

1.10428.0001

MQuant™ Phosphate Test

 PO_4^{3-}

1. Method

In sulfuric solution orthophosphate ions (PO_4^{3-}) react with molybdate ions to form molybdophosphoric acid, which is reduced to phosphomolybdenum blue (PMB). The phosphate concentration is measured **semiquantitatively** by visual comparison of the reaction zone of the test strip with the fields of a color scale.

2. Measuring range and number of determinations

Measuring range / color-scale graduation ¹⁾	Number of determinations
10 - 25 - 50 - 100 - 250 - 500 mg/l PO_4^{3-}	100
3.3 - 8.2 - 16 - 33 - 82 - 163 mg/l $\text{PO}_4\text{-P}$	
7.5 - 19 - 37 - 75 - 187 - 374 mg/l P_2O_5	

¹⁾ for conversion factors see section 8

3. Applications

This test measures only orthophosphate. Samples must be decomposed by digestion before total phosphorus can be measured.

Sample material:

Wastewater
Soils and fertilizers after appropriate sample pretreatment
Food after appropriate sample pretreatment

4. Influence of foreign substances

This was checked in solutions with 50 and 0 mg/l PO_4^{3-} . The determination is not yet interfered with up to the concentrations of foreign substances given in the table.

Concentrations of foreign substances in mg/l					
Ag ⁺	100	Fe ³⁺	100	Anionic	500
Al ³⁺	1000	K ⁺	1000	Surfactants ¹⁾	
Ca ²⁺	1000	Mg ²⁺	1000	Cationic	100
Cd ²⁺	1000	Mn ²⁺	1000	Surfactants ²⁾	
Cl ⁻	1000	NH ₄ ⁺	1000	Nonionic	100
CN ⁻	1000	Ni ²⁺	1000	Surfactants ³⁾	
Cr ³⁺	250	NO ₂ ⁻	10	H ₂ O ₂	500
CrO ₄ ²⁻	250	NO ₃ ⁻	1000		
Cu ²⁺	250	SO ₃ ²⁻	1000		
Fe ²⁺	100				

¹⁾ tested with Na-dodecyl sulfate

²⁾ tested with N-cetylpyridinium chloride

³⁾ tested with polyvinylpyrrolidone

5. Reagents and auxiliaries

Please note the warnings on the packaging materials!

The test strips and the test reagent are stable up to the date stated on the pack when stored closed at +15 to +25 °C.

Package contents:

Tube containing 100 test strips
1 bottle of reagent $\text{PO}_4\text{-1}$
1 test vessel

Other reagents:

MColorpHast™ Universal indicator strips pH 0 - 14, Cat. No. 109535
Sodium hydroxide solution 1 mol/l TitriPUR®, Cat. No. 109137
Sulfuric acid 0.5 mol/l TitriPUR®, Cat. No. 109072
Phosphate standard solution CertiPUR®, 1000 mg/l PO_4^{3-} , Cat. No. 119898

6. Preparation

- Extract solid sample materials by an appropriate method.
- Samples containing more than 500 mg/l PO_4^{3-} must be diluted with distilled water.
- **The pH must be within the range 4 - 10.** Adjust, if necessary, with sodium hydroxide solution or sulfuric acid.

7. Procedure

Immerse the reaction zone of the test strip in the pre-treated sample (15 - 30 °C) for 1 sec.

Allow excess liquid to run off via the long edge of the strip onto an absorbent paper towel.

Reagent $\text{PO}_4\text{-1}$	1 drop ¹⁾	Place on the reaction zone and allow to react for 15 sec.
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Allow excess liquid to run off via the long edge of the strip onto an absorbent paper towel (**Caution! Reagent contains sulfuric acid!**) and after 1 min determine with which color field on the label the color of the reaction zone coincides most exactly.

Read off the corresponding result in mg/l PO_4^{3-} or $\text{PO}_4\text{-P}$.

¹⁾ Hold the bottle vertically while adding the reagent!

Notes on the measurement:

- The color of the reaction zone may continue to change after the specified reaction time has elapsed. This must not be considered in the measurement.
- If the color of the reaction zone is equal to or more intense than the darkest color on the scale, repeat the measurement using **fresh**, diluted samples until a value of less than 500 mg/l PO_4^{3-} is obtained.

Concerning the result of the analysis, the dilution (see also section 6) must be taken into account:

Result of analysis = measurement value x dilution factor

8. Conversions

required given	mg/l PO_4^{3-}	mg/l $\text{PO}_4\text{-P}$	mg/l P_2O_5
1 mg/l PO_4^{3-}	1	0.326	0.747
1 mg/l $\text{PO}_4\text{-P}$	3.07	1	2.29
1 mg/l P_2O_5	1.34	0.436	1

9. Method control

To check test strips, test reagent, and handling: Dilute the phosphate standard solution with distilled water to 100 mg/l PO_4^{3-} and analyze as described in section 7.

Additional notes see under www.qa-test-kits.com.

10. Notes

- **Reclose** the reagent bottle and **the tube containing the test strips immediately after use.**
- Rinse the test vessel **with distilled water only.**

