Phosphate (reactive, ortho) – Vanadomolybdophosphoric Acid Method

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Applications and Industries

Domestic and industrial wastewater, industrial process waters, boiler water, cooling water, surface and ground water, potable water, seawater

Power generation, pulp and paper, food and beverage industries

References

APHA Standard Methods, 23rd ed., Method 4500-P C - 2005

ASTM D 515-82, Phosphorous in Water, Test Method C

Chemistry

In an acidic solution, ortho-phosphate reacts with ammonium molybdate and ammonium vanadate to produce a yellow colored complex in direct proportion to the phosphate concentration. Results are expressed in ppm (mg/L) phosphate as PO_4. To convert results from ppm PO_4 to ppm P, divide by 3.06.

Available Analysis Systems

Visual colorimetric: CHEMets®

Instrumental colorimetric: Vacu-vials®

Storage Requirements

Products should be stored in the dark and at room temperature.

Shelf Life

When stored in the dark and at room temperature:

Visual colorimetric:

CHEMets refills, color comparators: at least 1 year

Instrumental colorimetric:

Vacu-vials kit: at least 1 year

Safety Information

Safety Data Sheets (SDS) are available upon request and at www.chemetrics.com. Read SDS before using these products. Breaking the tip of an ampoule in air rather than water may cause the glass ampoule to shatter. Wear safety glasses and protective gloves.

Interference Information

- High concentrations of ferrous iron and other reducing agents may cause blue color development rather than yellow.
- Molybdate at >1000 ppm, thiosulfate, sulfide, thiocyanate, bismuth, thorium, fluoride, or arsenate may cause a false negative result.
- Arsenate and silica can become positive interferences only if the sample is heated.
- Samples with extreme pHs or that are highly buffered should be adjusted to approximately 7 prior to analysis.
- Unexpectedly high results may reflect sample contamination from labware. If contamination is suspected, labware can be rinsed with dilute sulfuric acid followed by distilled water.
- Condensed phosphates (pyro-, meta-, and other polyphosphates) and organically bound phosphates do not respond to this test.
- Sample color or turbidity may make a color match difficult during visual colorimetric testing and may cause a false positive result with instrumental colorimetric tests. CHEMetrics' Sample Zeroing Accessory Pack can be used to correct for potential errors during instrumental analysis.

Accuracy Statement

Statements of accuracy are based on laboratory tests performed under ideal testing conditions using standards of known concentration prepared in deionized water.

CHEMets kits:

± 1 color standard increment

Vacu-vials kit:

<1.3 ppm at 0 ppm
±1.5 ppm at 5.0 ppm
±4.0 ppm at 20.0 ppm
±6.0 ppm at 60.0 ppm