Orthophosphate

DOC316.53.01539

Ascorbic Acid Method

Method 10307

0.01–0.50 mg/L PO_4-P

HPT487

Scope and application: For wastewater, drinking water, boiler water, surface water and process analysis.

Test preparation

Before starting

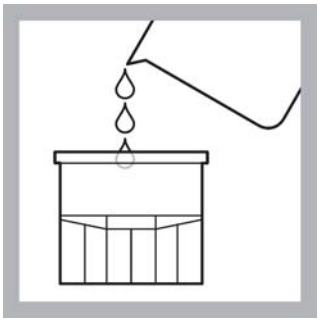
This method is applicable for the DR3900 and DR6000 only.
Filter the sample before analysis.
Review the safety information and the expiration date on the package.
The recommended temperature for reagent storage is 15–25 °C (59–77 °F).
The sample pH must be 2–10 for accurate results
The temperature of the samples and reagents must be 15–25 °C (59–77 °F) for accurate results.
Use TNT843, TNT844 or TNT845 to measure total phosphorous.
Review the Safety Data Sheets (MSDS/SDS) for the chemicals that are used. Use the recommended personal protective equipment.
Dispose of reacted solutions according to local, state and federal regulations. Refer to the Safety Data Sheets for disposal information for unused reagents. Refer to the environmental, health and safety staff for your facility and/or local regulatory agencies for further disposal information.

Items to collect

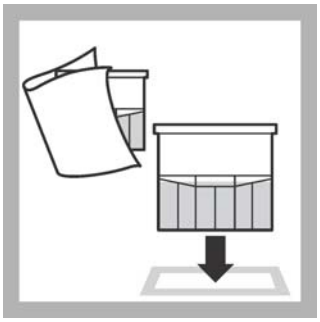
Description	Quantity
DosiCap C	1
Solution A	0.5 mL
Solution B	0.5 mL
Pipet, adjustable volume, 0.2–1.0 mL	1
Pipet tips, for 0.2–1.0 mL pipet	2
Pipet, adjustable volume, 1.0–5.0 mL	1
Pipet tips, for 1.0–5.0 mL pipet	1

Refer to Consumables and replacement items on page 3 for order information.

Test procedure



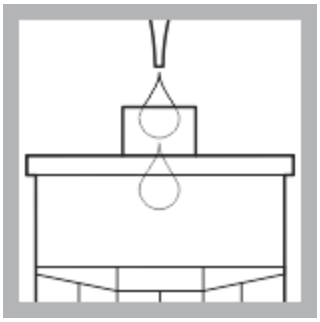
1. Prepare the blank: Fill the blank cell with deionized water.



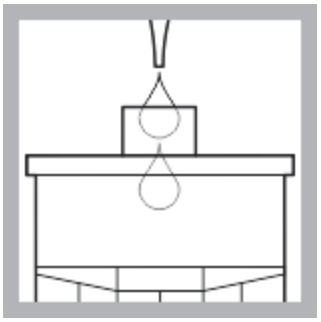
2. Clean the cell. Tap the cell to remove air bubbles. Insert the cell into the cell holder.

Go to **Stored Programs**. Select the test, then push **ZERO**.

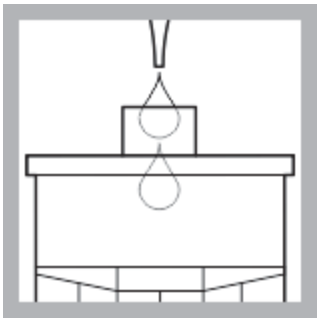
3. Remove the blank from the cell holder.



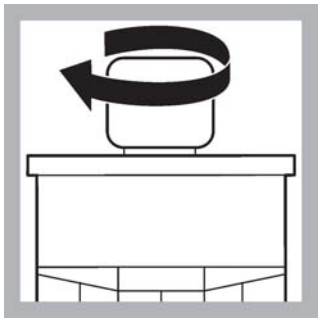
4. Prepare the sample: Add 0.5 mL of Solution A to the sample cell.



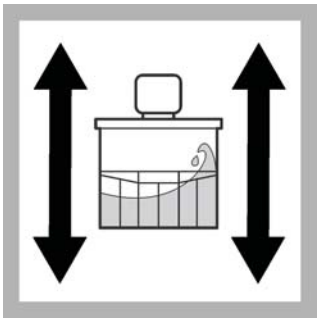
5. Add 5.0 mL of sample to the sample cell.



6. Add 0.5 mL of Solution B to the sample cell.

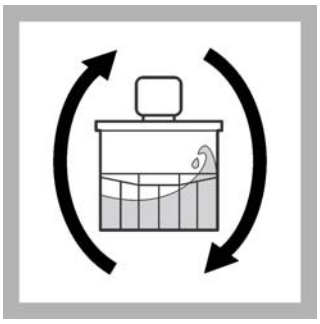


7. Put a DosiCap C on the cell and turn to tighten.

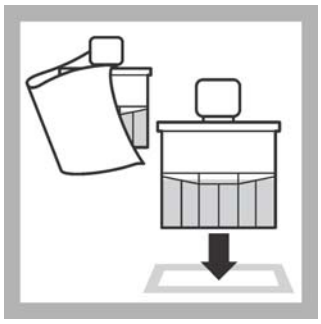


8. Shake the cell until the freeze-dried contents of the DosiCap are dissolved.

9. Set the timer for 10 minutes.



10. When the timer expires, invert the cell 3 or 4 times.



11. Clean the cell. Tap the cell to remove air bubbles.

Insert the cell into the cell holder. Push **READ**.

Interferences

Ions that do not cause an interference to the maximum tested concentrations are shown in Table 1. Combinations of ions were not tested.

Do plausability checks on the measurement results (dilute and/or spike the sample).

Table 1 Interfering substances

Interference level	Interfering substance
5000 mg/L	SO_4^{2-}
2000 mg/L	Cl^-
1000 mg/L	K^+, Na^+
500 mg/L	NO_3^-
250 mg/L	Ca^{2+}
100 mg/L	Mg^{2+}
50 mg/L	Co^{2+}, Fe^{2+}, Fe^{3+}, Zn^{2+}, Cu^{2+}, I^-, Cd^{2+}, NH_4^+, CO_3^{2-}, SiO_2
25 mg/L	Ni^{2+}, Mn^{2+}, Al^{3+}
10 mg/L	NO_2^-
5 mg/L	Hg^{2+}
2.5 mg/L	Ag^+, Pb^{2+}
1 mg/L	Cr^{3+}, Sn^{4+}
0.5 mg/L	Cr^{6+}

Summary of Method

Phosphate ions react with molybdate and antimony ions in an acidic solution to form an antimonyl phosphormolybdate complex. The ascorbic acid reduces the phosphormolybdate complex to phosphormolybdenum blue, which is measured photometrically. The measurement wavelength is 880 nm.

Consumables and replacement items

Required reagents

Description	Quantity/Test	Unit	Item no.
HPT487 Reagent Set, ULR Orthophosphate	1	20/pkg	HPT487

Required apparatus

Description	Quantity/test	Unit	Item no.
Pipet, adjustable volume, 0.2–1.0 mL	1	each	BBP078
Pipet tips, for 0.2–1.0 mL pipet	2	100/pkg	BBP079
Pipet, adjustable volume, 1.0–5.0 mL	1	each	BBP065
Pipet tips, for 1.0–5.0 mL pipet	1	75/pkg	BBP068

FOR TECHNICAL ASSISTANCE, PRICE INFORMATION AND ORDERING:
In the U.S.A. – **Call toll-free 800-227-4224**
Outside the U.S.A. – **Contact the HACH office or distributor serving you.**
On the Worldwide Web – **www.hach.com**; E-mail – **techhelp@hach.com**

HACH COMPANY
WORLD HEADQUARTERS
Telephone: (970) 669-3050
FAX: (970) 669-2932

09/2019, Edition 1