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Ammonium nitrate for industrial use — Measurement of pH value — Potentiometric method

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FOREWORD

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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.

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Belgium	Israel	Spain
Bulgaria	Italy	Sweden
Egypt, Arab Rep. of	Korea, Dem.P.rep. of	Switzerland
France	Netherlands	Thailand
Germany	New Zealand	United Kingdom
Hungary	Portugal	U.S.S.R.
India	Romania	Yugoslavia
Ireland	South Africa, Rep. of	

No Member Body expressed disapproval of the document.

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Ammonium nitrate for industrial use — Measurement of pH value — Potentiometric method

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a potentiometric method for measuring the pH value of a solution of ammonium nitrate for industrial use at a concentration of 100 g/l.

2 PRINCIPLE

Measurement at a temperature of 20 ± 1 °C of the pH value of an ammonium nitrate solution at a concentration of 100 g/l, using a pH meter fitted with glass and calomel electrodes.

3 REAGENTS

Distilled water, free from carbon dioxide, shall be used in the test.

3.1 *Di*sodium tetraborate buffer solution, 0,01 M.

Dissolve 3,81 ± 0,01 g of *di*sodium tetraborate decahydrate ($Na_2B_4O_7.10H_2O$) in water, transfer quantitatively to a 1 000 ml one-mark volumetric flask, dilute to the mark and mix.

Store this solution away from atmospheric carbon dioxide and renew at least each month.

The pH of this buffer solution at 20 °C is 9,22.

3.2 Potassium dihydrogen orthophosphate (0,025 M) and *di*sodium hydrogen orthophosphate, (0,025 M) buffer solution.

Dissolve 3,40 ± 0,01 g of potassium dihydrogen orthophosphate (KH_2PO_4) in approximately 400 ml of water. Then dissolve 3,55 ± 0,01 g of *di*sodium hydrogen orthophosphate (Na_2HPO_4) in approximately 400 ml of water. Transfer the two solutions quantitatively to a 1 000 ml one-mark volumetric flask, dilute to the mark and mix.

Store this solution away from atmospheric carbon dioxide.

The pH of this buffer solution at 20 °C is 6,88.

3.3 Potassium hydrogen phthalate buffer solution, 0,05 M

Dissolve 10,21 ± 0,01 g of potassium hydrogen phthalate ($KHC_8O_4H_4$) in water, transfer quantitatively to a 1 000 ml one-mark volumetric flask, dilute to the mark and mix. Store this solution in a well-sealed vessel and away from atmospheric carbon dioxide.

The pH of this buffer solution at 20 °C is 4,00.

4 APPARATUS

Ordinary laboratory apparatus and

4.1 pH meter, fitted with glass and calomel electrodes, sensitivity 0,05 pH units.

5 PROCEDURE

5.1 Test portion

Weigh, to the nearest 0,01 g, 10 g of the test sample.

5.2 Preparation of the test solution

Place the test portion (5.1) in a beaker of suitable capacity (250 ml for example). Add 50 ml of water and dissolve, stirring with a glass rod taking care to maintain the temperature at 20 ± 1 °C. Transfer the solution quantitatively to a 100 ml one-mark volumetric flask, dilute to the mark and mix.

5.3 Calibration of the pH meter

Calibrate the pH meter (4.1) at a temperature of 20 ± 1 °C using the buffer solutions (3.1), (3.2) and (3.3). Pass a small stream of nitrogen across the surface of the solutions and maintain this throughout the test.

5.4 Determination

Transfer the test solution (5.2) into a dry beaker of suitable capacity (250 ml for example), introduce the two electrodes of the pH meter (4.1) and carry out the measurement at a controlled temperature of 20 ± 1 °C, under the same conditions as used for the calibration.

6 EXPRESSION OF RESULTS

Express the results in pH units, to the nearest 0,1 unit, stating the temperature at which the measurement was carried out.

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.