Orthophosphate Test

0 to 1, 0 to 5, 0 to 50 mg/L for test kits 224800 (PO-19) and 224801 (PO-19A)

DOC326.98.00023

Additional copies available on www.hach.com

Test preparation

- Assemble the color comparator by placing the color disc on the center pin with the lettering facing out.
- Use sunlight or a lamp as a light source when matching colors with the color comparator.
- Rinse tubes and bottles with the sample water before testing. Rinse with deionized water after testing. For best results clean with 6.0 N (1:1) Hydrochloric Acid Solution (see Optional items) and rinse with deionized water.
- Accuracy is not affected by undissolved powder.
- To check reagent accuracy, use a standard solution in place of the sample (see Optional items).
- If the color from the low range test is so dark that it reads off the high end of the scale, repeat the test using a new sample and the mid range instructions.
- Sample preparation for testing boiler water or other turbid waters (PO-19A)—turbidity is often present in boiler water and must be removed to obtain accurate test results for soluble phosphate. Kit PO-19A includes a funnel, filter paper and two square mixing bottles for filtering the sample. Since the turbidity may be so fine it cannot be removed by direct filtration, a bottle of Filtration Aid Solution has been included with this kit.

CAUTION: Handle chemical standards and reagents carefully. Review Material Safety Data Sheets for safe handling, storage and disposal information.

Replacement items

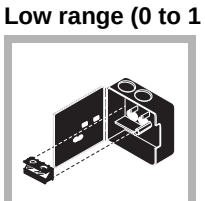
Description	Unit	Catalog no.
Bottle, mixing	6/pkg	232706
Color Comparator Box	each	173200
Color Disc, Phosphate, 0–50 mg/L	each	2489800
Color Viewing Tube, glass	6/pkg	173006
Dropper, glass, w/ 0.5- and 1-mL marks	5/pkg	1419705
Filter Paper, 12.5 cm (PO-19A only)	100/pkg	189457
Filtration Aid Solution (PO-19A only)	29 mL DB[1]	104633
Funnel, analytical, plastic, 65 mm (PO-19A only)	each	108367
Long Path Viewing Adapter (PO-19 only)	each	2412200
PhosVer® 3 Phosphate Reagent Powder Pillows	100/pkg	220999
Stoppers, for glass Color Viewing Tubes 173006	6/pkg	173106
Water, deionized	100 mL	27242

[1]Dropping Bottle

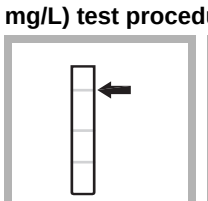
Optional items

Description	Unit	Catalog no.
Caps, for plastic viewing tubes 466004	4/pkg	4660014
Color Viewing Tube, plastic, w/ cap	4/pkg	4660004
Hydrochloric Acid Solution, 6.0 N (1:1)	500 mL	88449
Phosphate Standard Solution, 1 mg/L	500 mL	256949
Phosphate Standard Solution, 10 mg/L	946 mL	1420416

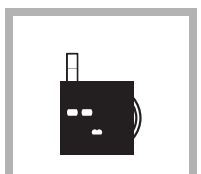
Low range (0 to 1 mg/L) test procedure



1. Insert the long path viewing adapter.



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



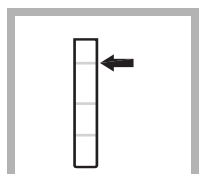
3. Insert the tube into the left opening of the comparator.

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

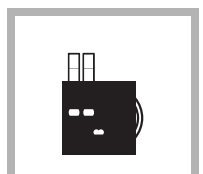
5. Add one PhosVer® 3 Phosphate Reagent Powder Pillow to the bottle. Swirl to mix.

Wait 8 minutes. If phosphate is present, a blue color develops.

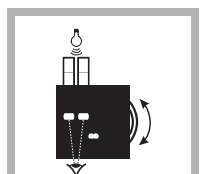
Note: *Complete the test and read the result within 10 minutes of the addition of the powder.*



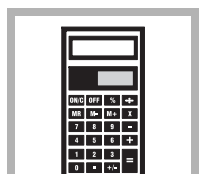
6. Fill another tube to the top line with prepared sample.



7. Insert the second tube into the right opening of the comparator.



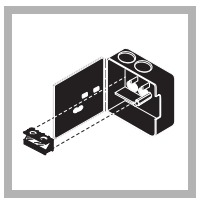
8. Hold the comparator so that a light source is directly above the tubes. Rotate the color disc until the colors in the front windows match.



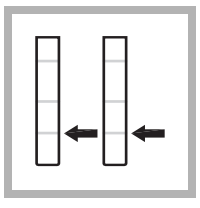
9. Divide the reading in the scale window by 50 to obtain the mg/L phosphate.

Note: *Divide the mg/L phosphate value by 3 to obtain the mg/L phosphorus.*

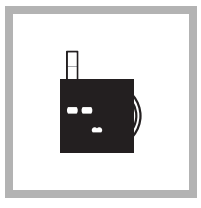
Mid range (0 to 5 mg/L) test procedure



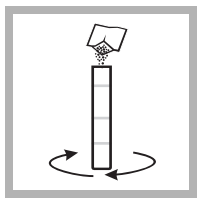
1. Remove the long path viewing adapter.



2. Fill two tubes to the first (5-mL) line with sample.



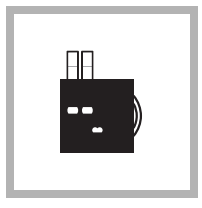
3. Insert one tube into the left opening of the comparator.



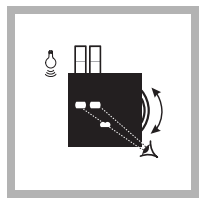
4. Add one PhosVer® 3 Phosphate Reagent Powder Pillow to the second tube. Swirl to mix.

Wait 1 minute. If phosphate is present, a blue color develops.

Note: *Complete the test and read the result within 5 minutes of the addition of the powder.*



5. Insert the second tube into the right opening of the comparator.

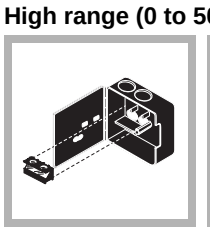


6. Hold the comparator so that a light source is directly behind the tubes. Rotate the color disc until the colors in the front windows match.

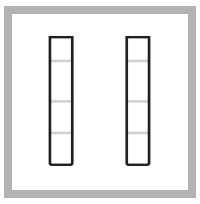
7. Divide the reading in the scale window by 10 to obtain the mg/L phosphate.

Note: *Divide the mg/L phosphate value by 3 to obtain the mg/L phosphorus.*

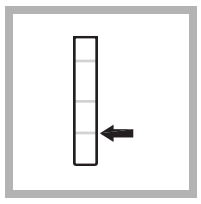
High range (0 to 50 mg/L) test procedure



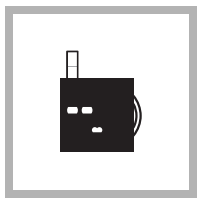
1. Remove the long path viewing adapter.



2. Rinse two tubes with deionized water.



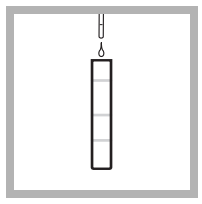
3. Fill a tube to the first (5-mL) line with deionized water.



4. Insert the tube into the left opening of the comparator.

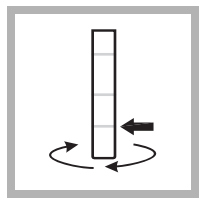
5. Rinse the dropper several times with the sample water.

Note: *If the sample is turbid, see Sample preparation for turbid water (PO-19A only).*

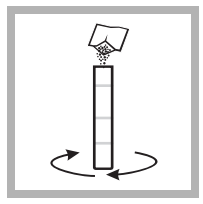


6. Fill the dropper to the first (0.5-mL) line with sample.

Pour this sample into the second tube.



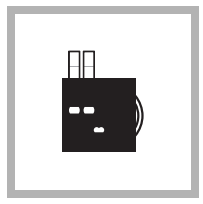
7. Add deionized water to the first (5-mL) line on the second tube. Swirl to mix.



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

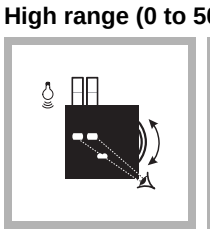
Wait 1 minute. If phosphate is present, a blue color develops.

Note: *Complete the test and read the result within 5 minutes of the addition of the powder.*

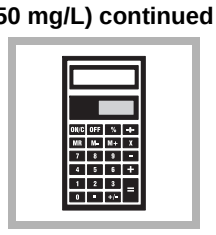


9. Insert the second tube into the right opening of the comparator.

High range (0 to 50 mg/L) continued

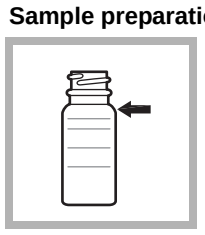


10. Hold the comparator so that a light source is directly behind the tubes. Rotate the color disc until the colors in the front windows match.



11. Read the result in mg/L phosphate in the scale window.
Note: *Divide the mg/L phosphate value by 3 to obtain the mg/L phosphorus.*

Sample preparation for turbid water (PO-19A only)



1. Fill a bottle to the shoulder with sample.

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

3. Place the funnel in another bottle. Insert a folded filter into the funnel.

4. Pour the water sample into the filter paper and allow the sample to filter through. Test this clear water sample for phosphate.

 For technical assistance or ordering information: visit www.hach.com, call 800-227-4224 or email techhelp@hach.com Edition 1, December 2006

正磷酸盐测试

0 到 1、0 到 5、0 到 50 mg/L，针对测试包 224800 (PO-19) 和 224801 (PO-19A)

DOC326.98.00023

可通过 www.hach.com 获取更多副本

测试准备

- 将 pH 色盘插入比色仪盒的中心销上，文字面朝外。
- 在将颜色与比色仪对照时，请使用阳光或灯光作为光源。
- 测试前使用样品水冲洗试管和瓶。 测试后使用去离子水冲洗。 要获得最佳结果，请使用 6.0 N (1:1) 盐酸溶液 （参见 “可选物品”）清洗，并使用去离子水冲洗。
- 未溶解的粉末不会影响准确度。
- 要检查试剂的准确性，请使用标准溶液代替样品 （参见 “可选物品”）。
- 如果低范围测试的颜色非常暗，从而显示超出刻度的高端值，请使用新样品并遵照中范围说明重新测试。
- 测试锅炉水或其它混浊水的样品准备 (PO-19A) - 锅炉水中经常存在混浊物，必须将其去除后，才能得到溶解磷酸盐的准确测试结果。 PO-19A 中包括一个漏斗、过滤纸和两个方形混合瓶，用于过滤样品。 混浊物可能非常细小，无法通过直接过滤去除，因此测试包中还包括了一瓶过滤辅助溶液。

注意： 请小心使用化学标准液和试剂。 有关安全使用、储藏和处理这些溶液的信息，请参阅 “材料安全数据表”。

备换物品

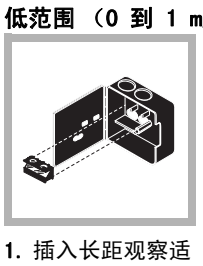
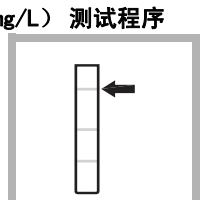
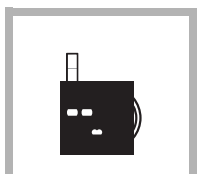
说明	单位	分类号
混合瓶	6/pkg	232706
比色仪盒	个	173200
色盘，磷酸盐，0-50 mg/L	个	2489800
显色管，玻璃	6/pkg	173006
滴管，玻璃，带有 0.5 和 1mL 刻度	5/pkg	1419705
过滤纸，12.5 cm （仅限 PO-19）	100/pkg	189457
过滤辅助溶液 （仅限 PO-19）	29 mL DB[1]	104633
分析漏斗，塑料，65 mm （仅限 PO-19）	个	108367
长距观察适配器 （仅限 PO-19）	个	2412200
PhosVer® 3 磷酸盐粉末试剂袋	100/pkg	220999
挡块，用于玻璃比色管 173006	6/pkg	173106
去离子水	100 mL	27242

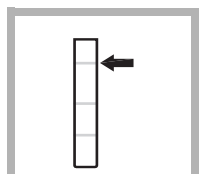
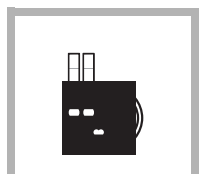
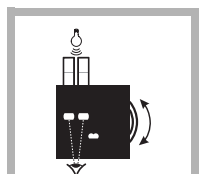
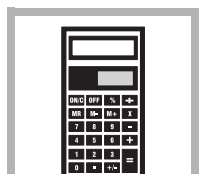
[1] 滴瓶

可选物品

说明	单位	分类号
盖，用于塑料显色管 466004	4/pkg	4660014
显色管，塑料，带盖	4/pkg	4660004
盐酸溶液，6.0 N (1:1)	500 mL	88449
磷酸盐标准溶液，1 mg/L	500 mL	256949
磷酸盐标准溶液，10 mg/L	946 mL	1420416

低范围 （0 到 1 mg/L） 测试程序

1. 插入长距观察适配器。

2. 在一个试管内添加样品到顶部刻度线。

3. 将这个试管插入比色仪的左侧开口中。

4. 在样品瓶内添加样品到 20-mL 刻度线。

5. 在样品瓶中添加一袋 PhosVer® 3 磷酸盐粉末试剂。 充分摇匀。

等待 8 分钟。 如果存在磷酸盐，会出现蓝色。

***备注：** 在添加粉末试剂后 10 分钟内读取结果，完成测试。*

6. 在另一试管内添加准备好的样品到顶部刻度线。

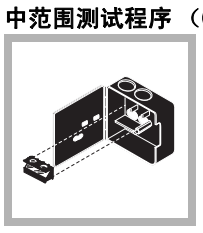
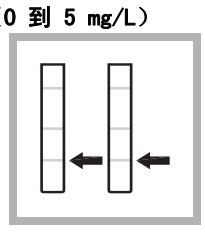
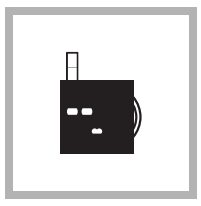
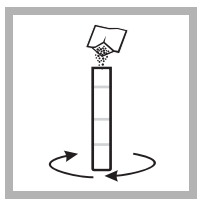
7. 将第二个试管插入比色仪的右侧开口中。

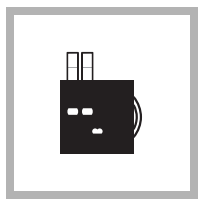
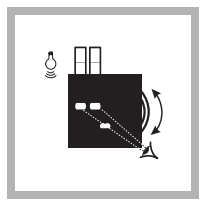
8. 握住比色仪，让光源位于试管的正上方。 转动色盘，使得前窗口的颜色相符。

9. 将刻度窗口的读数除以 50，得到以 mg/L 为单位的磷酸盐结果。

***备注：** 将以 mg/L 为单位的磷酸盐结果除以 3，即得到以 mg/L 为单位的磷结果。*

中范围测试程序 （0 到 5 mg/L）


1. 取下长距观察适配器。

2. 在两个试管内添加样品到第一刻度线 (5-mL)。

3. 将一个试管插入比色仪的左侧开口中。

4. 在第二个试管中添加一袋 PhosVer® 3 磷酸盐粉末试剂。 充分摇匀。

等待 1 分钟。 如果存在磷酸盐，会出现蓝色。

***备注：** 在添加粉末试剂后 5 分钟内读取结果，完成测试。*

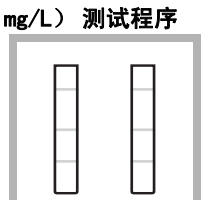
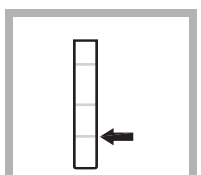
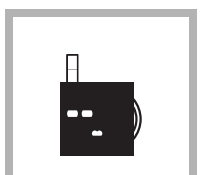
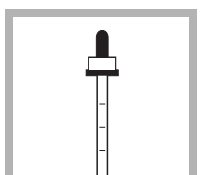
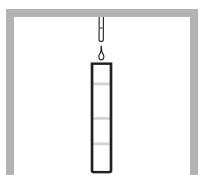
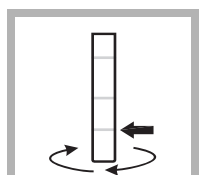
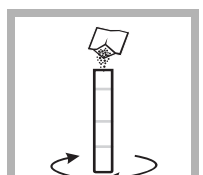
5. 将第二个试管插入比色仪的右侧开口中。

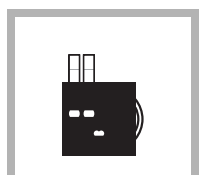
6. 握住比色仪，让光源位于试管的正后方。 转动色盘，使得前窗口的颜色相符。

7. 将刻度窗口的读数除以 10，得到以 mg/L 为单位的磷酸盐结果。

***备注：** 将以 mg/L 为单位的磷酸盐结果除以 3，即得到以 mg/L 为单位的磷结果。*

高范围 （0 到 50 mg/L） 测试程序

1. 取下长距观察适配器。

2. 使用去离子水冲洗两个试管。

3. 在一个试管内添加去离子水到第一刻度线 (5-mL)。

4. 将这个试管插入比色仪的左侧开口中。

5. 使用样品水冲洗滴管数次。

***备注：** 如果样品混浊，请参见 混浊水样品准备（仅限 PO-19）。*

6. 在滴管内添加样品到第一刻度线 (0.5-mL)。

将此样品注入第二个试管中。

7. 在第二个试管内添加去离子水到第一刻度线 (5-mL)。 充分摇匀。

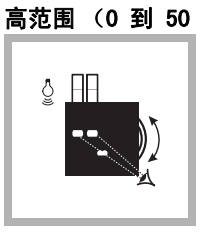
8. 在第二个试管中添加一袋 PhosVer® 3 磷酸盐粉末试剂。 充分摇匀。

等待 1 分钟。 如果存在磷酸盐，会出现蓝色。

***备注：** 在添加粉末试剂后 5 分钟内读取结果，完成测试。*

9. 将第二个试管插入比色仪的右侧开口中。

高范围 （0 到 50 mg/L） 续

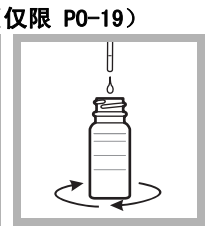


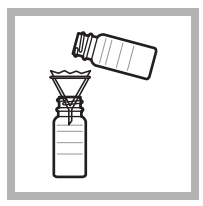

10. 握住比色仪，让光源位于试管的正后方。 转动色盘，使得前窗口的颜色相符。

11. 在刻度窗口中读取以 mg/L 为单位的磷酸盐含量结果。

***备注：** 将以 mg/L 为单位的磷酸盐结果除以 3，即得到以 mg/L 为单位的磷结果。*

混浊水样品准备 （仅限 PO-19）



1. 在瓶内添加样品到瓶肩部。

2. 在瓶中添加一滴过滤辅助溶液。 充分摇匀。

3. 将漏斗置于另一瓶中。 在漏斗中插入折叠过滤纸。

4. 将水样品注入过滤纸，将样品过滤。 测试此清洁水样品的磷酸盐含量。