EXPRESSION OF RESULTS

The bromine number is given by the formula

$$\frac{0{,}008\,(V_1 - V_0)}{\rho}$$

where

V_0 is the volume, in millilitres, of the potassium bromide/bromate solution (4.2) used for the blank test (6.2);

V_1 is the volume, in millilitres, of the potassium bromide/bromate solution (4.2) used for the determination (6.3);

ρ is the density, in grams per millilitre, of the laboratory sample at 20 °C (see clause 5 of part I).

Report the result to the nearest 0,1.

Alternatively, the bromine number, expressed in milliequivalents per kilogram, is given by the formula

$$\frac{V_1 - V_0}{\rho}$$

NOTE — If the concentration of the standard volumetric solution used is not exactly as specified in the list of reagents, an appropriate correction should be made.

ANNEX

ISO PUBLICATIONS RELATING TO HIGHER ALCOHOLS FOR INDUSTRIAL USE

ISO 1843/I — General.

ISO 1843/II — Determination of acidity to phenolphthalein — Titrimetric method.

ISO 1843/III — Determination of carbonyl compounds content — Potentiometric method.

ISO 1843/IV — Determination of bromine number — Titrimetric method in the presence of mercury(II) chloride.

ISO 1843/V — Determination of total alcohols content.

ISO 1843/VI — Determination of ash.

ISO/R 1845 — Determination of distillation yield.

ISO/R 1852 — Test for colour with sulphuric acid.