



# Ortho- and Metaphosphate Test Kit

PO-23 (224902)

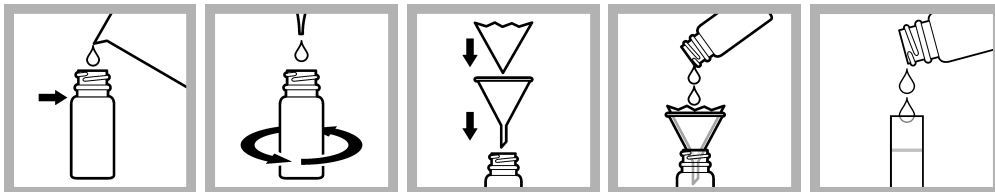
DOC326.97.00078

## Test preparation

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

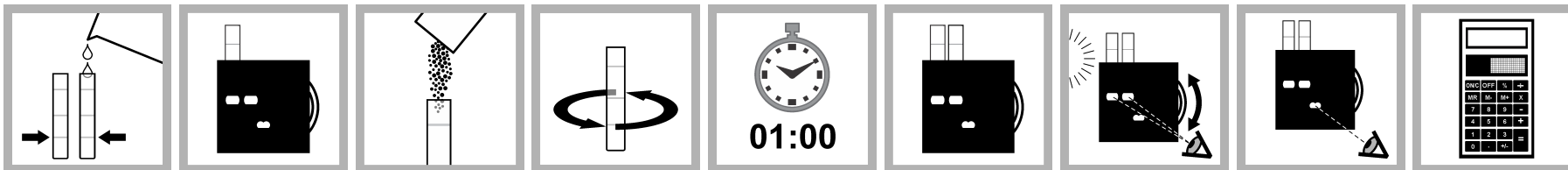
- Put the color disc on the center pin in the color comparator box (numbers to the front).
- Use sunlight or a lamp as a light source to find the color match with the color comparator box.
- Rinse the tubes with sample before the test. Rinse the tubes with deionized water after the test.
- For best results, clean the tubes and bottles with 6.0 N (1:1) hydrochloric acid solution, then rinse with deionized water.
- 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.
- 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.
- To determine metaphosphate, use the digestion procedure to determine the total inorganic phosphate. Subtract the result of an orthophosphate test (without digestion) from the total inorganic phosphate result.
- To record the test result as mg/L P, divide the mg/L PO<sub>4</sub> 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 (0–4 mg/L PO<sub>4</sub>)



1. Fill two tubes to the first line (5 mL) with sample.
2. Put one tube into the left opening of the color comparator box.
3. Add one PhosVer 3 Phosphate Reagent Powder Pillow to the second tube.
4. Swirl to mix. A blue color develops.
5. Wait 1 minute. Read the result within 5 minutes.
6. Put the second tube into the color comparator box.
7. Hold the color comparator box in front of a light source. Turn the color disc to find the color match.
8. Read the value in the scale window.
9. Divide the value by 10 to get the result in mg/L.

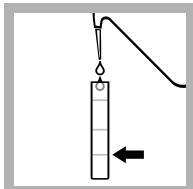
## Replacement items

Description	Unit	Item no.
PhosVer® 3 Phosphate Reagent Powder Pillows, 5 mL	100/pkg	220999
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
Flask, Erlenmeyer, 50 mL	each	50541
Glass viewing tubes, 18 mm	6/pkg	173006
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

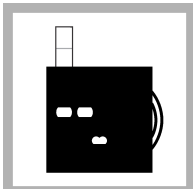
## Optional items

Description	Unit	Item no.
Boiling chips, carbon	227 g	1483531
Caps for plastic viewing tubes (4660004)	4/pkg	4660014
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
Hydrochloric acid standard solution, 6.0 N (1:1)	500 mL	88449
Phosphate standard solution, 1 mg/L as PO <sub>4</sub> (NIST)	500 mL	256949
Phosphate standard solution, 10 mg/L as PO <sub>4</sub> (NIST)	946 mL	1420416
Plastic viewing tubes, 18 mm, with caps	4/pkg	4660004

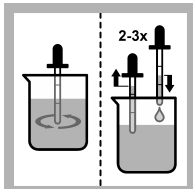
## Test procedure—Orthophosphate (0–40 mg/L PO<sub>4</sub>)



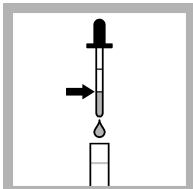
1. Fill a tube to the first line (5 mL) with deionized water.



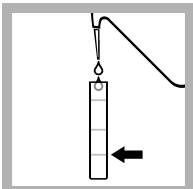
2. Put the tube into the left opening of the color comparator box.



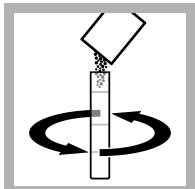
3. Fully rinse the dropper with the sample.



4. Use the dropper to add 0.5-mL of sample to a second tube.



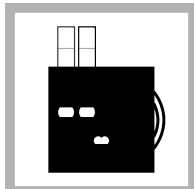
5. Add deionized water to the first line (5 mL) on the second tube.



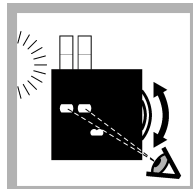
6. Add one PhosVer 3 Phosphate Reagent Powder Pillow to the second tube. Swirl to mix.



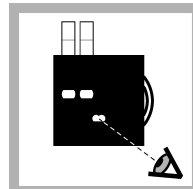
7. Wait 1 minute. Read the result within 5 minutes. A blue color develops.



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

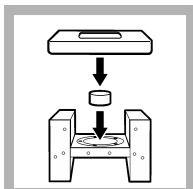


9. Hold the color comparator box in front of a light source. Turn the color disc to find the color match.

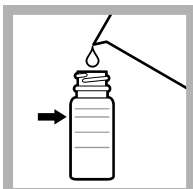


10. Read the result in mg/L in the scale window.

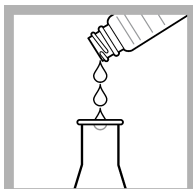
## Digestion procedure for total inorganic phosphate



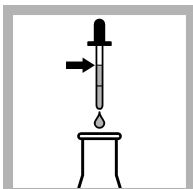
1. Assemble the heating apparatus.



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



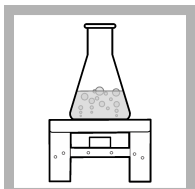
3. Pour the sample into a clean 50-mL Erlenmeyer flask.



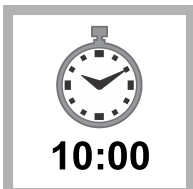
4. Use the dropper to add 2.0 mL of 5.25 N sulfuric acid.



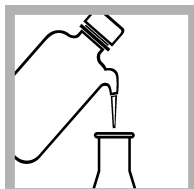
5. Swirl to mix.



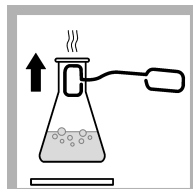
6. Put the flask on the heating apparatus.



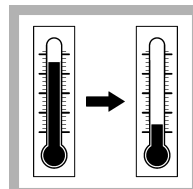
7. Boil the solution for 10 minutes.



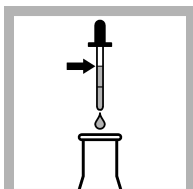
8. Add some deionized water during the boil time, if necessary, to keep some solution in the flask.



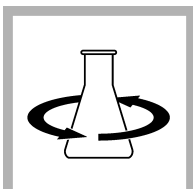
9. Use the clamp to remove the flask.



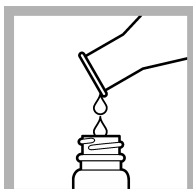
10. Wait until the solution is cool.



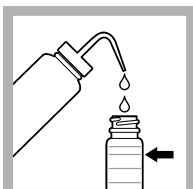
11. Use the dropper to add 2.0 mL of 5 N sodium hydroxide.



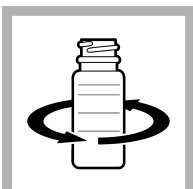
12. Swirl to mix.



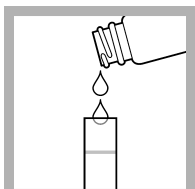
13. Pour the solution into the bottle.



14. Add deionized water to the 20-mL mark.



15. Swirl to mix.



16. Use the digested sample in the test procedure. The result is total inorganic phosphate.

