QUANTITATIVE ANALYSIS OF PHOSPHATES IN CLEANERS

Application

This test method is used to determine the percentage of phosphate in cleaners. It is also used to determine soluble phosphates in other materials such as phosphating solutions.

Apparatus Required

Erlenmeyer Flask - 250 mL

Funnel - Suitable for use with filter paper

Watch Glasses

Graduated Cylinder - 100 mL

Hot Plate

Analytical Balance - Precision of +/- 0.1 mg

Materials Required

Hydrochloric Acid
Concentrated, reagent grade. CAUTION: Corrosive

Nitric Acid
Concentrated, reagent grade. CAUTION: Corrosive

Ammonium Hydroxide
Concentrated, reagent grade. CAUTION: Corrosive

Potassium Nitrate
Reagent grade. CAUTION: Possible fire and explosion hazard

Distilled or Deionized Water
10 ppm max total dissolved solids (ASTM D 1888)

Litmus Paper

Filter Paper
Whatman No. 42, or equivalent

Date	Action	Revisions	
2001 01 22	Revised	Editorial – no technical change	A. Cockman
2000 03 23	Revised	Editorial – no technical change	A. Cockman
1990 02 14			

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Solutions Required

Ammonium Molybdate Solution
Refer to FLTM AZ 102-01

Potassium Nitrate Solution
1 % concentration

Sodium Hydroxide Solution
0.1 N - refer to FLTM AZ 102-01

Hydrochloric Acid Solution
0.1 N - refer to FLTM AZ 102-01

Phenolphthalein
Refer to FLTM AZ 102-01

Conditioning and Test Conditions

All test values indicated herein are based on material conditioned in a controlled atmosphere of 23 +/- 2 °C and 50 +/- 5 % relative humidity for not less than 24 h prior to testing and tested under the same conditions unless otherwise specified.

Procedure

1. Transfer an aliquot of solution equivalent to 0.0050 - 0.0075 g of P_2O_5 to a 250 mL Erlenmeyer flask.
2. Dilute with distilled water to make the total volume approximately 60 mL.
3. Add 20 mL of concentrated nitric acid.
4. Boil mixture on hot plate to approximately 25 % of its original volume.
5. Remove from hot plate and cool to room temperature.
6. Add concentrated ammonium hydroxide until fumes are no longer evolved.
7. Continue to add concentrated ammonium hydroxide and keep testing the solution with litmus paper until the solution is as close to neutral as possible.
8. Dilute the solution to 100 mL.
9. Add 0.25 mL of concentrated nitric acid.
10. Adjust the temperature of the solution to 40 to 50 °C.
11. Add 50 mL of freshly-filtered ammonium molybdate solution.

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