INTERNATIONAL STANDARD 2993

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Ammonium sulphate for industrial use — Determination of free acidity — Titrimetric method

Sulfate d'ammonium à usage industriel — Détermination de l'acidité libre — Méthode titrimétrique

First edition — 1974-04-01

UDC 661.522 : 543.241

Ref. No. ISO 2993-1974 (E)

Descriptors : ammonium compounds, ammonium sulphate, chemical analysis, measurement, acidity, volumetric analysis.

Price based on 2 pages

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.

International Standard ISO 2993 was drawn up by Technical Committee ISO/TC 47, *Chemistry*, and circulated to the Member Bodies in November 1972.

It has been approved by the Member Bodies of the following countries :

Australia	India	Spain
Austria	Israel	Sweden
Belgium	Italy	Switzerland
Czechoslovakia	Netherlands	Thailand
Egypt, Arab Rep. of	New Zealand	Turkey
France	Poland	United Kingdom
Germany	Romania	U.S.S.R.
Hungary	South Africa, Rep. of	

This International Standard has also been approved by the International Union of Pure and Applied Chemistry (IUPAC).

No Member Body expressed disapproval of the document.

Printed in Switzerland

Ammonium sulphate for industrial use — Determination of free acidity — Titrimetric method

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a titrimetric method for the determination of the free acidity present in ammonium sulphate for industrial use.

The method is applicable to products containing a free acidity, expressed as H_2SO_4, equal to or greater than 0,01 % (*m/m*).

2 PRINCIPLE

Titration of the free acidity in a test portion with standard volumetric sodium hydroxide solution in the presence of an indicator.

3 REAGENTS

3.1 Distilled water, or water of equivalent purity, neutral to the indicator.

Add several drops of the indicator solution (3.3) to 1 000 ml of water and, if necessary, adjust to a pH between 5,2 and 5,6 with the sodium hydroxide solution (3.2) or with a 0,1 N hydrochloric acid solution.

3.2 Sodium hydroxide, 0,1 N standard volumetric solution.

3.3 Methyl purple indicator solution, 10 %, or other indicator with a colour change in the same pH range (5,2 to 5,6).

4 APPARATUS

Ordinary laboratory apparatus.

5 PROCEDURE

5.1 Test portion

Weigh, to the nearest 0,1 g, about 100 g of the test sample.

5.2 Preparation of the test solution

Place the test portion (5.1) in a 1 000 ml beaker and dissolve it in about 500 ml of the water (3.1), maintaining the temperature at 20 to 25 °C. If the solution is turbid, filter it through a medium grade filter paper. Wash the beaker and the filter, collecting the filtrate and washings in a flask of suitable capacity.

5.3 Titration

Add 3 to 5 drops of the indicator solution (3.3) to the test solution (5.2) and titrate with the standard volumetric sodium hydroxide solution (3.2) to the colour change of the indicator from red-violet to brilliant green.

NOTE — The titration may be performed also with the aid of a pH meter.

6 EXPRESSION OF RESULTS

The free acidity, expressed as a percentage by mass of sulphuric acid (H_2SO_4), is given by the formula

$$\frac{V \times 0{,}004\,9}{m_0} \times 100 = \frac{0{,}49\,V}{m_0}$$

where

m_0 is the mass, in grams, of the test portion;

V is the volume, in millilitres, of the standard volumetric sodium hydroxide solution (3.2) used for the determination;

0,004 9 is the mass, in grams, of sulphuric acid corresponding to 1 ml of 0,1 N standard volumetric sodium hydroxide solution.

7 TEST REPORT

The test report shall include 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 International Standard, or regarded as optional.

ANNEX

This document forms part of the following series on methods of test for ammonium sulphate for industrial use :

ISO 2992 – *Determination of iron content – 2,2'-bipyridyl photometric method.*

ISO 2993 – *Determination of free acidity – Titrimetric method.*

ISO 2994 – *Determination of matter insoluble in water – Gravimetric method.*

ISO 3332 – *Determination of ammoniacal nitrogen content – Volumetric method after distillation.*[1)]

ISO 3333 – *Determination of copper content – Zinc dibenzyldithiocarbamate photometric method.*[1)]

1) At present at the stage of draft.