

Supelco®

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MQuant®

Phosphate Test

P

for the determination of orthophosphate

1. Method

Colorimetric determination with color-matching vessel

In sulfuric solution orthophosphate ions (PO_4^{3-}) react with molybdate ions to form molybdophosphoric acid. This is reduced to phosphomolybdenum blue (PMB). The phosphate concentration is measured **semiquantitatively** by visual comparison of the color of the measurement solution with the color zones of a color-matching vessel.

2. Measuring range and number of determinations

Measuring range / color-scale graduation ¹⁾	Number of determinations
1.0 - 2.5 - 5.0 - 7.5 - 10 mg/l P_2O_5	200
1.3 - 3.3 - 6.7 - 10 - 13 mg/l PO_4^{3-}	
0.44 - 1.1 - 2.2 - 3.3 - 4.4 mg/l $\text{PO}_4\text{-P}$	

¹⁾ for conversion factors see section 8

3. Applications

This test measures only orthophosphate.

Sample material:

Groundwater, surface water, and seawater
Waters from aquaculture
Drinking water and mineral water
Industrial water, process water, and wastewater
Electroplating wastewater
Boiler water and boiler feed water
Food after appropriate sample pretreatment
Soils and fertilizers after appropriate sample pretreatment

4. Influence of foreign substances

The determination is not interfered with by the substances usually contained in the sample materials stated above.

5. Reagents and auxiliaries

Please note the warnings on the packaging materials!

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

Package contents:

3 bottles of reagent $\text{PO}_4\text{-1}$
3 bottles of reagent $\text{PO}_4\text{-2}$
1 graduated 12-ml plastic syringe
1 color-matching vessel
1 card with brief instruction

Other reagents:

MQuant® 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

Refill pack:

Cat. No. 108046

MQuant® Phosphate Test

Refill pack for 111138

(Reagents **without technical accessories** for 200 determinations)

6. Preparation

- **Important:** Alkaline water samples (e.g. boiler water or boiler feed water) must be filled and stored **only in plastic bottles!**
- **The pH must be within the range 0 - 10.**
Adjust, if necessary, with sodium hydroxide solution or sulfuric acid.
- Filter turbid samples.

7. Procedure

Rinse the color-matching vessel several times with the pretreated sample.

Pretreated sample (10 - 35 °C)	10 ml	Inject into the color-matching vessel with the syringe.
Reagent $\text{PO}_4\text{-1}$	10 drops ¹⁾	Add, close the vessel with the stopper, and mix.
Reagent $\text{PO}_4\text{-2}$	10 drops ¹⁾	Add, close the vessel with the stopper, and mix.

Leave to stand for 10 min.

Hold the color-matching vessel in front of a white background, e.g. the backside of the brief-instruction card, and determine with which color zone of the P_2O_5 scale the color of the measurement solution coincides most exactly. Read off the result in ppm (= mg/l) P_2O_5 from the vessel.

¹⁾ Hold the bottle vertically while adding the reagent!

Note on the measurement:

If the color of the measurement solution 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 10 mg/l P_2O_5 is obtained.

Concerning the result of the analysis, the dilution must be taken into account:

$$\text{Result of analysis} = \text{measurement value} \times \text{dilution factor}$$

8. Conversions

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

9. Method control

To check test reagents, measurement device, and handling:

Dilute the phosphate standard solution with distilled water to 10 mg/l PO_4^{3-} (7.5 mg/l P_2O_5) and analyze as described in section 7.

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

10. Notes

- Reclose the reagent bottles immediately after use.
- Rinse the color-matching vessel and the syringe **with distilled water only**.
- **Information on disposal can be obtained at www.disposal-test-kits.com.**

