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INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

ISO RECOMMENDATION

R 849

PHOSPHORIC ACID FOR INDUSTRIAL USE

DETERMINATION OF IRON CONTENT

2,2'-BIPYRIDYL SPECTROPHOTOMETRIC METHOD

1st EDITION

October 1968

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BRIEF HISTORY

The ISO Recommendation R 849, *Phosphoric acid for industrial use – Determination of iron content – 2,2'-bipyridyl spectrophotometric method,* 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 by the Technical Committee began in 1960 and led, in 1966, to the adoption of a Draft ISO Recommendation.

In December 1966, this Draft ISO Recommendation (No. 1110) was circulated to all the ISO Member Bodies for enquiry. It was approved, subject to a few modifications of an editorial nature, by the following Member Bodies :

Austria	India	Spain
Belgium	Israel	Switzerland
Brazil	Italy	Thailand
Bulgaria	Japan	Turkey
Chile	Korea, Rep. of	U.A.R.
Czechoslovakia	New Zealand	United Kingdom
France	Poland	U.S.S.R.
Germany	Romania	Yugoslavia
Hungary	South Africa, Rep. of	

One Member Body opposed the approval of the Draft :

Netherlands

The Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided, in October 1968, to accept it as an ISO RECOMMENDATION.

ISO Recommendation R 849 October 1968

PHOSPHORIC ACID FOR INDUSTRIAL USE

DETERMINATION OF IRON CONTENT

2,2'-BIPYRIDYL SPECTROPHOTOMETRIC METHOD

1. SCOPE

This ISO Recommendation describes a method for the spectrophotometric determination of the iron content of phosphoric acid for industrial use.

2. FIELD OF APPLICATION

The method is applicable to the determination of iron content, expressed as Fe, greater than 0.001 %.

2.1 Special case

Phosphoric acid for industrial use containing polyphosphoric acids (see section 8).

NOTE. – In case there is no certainty of absence of polyphosphoric acids, carry out the determination according to the procedure of the special case directly.

3. PRINCIPLE

Preliminary reduction of trivalent iron by means of hydroxylammonium chloride.

Formation of a bivalent iron - 2,2'-bipyridyl complex in presence of ammonium acetate at pH 3.1, at a temperature of 75 °C (under the test conditions, phosphate ions do not interfere).

Spectrophotometric measurement of the coloured complex at a wavelength of about 522 nm.

4. REAGENTS

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

4.1 *Hydrochloric acid,* approximately $d = 1.19$, 37 % (m/m) or 12 N solution.

4.2 *2,2'-bipyridyl,* 5 g/l hydrochloric acid solution.

Dissolve 0.50 g of 2,2'-bipyridyl in 10 ml of approximately $d = 1.19$ hydrochloric acid solution and dilute to 100 ml.

4.3 *Ammonium acetate,* 300 g/l solution.

Dissolve 300 g of ammonium acetate in water and dilute to 1000 ml.

4.4 *Hydroxylammonium chloride,* 100 g/l solution.

Dissolve 10 g of hydroxylammonium chloride ($NH_2OH.HCl$) in water and dilute to 100 ml.