

REF 985076

en

Test 0-76

12.17

NANOCOLOR® ortho- and total Phosphate 1**Method:**

Photometric determination as molybdenum blue after acidic hydrolyzes and oxidation at 100–120 °C
The test is equivalent to the EPA method 365.3.

Range:	Tube test 0.05–1.50 mg/L P (PO₄-P) 0.2–5.0 mg/L PO₄³⁻	Semi-micro cuvette 50 mm 0.010–0.800 mg/L P (PO₄-P) 0.03–2.50 mg/L PO₄³⁻
Wavelength (HW = 5–12 nm):	690 nm	
Decomposition:	30 min at 120 °C or 60 min at 100 °C	
Reaction time:	10 min (600 s) at 20–25 °C	

Contents of reagent set:

- 20 test tubes total Phosphate 1
- 1 tube *NANOFIX* total Phosphate 1 R2
- 1 tube *NANOFIX* total Phosphate 1 R3
- 1 test tube with 5 mL total Phosphate 1 R4

Hazard warning:

Test tubes contain sulfuric acid 5–15%, reagent R2 contains sodium peroxodisulfate 20–100%, reagent R4 contains sulfuric acid 5–15%.

H317, H334 May cause an allergic skin reaction. May cause allergy or asthma symptoms or breathing difficulties if inhaled.

P261, P272, P280, P302+352, P304+340, P333+313, P342+311, P363 Avoid breathing dust. Contaminated work clothing should not be allowed out of the workplace. Wear protective gloves/eye protection. IF ON SKIN: Wash with plenty of water/... IF INHALED: Remove person to fresh air and keep comfortable for breathing. If skin irritation or rash occurs: Get medical advice/attention. If experiencing respiratory symptoms: Call a POISON CENTER/doctor/... Wash contaminated clothing before reuse. For further information ask for a safety data sheet.

Preliminary tests:

If the order of magnitude of the concentration in a sample is not known, a preliminary test with QUANTOFIX® Phosphate (3–100 mg/L PO₄³⁻, REF 91320) or VISOCOLOR® ECO Phosphate (0.2–5 mg/L PO₄-P, REF 931084) rapidly gives this information. From the order of magnitude the required dilution can be calculated and prepared directly.

Interferences:

Precipitations after hydrolysis can be removed by membrane filtration prior to the determination. If higher amounts of organic compounds and/or organic phosphorus compounds are present, use *NANOCOLOR® NanOx* Metal (REF 918978) for decomposition.

The following quantities of ions will not interfere: ≤ 2 mg/L As, NO₂⁻, S²⁻ (only ortho-P); ≤ 20 mg/L Fe, Cu, Cr; ≤ 100 mg/L Si, < 150 mg/L COD (reference to potassium hydrogen phthalate)

The method ortho P can be applied also for the analysis of sea water.

Procedure:

Requisite accessories: piston pipette with tips

total Phosphate

Open test tube, add

4.0 mL test sample (*the pH value of the sample must be between pH 0 and 10*) and

1 NANOFIX R2, screw cap back on to test tube, shake.
(Close *NANOFIX* tube immediately after use.)

Place tube in heating block and start heating block.

After 30/60 min remove test tube from heating block and allow to cool down to room temperature.

Add

1 NANOFIX R3 and

200 µL (= 0.2 mL) R4, mix.

Clean outside of test tube and measure after 10 min.

ortho Phosphate

Filter sample solution.

Open test tube, add

4.0 mL test sample (*the pH value of the sample must be between pH 0 and 10*),

1 NANOFIX R3 and

200 µL (= 0.2 mL) R4, screw cap back on to test tube, shake.

Clean outside of test tube and measure after 10 min.

Notes:

The concentration of condensed phosphates is the difference between total phosphate **without** Phosphate R2 and ortho phosphate.

Fast cooling of the cells/cuvettes under cold water can lead to clot formation by the *NANOFIX* capsules.

Lower ortho phosphate concentrations (0.010–0.800 mg/L PO₄-P) can be determined by using semi-micro cuvettes 50 mm (REF 91950):

Test sample	Blank value
Filter sample solution. Open test tube, add 4.0 mL test sample (<i>the pH value of the sample must be between pH 0 and 10</i>), 1 NANOFIX R3 and 200 µL (= 0.2 mL) R4, close and mix.	Open test tube, add 4.0 mL distilled water, 1 NANOFIX R3 and 200 µL (= 0.2 mL) R4, close and mix.

Pour the contents of test tubes into semi-micro cuvettes 50 mm and measure after 10 min [method 176x].

In analogy, also lower total phosphate concentrations can be determined.

Measurement:

For MACHEREY-NAGEL photometers see manual, test 0-76.

Measurement when samples are colored or turbid:

For all MACHEREY-NAGEL photometers see manual, use key for correction value.

Photometers of other manufacturers:

For other photometers check whether measurement of round glass tubes is possible. Verify factor for each type of instrument by measuring standard solutions.

Analytical quality control:

NANOCONTROL ortho Phosphate (REF 92576) or *NANOCONTROL* Multistandard Sewage outflow 2 (REF 925010)