

Revised.

ISO

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION

**ISO RECOMMENDATION
R 994**

POTASSIUM HYDROXIDE FOR INDUSTRIAL USE

DETERMINATION OF IRON CONTENT

2,2'-BIPYRIDYL SPECTROPHOTOMETRIC METHOD

1st EDITION
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BRIEF HISTORY

The ISO Recommendation R 994, *Potassium hydroxide 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 led, in 1966, to the adoption of a Draft ISO Recommendation.

In December 1966, this Draft ISO Recommendation (No. 1103) 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	Ireland	South Africa, Rep. of
Belgium	Israel	Spain
Brazil	Italy	Switzerland
Chile	Japan	Thailand
Cuba	Netherlands	Turkey
Czechoslovakia	New Zealand	U.A.R.
Germany	Poland	United Kingdom
Hungary	Portugal	U.S.S.R.
India	Romania	Yugoslavia

Two Member Bodies opposed the approval of the Draft :

France
U.S.A.

The Draft ISO Recommendation was then submitted by correspondence to the ISO Council, which decided, in February 1969, to accept it as an ISO RECOMMENDATION.

POTASSIUM HYDROXIDE FOR INDUSTRIAL USE

DETERMINATION OF IRON CONTENT

2,2'-BIPYRIDYL SPECTROPHOTOMETRIC METHOD

1. SCOPE

This ISO Recommendation describes the 2,2'-bipyridyl spectrophotometric method for the determination of the iron content of potassium hydroxide for industrial use.

2. PRINCIPLE

Preliminary reduction of trivalent iron by means of hydroxylammonium chloride. Formation of a bivalent iron-2,2'-bipyridyl complex in the presence of ammonium acetate.

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

3. REAGENTS

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

3.1 *Hydrochloric acid*, approximately $d = 1.19$, 38 % (m/m) or 12 N solution.

3.2 *Hydrochloric acid*, approximately N solution.

3.3 *Hydroxylammonium chloride*, 100 g/l solution.
Dissolve 10 g of hydroxylammonium chloride ($\text{NH}_2\text{OH}\cdot\text{HCl}$) in water and dilute to 100 ml.

3.4 *Ammonium acetate*, 200 g/l solution.
Ammonium acetate used for the solution should not have an iron content higher than 1 part per million.

3.5 *2,2'-bipyridyl*, 1 g/l hydrochloric acid solution.
Dissolve 1 g of 2,2'-bipyridyl, weighed to the nearest 0.2 mg, in 20 ml of the hydrochloric acid solution (3.2) and dilute to 1000 ml.

3.6 *Iron standard solution*, containing 2.000 g/l of Fe.
Weigh, to the nearest 1 mg, 7.022 g of iron (II)-ammonium sulphate hexahydrate and place in a beaker of suitable capacity. Add 50 ml of 100 g/l sulphuric acid solution, then transfer quantitatively to a 500 ml one-mark volumetric flask. Dilute to the mark and mix thoroughly.

1 ml of this standard solution contains 2.00 mg of Fe.