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ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION

R 1848

HIGHER ALCOHOLS FOR INDUSTRIAL USE

DETERMINATION OF BROMINE INDEX

IN THE PRESENCE OF MERCURY (II) CHLORIDE

1st EDITION

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BRIEF HISTORY

The ISO Recommendation R 1848, *Higher alcohols for industrial use – Determination of bromine index in the presence of mercury (II) chloride,* was drawn up by Technical Committee ISO/TC 47, *Chemistry,* the Secretariat of which is held by the Ente Nazionale Italiano di Unificazione (UNI).

Work on this question led to the adoption of Draft ISO Recommendation No. 1848, which was circulated to all the ISO Member Bodies for enquiry in April 1969. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies :

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

The following Member Body opposed the approval of the Draft :

New Zealand

This Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided to accept it as an ISO RECOMMENDATION.

ISO Recommendation R 1848 November 1970

HIGHER ALCOHOLS FOR INDUSTRIAL USE

DETERMINATION OF BROMINE INDEX IN THE PRESENCE OF MERCURY (II) CHLORIDE

1. SCOPE

This ISO Recommendation describes a method for the determination of bromine index in the presence of mercury (II) chloride of C_6 to C_{13} alcohols for industrial use.

2. DEFINITION

The *bromine index* is defined as the number of grammes of bromine consumed by 100 g of the sample under the conditions of test.

3. PRINCIPLE

Titration of a test portion with potassium bromide/bromate solution in the presence of mercury (II) chloride.

4. REAGENTS

Distilled water or water of equivalent purity should be used in the test.

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

Dissolve 20 g of mercury (II) chloride in water. Add to this solution 15 ml of hydrobromic acid, ρ 1.46 (g/ml) and 170 ml of hydrochloric acid, ρ 1.19 (g/ml). Dilute to 1000 ml.

4.2 *Potassium bromide/bromate*, 0.1 N standard volumetric solution.

Dissolve 10 g of potassium bromide and 2.784 g of potassium bromate in water and dilute to the mark in a 1000 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*, capacity 10 ml, graduated in 0.02 ml divisions.

6. SAMPLING

Follow the principles given in ISO Recommendation R ...*.

Place the sample in a clean, dry, glass-stoppered bottle of such a size that it is nearly filled up. If it is necessary to seal this bottle, care should be taken to avoid the risk of contamination.

7. PROCEDURE

7.1 Test portion

Take 100 ml of the laboratory sample by means of a pipette.

7.2 Blank test

At the same time as the determination, carry out a blank test using the same procedure and the same quantities of all reagents as used in the determination.

7.3 Determination

Place the test portion (7.1) in a 250 ml conical flask, add 25 ml of the mercury (II) chloride solution (4.1) and mix well. Add 2 or 3 drops of the methyl orange solution (4.3) and titrate with the potassium bromide/bromate solution (4.2) until the indicator is decolorized.

8. EXPRESSION OF RESULTS

8.1 Bromine index is given by the following formula :

$$\frac{0.008\ (V_1 - V_2)}{\rho}$$

where

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

V_2 is the volume, in millilitres, of the potassium bromide/bromate solution (4.2) used for the blank test;

ρ is the density, in grammes per millilitre, of the laboratory sample at 20 °C.

Report the result to the nearest 0.1.

8.2 Alternatively the result may be expressed in terms of milliequivalents per kilogramme by the following formula :

$$\frac{V_1 - V_2}{\rho}$$

9. TEST REPORT

The test report should give 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 ISO Recommendation or regarded as optional.

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* Sampling from the consignment of a chemical product will be the subject of a future ISO Recommendation.