



Phosphate LR T

M320

0.02 - 1.3 mg/L P

PO₄

Phosphomolybdenum Blue

Instrument specific information

The test can be performed on the following devices. In addition, the required cuvette and the absorption range of the photometer are indicated.

| Instrument Type | Cuvette | λ | Measuring Range |
|--|---------|-----------|----------------------|
| MD 100, MD 600, MD 610, MD 640, MultiDirect | ø 24 mm | 660 nm | 0.02 - 1.3 mg/L P |
| XD 7000, XD 7500 | ø 24 mm | 710 nm | 0.016 - 1.305 mg/L P |
| MD50 | ø 24 mm | 680 nm | 0.05 - 4 mg/L P |
| SpectroDirect | ø 24 mm | 710 nm | 0.02 - 1.3 mg/L P |

Material

Required material (partly optional):

| Reagents | Packaging Unit | Part Number |
|---|----------------|-------------|
| Phosphate No. 1 LR | Tablet / 100 | 513040BT |
| Phosphate No. 2 LR | Tablet / 100 | 513050BT |
| Phosphate No. 2 LR | Tablet / 250 | 513051BT |
| Set Phosphate No. 1 LR/No. 2 LR 100 Pc. # | 100 each | 517651BT |
| ValidCheck Phosphate 0.3 mg/l PO ₄ - 4 | 1 pc. | 48241225 |
| ValidCheck Phosphate 1 mg/l PO ₄ - 4 | 1 pc. | 48241425 |
| ValidCheck DW Anions Multistandard Cl/F/NO ₃ / PO ₄ /SO ₄ | 1 pc. | 48399312 |

Application List

- Waste Water Treatment
- Boiler Water
- Drinking Water Treatment
- Raw Water Treatment
- Pool Water Control



Preparation

1. Strongly buffered samples or samples with extreme pH values should be adjusted to between pH 6 and pH 7 before the analysis (use 1 mol/l Sulphuric acid or 1 mol/l Sodium hydroxide).
2. Ortho-Phosphate ions react with the reagent to form an intense blue colour. Phosphate, which is found in organic and condensed, inorganic (meta-, pyro- and polyphosphate) forms, must therefore be converted into ortho-phosphate ions prior to analysis. The pretreatment of the sample with acid and heat creates the conditions for the hydrolysis of the condensed, inorganic forms. Organically bound phosphate can be converted into ortho-phosphate ions by heating with acid and Persulphate.

The amount of organically bound phosphate can be calculated:
 $\text{mg/L organic Phosphate} = \text{mg/L Phosphate, total} - \text{mg/L Phosphate, can be hydrolysed in acid.}$

Notes

1. Only ortho-phosphate ions react.
2. The tablets must be added in the correct sequence.



Determination of Phosphate, ortho LR with Tablet

Select the method on the device.

For this method, a ZERO measurement does not have to be carried out every time on the following devices: XD 7000, XD 7500



Fill 24 mm vial with **10 mL sample**.



Close vial(s).



Place **sample vial** in the sample chamber. Pay attention to the positioning.



Press the **ZERO** button.

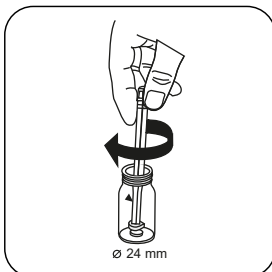


Remove the vial from the sample chamber.

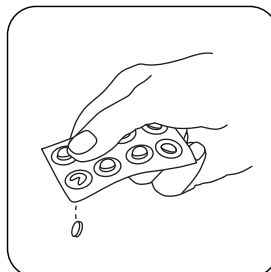
For devices that require **no ZERO measurement**, start here.



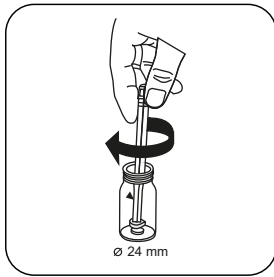
Add **PHOSPHATE No. 1 LR tablet**.



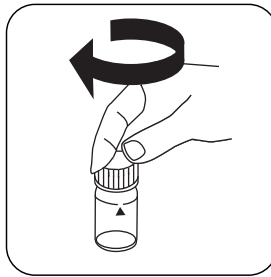
Crush tablet(s) by rotating slightly.



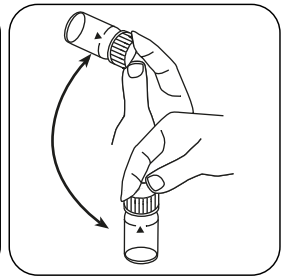
Add **PHOSPHATE No. 2 LR tablet**.



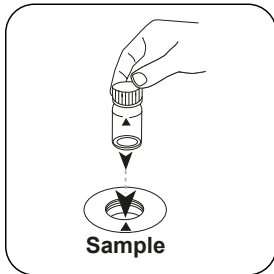
Crush tablet(s) by rotating slightly.



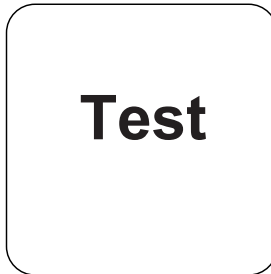
Close vial(s).



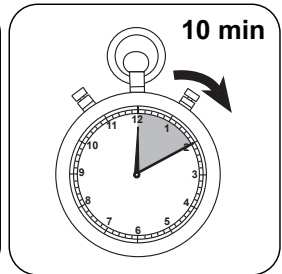
Dissolve tablet(s) by inverting.



Place **sample vial** in the sample chamber. Pay attention to the positioning.



Press the **TEST** (XD: **START**) button.



Wait for **10 minute(s) reaction time**.

Once the reaction period is finished, the measurement takes place automatically. The result in mg/L ortho-Phosphate appears on the display.



Analyses

The following table identifies the output values can be converted into other citation forms.

| Unit | Cite form | Scale Factor |
|------|-------------------------------|--------------|
| mg/l | P | 1 |
| mg/l | PO ₄ ³⁻ | 3.066177 |
| mg/l | P ₂ O ₅ | 2.29137 |

Chemical Method

Phosphomolybdenum Blue

Appendix


Calibration function for 3rd-party photometers

Conc. = a + b•Abs + c•Abs² + d•Abs³ + e•Abs⁴ + f•Abs⁵

| | ∅ 24 mm | □ 10 mm |
|---|-----------------------------|-----------------------------|
| a | -3.51239 • 10 ⁻² | -3.51239 • 10 ⁻² |
| b | 8.89272 • 10 ⁻¹ | 1.91193 • 10 ⁺⁰ |
| c | | |
| d | | |
| e | | |
| f | | |

Interferences

| Interference | from / [mg/L] |
|--------------------------------|-------------------|
| Al | 200 |
| AsO ₄ ³⁻ | in all quantities |
| Cr | 100 |
| Cu | 10 |
| Fe | 100 |
| Ni | 300 |
| H ₂ S | in all quantities |
| SiO ₂ | 50 |
| S ²⁻ | in all quantities |



| Interference | from / [mg/L] |
|---------------------|----------------------|
| Zn | 80 |
| V(V) | large quantities |
| W(VI) | large quantities |

According to

DIN ISO 15923-1 D49
Standard Method 4500-P E
US EPA 365.2

* including stirring rod, 10 cm