Annex D.7

Revision of CEN/TS 17759:2022, Inorganic fertilizers — Determination of pH of a solution of ammonium nitrate fertilizer of high nitrogen content

Draft method

1 Scope

This document specifies a method for the determination of pH of a solution of ammonium nitrate fertilizer of high nitrogen content.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 1482-2, *Fertilizers, liming materials and inhibitors — Sampling and sample preparation — Part 2: General sample preparation provisions*

EN 12944-1, *Fertilizers and liming materials — Vocabulary — Part 1: General terms*

EN 12944-2, *Fertilizers and liming materials — Vocabulary — Part 2: Terms relating to fertilizers*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 12944-1 and EN 12944-2 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at https://www.electropedia.org/

— ISO Online browsing platform: available at https://www.iso.org/obp

4 Principle

The measurement of the pH of an ammonium nitrate solution is carried out by means of a pH meter.

5 Reagents

Use only reagents of recognized analytical grade.

5.1 Distilled or demineralized water, free from carbon dioxide.

5.2 Buffer solution A, pH 6,88 at 20 °C or buffer solution B pH 4,00 at 20 °C.

For buffer solution A, dissolve 3,40 g ± 0,01 g of potassium dihydrogen phosphate (KH_2PO_4) in approximately 400 ml of water. Then dissolve 3,55 g ± 0,01 g of disodium hydrogen phosphate (Na_2HPO_4) in approximately 400 ml of water (5.1). Transfer the two solutions without loss into a 1 000-ml graduated flask (6.2), fill up to the mark and mix.

Keep this solution in an airtight vessel.

For buffer solution B, dissolve 10,21 g ± 0,01 g of potassium hydrogen phthalate ($KHC_8O_4H_4$) in water (5.1), transfer without loss into a 1 000-ml graduated flask (6.2), fill up to the mark and mix.

Keep this solution in an airtight vessel.

Alternatively, commercially available pH standard solutions may be used.

6 Apparatus and equipment

Usual laboratory glassware and equipment and, in particular, the following.

6.1 pH meter, equipped with glass and calomel electrodes or equivalent, sensitivity 0,05 pH unit.

6.2 Graduated flask, capacity 1 000 ml.

6.3 Beaker, capacity 250 ml.

6.4 Balance, capable of weighing to the nearest 0,01 g.

6.5 Airtight vessel.

7 Sampling and sample preparation

Sampling is not part of the method specified in this document. A recommended sampling method is given in EN 1482-1 [1].

Sample preparation shall be carried out in accordance with EN 1482-2.

8 Procedure

8.1 Calibration of the pH meter

Calibrate the pH meter (6.1) at a temperature of 20 °C ± 1 °C, using the buffer solutions (5.2). Pass a slow stream of nitrogen onto the surface of the solution and maintain this throughout the test.

8.2 Determination

Pour 100,0 ml of water onto 10 g ± 0,01 g of the sample in a 250 ml beaker (6.3). Remove the insolubles by filtering, decanting or centrifuging the liquid. Measure the pH of the clear solution at a temperature of 20 °C ± 1 °C according to the same procedure as for the calibration of the pH meter.

9 Expression of the results

Express the result in pH units, to the nearest 0,1 unit, and state the temperature used.

10 Test report

The test report shall contain at least the following information:

a) all information necessary for the complete identification of the sample;

b) test method used with reference to this document, prEN 17759:2024;

c) test result obtained expressed in pH units, to the nearest 0,1 unit, and state the temperature used;

d) date of sampling and sampling procedure (if known);

e) date when the analysis was finished;

f) all operating details not specified in this document, or regarded as optional, together with details of any incidents that occurred when performing the method which might have influenced the test result(s).

Bibliography

[1] EN 1482-1, *Fertilizers, liming materials and inhibitors — Sampling and sample preparation — Part 1: General sampling provisions*