Total Phosphate Test Kit

PO-24 (225001)

DOC326.97.00079

Test preparation

CAUTION: ⚠ Review the Safety Data Sheets (MSDS/SDS) for the chemicals that are used. Use the recommended personal protective equipment.

- Put the color disc on the center pin in the color comparator box (numbers to the front).
- Use sunlight or a lamp as a light source to find the color match with the color comparator box.
- Rinse the tubes with sample before the test. Rinse the tubes with deionized water after the test.
- If the color match is between two segments, use the value that is in the middle of the two segments.
- If the color disc becomes wet internally, pull apart the flat plastic sides to open the color disc. Remove the thin inner disc. Dry all parts with a soft cloth. Assemble when fully dry.
- The long-path adapter for the low range test shows the color in the tubes from top to bottom. Make sure the light source is above the tubes during the color match.
- Undissolved reagent does not have an effect on test accuracy.
- To verify the test accuracy, use a standard solution as the sample.
- Use the filtration procedure for samples that contain turbidity.
- This test kit measures orthophosphate, total inorganic phosphate and total phosphate. Subtract orthophosphate from total inorganic phosphate to determine meta (poly) phosphate. Subtract total inorganic phosphate from total phosphate to determine organic phosphate.
- To record the test result as mg/L P, divide the mg/L PO_4 test result by 3.

Filtration procedure for turbid samples

1. Fill a bottle to the shoulder with sample.

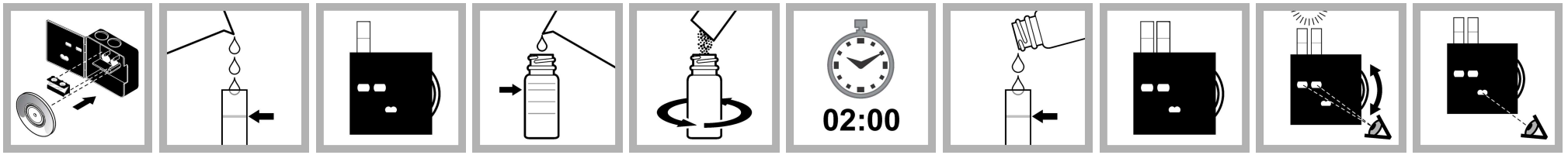
2. Add one drop of Filtration Aid Solution. Swirl to mix.

3. Put the filter paper in the funnel. Put the funnel on a second bottle.

4. Pour the sample from the first bottle into the funnel.

5. Use the filtered sample in the test procedure. Record the results as soluble phosphate.

Test procedure—Orthophosphate low range (0–0.8 mg/L PO_4)



1. Install the long-path adapter in the color comparator box.

2. Fill a tube to the top line with sample.

3. Put the tube into the left opening of the color comparator box.

4. Fill the bottle to the 20-mL mark with sample.

5. Add one PhosVer 3 Phosphate Reagent Powder Pillow. Swirl to mix.

6. Wait 2 minutes. A blue color develops. Read the result within 10 minutes.

7. Fill a second tube to the top line with the prepared sample.

8. Put the second tube into the color comparator box.

9. Hold the color comparator box below a light source. Turn the color disc to find the color match.

10. Read the value in the scale window. Divide the value by 50 to get the result in mg/L.

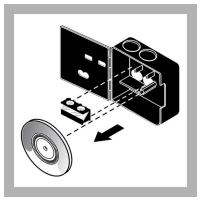
Replacement items

Description	Unit	Item no.
PhosVer® 3 Phosphate Reagent Powder Pillows, 25 mL	100/pkg	212599
Bottle, square, glass, 29 mL	6/pkg	43906
Bottle, square, 29 mL, with 10, 15, 20 and 23-mL marks	6/pkg	232706
Clamp, test tube holder	each	63400
Color comparator box	each	173200
Color disc, phosphate, 0–40 mg/L	each	9262100
Cookit stove with Heatab fuel tablets	each	220600
Cookit support cover	each	217900
Dropper, glass, 0.5- and 1.0-mL marks	5/pkg	1419705
Filter paper, 2–3 micron, pleated, 12.5 cm	100/pkg	189457
Filtration aid solution, 29-mL dropper bottle	29 mL	104633
Funnel, poly, 65 mm	each	108367
Flask, Erlenmeyer, 50 mL	each	50541
Glass viewing tubes, 18 mm	6/pkg	173006
Long-path adapter	each	2412200
Potassium Persulfate Powder Pillows	100/pkg	245199
Sodium hydroxide standard solution, 5.0 N	100 mL MDB	245032
Stoppers for 18-mm glass tubes and AccuVac Ampuls	6/pkg	173106
Sulfuric acid standard solution, 5.25 N	100 mL MDB	244932
Water, deionized	100 mL	27242

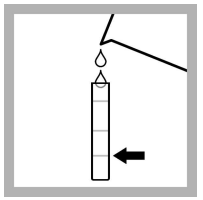
Optional items

Description	Unit	Item no.
Boiling chips, carbon	227 g	1483531
Caps for plastic viewing tubes (4660004)	4/pkg	4660014
Phosphate standard solution, 1 mg/L as PO_4 (NIST)	500 mL	256949
Phosphate standard solution, 10 mg/L as PO_4 (NIST)	946 mL	1420416
Plastic viewing tubes, 18 mm, with caps	4/pkg	4660004

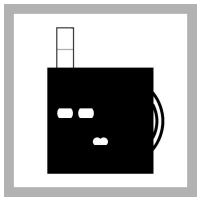
Test procedure—Orthophosphate mid range (0–4 mg/L PO_4)



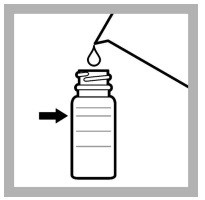
1. If installed, remove the long-path adapter.



2. Fill a tube to the first line (5 mL) with sample.



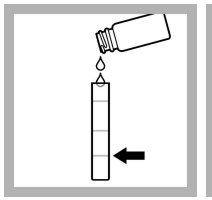
3. Put the tube into the left opening of the color comparator box.



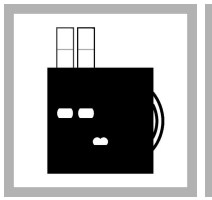
4. Fill the bottle to the 20-mL mark with sample.

5. Add one PhosVer 3 Phosphate Reagent Powder Pillow. Swirl to mix.

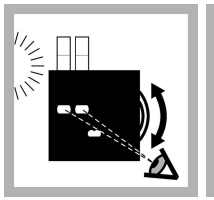
6. Wait 2 minutes. A blue color develops. Read the result within 10 minutes.



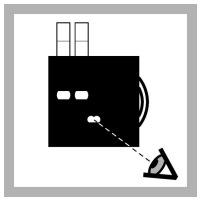
7. Fill a second tube to the first line (5 mL) with the prepared sample.



8. Put the second tube into the color comparator box.

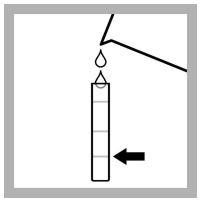


9. Hold the color comparator box in front of a light source. Turn the color disc to find the color match.

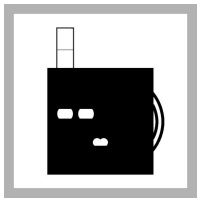


10. Read the value in the scale window. Divide the value by 10 to get the result in mg/L.

Test procedure—Orthophosphate high range (0–40 mg/L PO_4)



1. Fill a tube to the first line (5 mL) with sample. If installed, remove the long-path adapter.



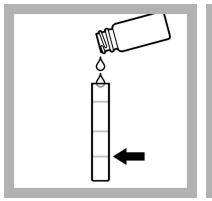
2. Put the tube into the left opening of the color comparator box.

3. Use the dropper two times to add 2 mL of sample to a clean bottle.

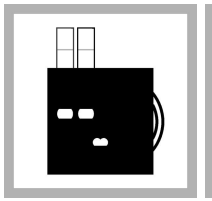
4. Fill the bottle to the 20-mL mark with deionized water.

5. Add one PhosVer 3 Phosphate Reagent Powder Pillow. Swirl to mix.

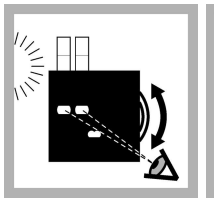
6. Wait 2 minutes. A blue color develops. Read the result within 10 minutes.



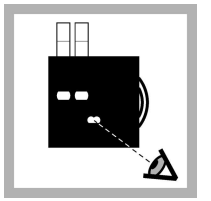
7. Fill a second tube to the first line (5 mL) with the prepared sample.



8. Put the second tube into the color comparator box.



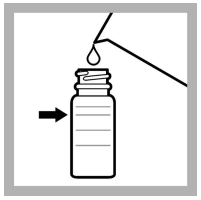
9. Hold the color comparator box in front of a light source. Turn the color disc to find the color match.



10. Read the result in mg/L in the scale window.

Digestion procedure for total inorganic phosphate and total phosphate

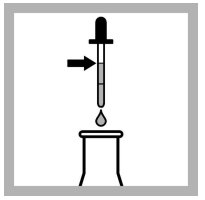
Digest the sample with heat and acid for total inorganic phosphate. Digest the sample with heat, acid and persulfate for total phosphate. During digestion for total inorganic phosphate, meta (poly) phosphates are converted to orthophosphate. During digestion for total phosphate, meta (poly) and organic phosphates are converted to orthophosphate.



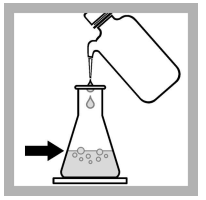
1. Fill the bottle to the 20-mL mark with sample.

2. Pour the sample into a clean 50-mL Erlenmeyer flask.

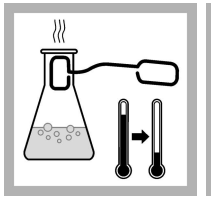
3. Total phosphate only: Add one Potassium Persulfate Powder Pillow. Swirl to mix.



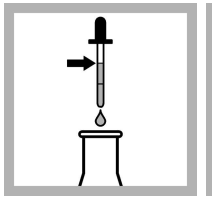
4. Use the dropper two times to add 2.0 mL of 5.25 N sulfuric acid. Swirl to mix.



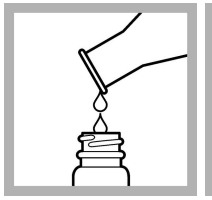
5. Boil the solution for 10 minutes for total inorganic phosphate or 30 minutes for total phosphate. Add deionized water to keep the liquid level near 20 mL.



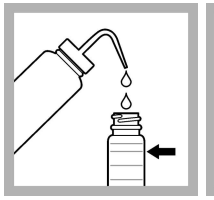
6. Use the clamp to remove the flask. Wait until the solution is cool.



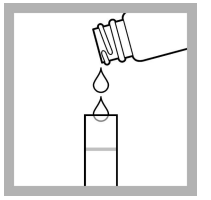
7. Use the dropper two times to add 2.0 mL of 5 N sodium hydroxide. Swirl to mix.



8. Pour the solution into the bottle.



9. Add deionized water to the 20 mL mark. Swirl to mix.



10. Use the digested sample in the applicable test procedure. The result is total inorganic phosphate or total phosphate.

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