BRITISH STANDARD

BS 4427-2: 1969

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Methods of test for

Sodium tripolyphosphate (*penta*Sodium triphosphate) and sodium pyrophosphate (*tetra*Sodium pyrophosphate) —

Part 2: Measurement of pH value of sodium tripolyphosphate

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This British Standard, having been approved by the Chemicals Industry Standards Committee, was published under the authority of the Executive Board on 28 February 1969

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The following BSI reference relates to the work on this standard:
Committee reference CIC/25

ISBN 580 05386 5

Amendments issued since publication

Amd. No.	Date	Comments

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Foreword

For some years the United Kingdom has participated in the work of preparing methods of test for sodium tripolyphosphate and sodium pyrophosphate for industrial use, carried out within Working Group 7 of Technical Committee 47 — Chemistry, of the International Organization for Standardization (ISO). As international agreement is reached on the methods, it is proposed to publish them as parts of this British Standard.

This part is technically identical with ISO Recommendation R 851, "*Sodium tripolyphosphate for industrial use. Measurement of pH. Potentiometric method*."

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 and 2, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

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1 Scope

This Part of BS 4427 describes a potentiometric method for the measurement of the pH value of a solution at a conventional concentration of 10 g/l, of sodium tripolyphosphate for industrial use.

2 Principle

The principle of this method of test is the measurement of the pH of a sodium tripolyphosphate solution at a conventional concentration of 10 g/l by means of a pH meter fitted with a glass electrode.

3 Reagents

Freshly boiled and cooled distilled water shall be used in the test. The following reagents shall be used:

3.1 *Sodium tetraborate buffer solution*, 0.01M. Dissolve 3.81 ± 0.01 g of sodium tetraborate decahydrate ($Na_2B_4O_7.1OH_2O$) in water and then dilute to 1 000 ml.

The solution should be stored in the absence of atmospheric carbon dioxide and renewed at least once a month.

According to the temperature, this solution gives the following pH values:

°C	**pH**
15	9.26
20	9.22
25	9.18
30	9.14

The pH change for + 1 degC is equal to – 0.008 pH unit.

3.2 *Sodium tetraborate and sodium hydroxide buffer solution*. Add 100 ml of 0.01N sodium hydroxide solution to 100 ml of the sodium tetraborate buffer solution (**3.1**) and mix thoroughly.

According to the temperature, this solution gives the following pH values:

°C	**pH**
15	9.64
20	9.61
25	9.58
30	9.55

The pH change for + 1 degC is equal to – 0.006 pH unit.

4 Apparatus

Ordinary laboratory apparatus with the following shall be used:

4.1 *pH meter*, fitted with a glass electrode, sensitivity 0.05 pH unit.

5 Procedure

5.1 Test portion. Weigh to the nearest milligramme, 1 g of the test sample.

5.2 Preparation of the sample solution. Place 50 ml of water in a beaker of suitable capacity (250 ml, for example).

Add by small quantities the test portion (**5.1**) and stir with a glass rod until the sample is dissolved.

Transfer quantitatively the solution to a 100 ml one-mark volumetric flask, dilute to the mark and mix thoroughly.

NOTE This solution should be prepared just before use.

5.3 Determination. Transfer the contents of the flask to a dry beaker of suitable capacity (250 ml, for example) and measure its pH value with the pH meter (**4.1**) previously calibrated against the buffer solution (**3.1** or **3.2**).

The buffer solution chosen should be the one with a pH value lower than that of the sample solution.

The pH of the buffer solution should not be more than 0.5 pH unit lower than the pH of the sample solution.

The pH meter calibration and the measurement of the pH of the sample solution should be carried out at the same temperature.

6 Expression of results

Express the results in pH units to the nearest 0.05 pH unit, indicating the temperature of the measurement.

7 Test report

State the following in the report:

1) the reference of the method used,

2) the results and the method of expression used,

3) any unusual features noted during the determination,

4) any operation not included in this standard or regarded as optional.

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