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INTERNATIONAL STANDARD 851

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Sodium tripolyphosphate for industrial use — Measurement of pH — Potentiometric method

Tripolyphosphate de sodium à usage industriel — Mesurage du pH — Méthode potentiométrique

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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.

Prior to 1972, the results of the work of the technical committees were published as ISO Recommendations; these documents are in the process of being transformed into International Standards. As part of this process, Technical Committee ISO/TC 47, *Chemistry*, has reviewed ISO Recommendation R 851-1968 and found it technically suitable for transformation. International Standard ISO 851 therefore replaces ISO Recommendation R 851-1968, to which it is technically identical.

ISO Recommendation R 851 had been approved by the member bodies of the following countries :

Austria	India	South Africa, Rep. of
Belgium	Israel	Spain
Brazil	Italy	Switzerland
Bulgaria	Japan	Thailand
Chile	Korea, Dem. P. Rep. of	Turkey
Czechoslovakia	Korea, Rep. of	United Kingdom
Egypt, Arab Rep. of	Netherlands	U.S.S.R.
France	New Zealand	Yugoslavia
Germany	Poland	
Hungary	Romania	

No member body had expressed disapproval of the Recommendation.

No member body disapproved the transformation of the Recommendation into an International Standard.

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Sodium tripolyphosphate for industrial use — Measurement of pH — Potentiometric method

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a potentiometric method for the measurement of the pH value of a solution, at a conventional concentration of 10 g/l, of sodium tripolyphosphate (*penta*sodium triphosphate) for industrial use.

2 PRINCIPLE

Measurement of the pH of a sodium tripolyphosphate solution at a conventional concentration of 10 g/l by means of a pH meter.

3 REAGENTS

During the analysis, use only reagents of recognized analytical grade and only distilled water or water of equivalent purity, freshly boiled and cooled to ambient temperature.

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

Dissolve 3,81 ± 0,01 g of 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 in a hermetically sealed plastic bottle in the absence of atmospheric carbon dioxide and renew at least once a month.

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

Temperature °C	pH
15	9,26
20	9,22
25	9,18
30	9,14

The pH change for + 1 °C is equal to − 0,008 pH unit.

3.2 ***Di*sodium tetraborate and sodium hydroxide,** buffer solution.

Add 100 ml of 0,01 N sodium hydroxide solution to 100 ml of the sodium tetraborate buffer solution (3.1) and mix.

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

Temperature °C	pH
15	9,64
20	9,61
25	9,58
30	9,55

The pH change for + 1 °C is equal to − 0,006 pH unit.

4 APPARATUS

Ordinary laboratory apparatus and

4.1 pH meter, fitted with a glass measurement electrode and a calomel reference electrode, of sensitivity 0,05 pH unit.

5 PROCEDURE

5.1 Test portion

Weigh, to the nearest 0,001 g, 1 g of the test sample.

5.2 Preparation of test solution

Place 50 ml of water in a beaker of suitable capacity (for example 250 ml) and add, in small quantities, the test portion (5.1), stirring with a glass rod until dissolution is complete.

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

NOTE — Prepare the test solution just before use.

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5.3 Determination

Transfer the contents of the flask to a dry beaker of suitable capacity (for example 250 ml) 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 shall be the one having a pH value just lower than that of the test solution.

The pH of the buffer solution shall not be more than 0,5 pH unit lower than the pH of the test solution.

Carry out the calibration of the pH meter and the measurement of the pH of the test solution at the same temperature.

6 EXPRESSION OF RESULTS

Express the results of the measurement in pH units, to the nearest 0,05 pH unit, indicating the temperature of the measurement.

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

ISO PUBLICATIONS RELATING TO CONDENSED SODIUM PHOSPHATES FOR INDUSTRIAL USE

SODIUM PYROPHOSPHATE (*tetra*sodium diphosphate)

ISO 2999 — Estimation of pyrophosphate content — Potentiometric method.

SODIUM TRIPOLYPHOSPHATE (*penta*sodium triphosphate)

ISO 850 — Determination of matter insoluble in water.

ISO 851 — Measurement of pH — Potentiometric method.

ISO 3000 — Estimation of tripolyphosphate content — Tris(ethylenediamine) cobalt(III) chloride gravimetric method.

SODIUM PYROPHOSPHATE AND SODIUM TRIPOLYPHOSPHATE (*tetra*sodium diphosphate and *penta*sodium triphosphate)

ISO 852 — Determination of iron content — 2,2′-Bipyridyl photometric method.

ISO 853 — Determination of loss on ignition.

ISO 2996 — Determination of particle size distribution by mechanical sieving.

ISO 2998 — Determination of orthophosphate content — Photometric method using the reduced molybdophosphate.

ISO 3357 — Determination of total phosphorus(V) oxide content — Quinoline phosphomolybdate gravimetric method.

ISO 3358 — Separation by column chromatography and determination of the different phosphate forms.

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