

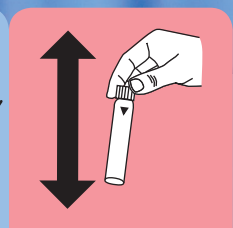
Lovibond® Water Testing

Tintometer® Group



Manual of Methods

MD50 • MD150



KS4.3 T / 20


Method name

Method number

Bar code for the detection of the methods

Measuring range

20

S:4.3

Display in the MD 100 / MD 110 / MD 200

Chemical Method

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 200, MD 600, MD 610, MD 640, MultiDirect, PM 620, PM 630	ø 24 mm	610 nm	0.1 - 4 mmol/l $K_{S4.3}$
SpectroDirect, XD 7000, XD 7500	ø 24 mm	615 nm	0.1 - 4 mmol/l $K_{S4.3}$

Material

Required material (partly optional):

Reagents	Packaging Unit	Part Number
Alka-M-Photometer	Tablet / 100	513210BT
Alka-M-Photometer	Tablet / 250	513211BT

Application List

- Waste Water Treatment
- Drinking Water Treatment
- Raw Water Treatment

Notes

1. The terms Alkalinity-m, m-Value, total alkalinity and Acid demand to $K_{S4.3}$ are identical.
2. For accurate results, exactly 10 ml of water sample must be used for the test.

Language codes ISO 639-1

Revision status

EN Handbook of Methods 01/20

Performing test procedure

Implementation of the provision Acid capacity $K_{S_{4.3}}$ with Tablet

Select the method on the device

For this method, no ZERO measurements are to be carried out with the following devices: XD 7000, XD 7500



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

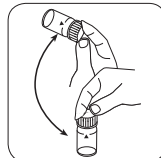


Close vial(s).

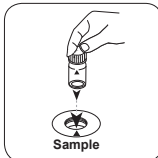


Place **sample vial** in the sample chamber. • Pay attention to the positioning.

• • •



Dissolve tablet(s) by inverting.



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



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

The result in Acid Capacity $K_{S_{4.3}}$ appears on the display.



Phosphate LR T

M320

0.02 - 1.3 mg/L P

PO4

Phosphomolybdenum Blue

Material

EN

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

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:
mg/L organic Phosphate = mg/L Phosphate, total - 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.



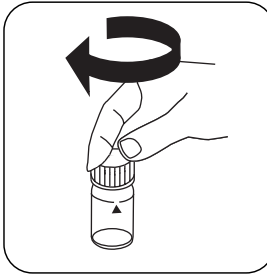
Determination of Phosphate, ortho LR with Tablet

Select the method on the device.

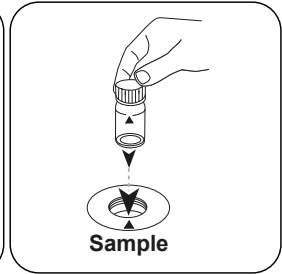
For this method, a ZERO measurement does not have to be carried out every time on the following devices: XD 7000, XD 7500



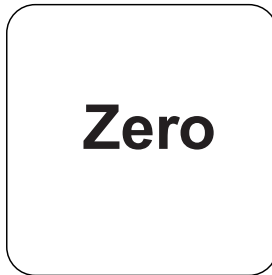
Fill 24 mm vial with **10 mL sample**.



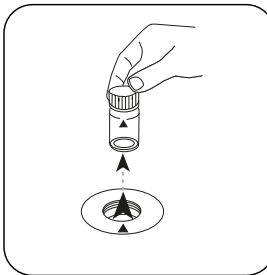
Close vial(s).



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

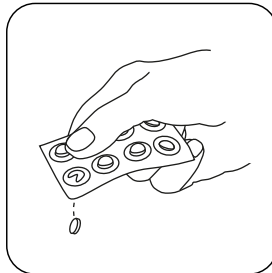


Press the **ZERO** button.

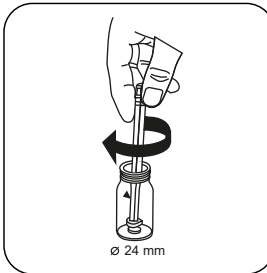


Remove the vial from the sample chamber.

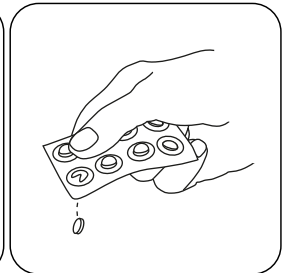
For devices that require **no ZERO measurement**, start here.



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



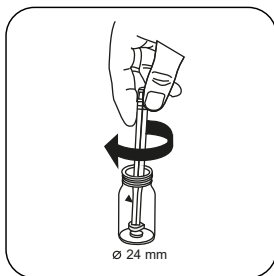
Crush tablet(s) by rotating slightly.



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



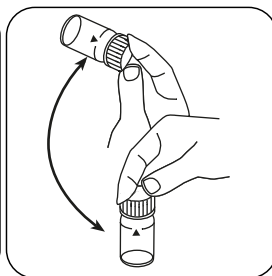
EN



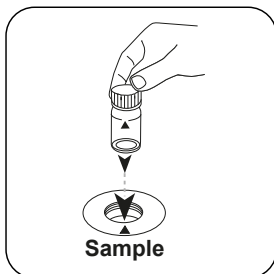
Crush tablet(s) by rotating slightly.



Close vial(s).



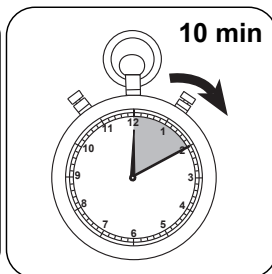
Dissolve tablet(s) by inverting.



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

EN

Chemical Method

Phosphomolybdenum Blue

Appendix

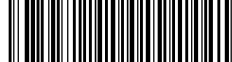
Interferences

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
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



Phosphate PP

M323

0.02 - 0.8 mg/L P

PO4

Phosphomolybdenum Blue

Material

EN

Required material (partly optional):

Reagents	Packaging Unit	Part Number
VARIO Phosphate RGT F10 mL	Powder / 100 pc.	531550

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:
mg/L organic Phosphate = mg/L Phosphate, total - mg/L Phosphate, can be hydrolysed in acid.

Notes

1. The reagent Vario Phosphate Rgt. F10 is not completely dissolved.

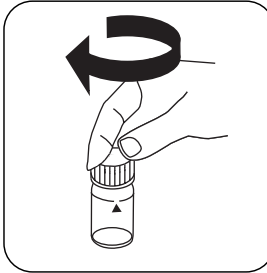
Determination of Phosphate, ortho with Vario Powder Packs

Select the method on the device.

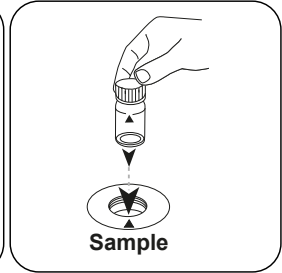
For this method, a ZERO measurement does not have to be carried out every time on the following devices: XD 7000, XD 7500



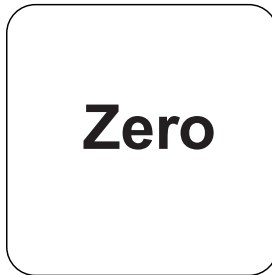
Fill 24 mm vial with **10 mL sample**.



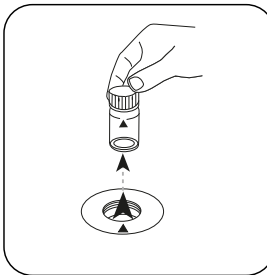
Close vial(s).



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

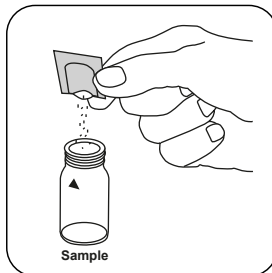


Press the **ZERO** button.

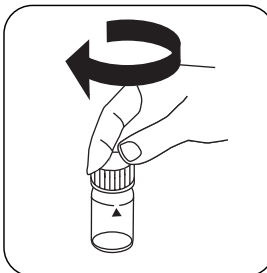


Remove the vial from the sample chamber.

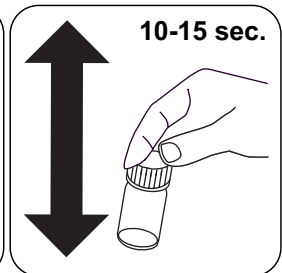
For devices that require **no ZERO measurement**, start here.



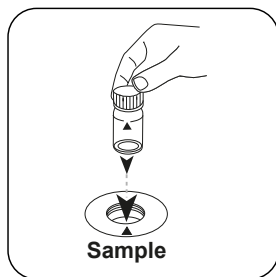
Add **Vario Phosphate Rgt. F10 powder pack**.



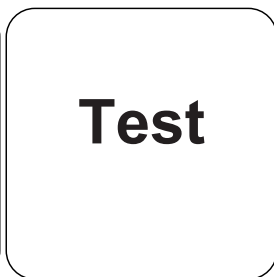
Close vial(s).



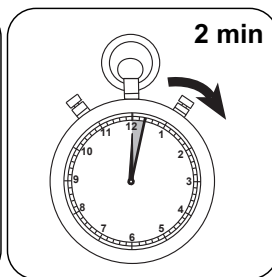
Mix the contents by shaking. (10-15 sec.).



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



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



Wait for **2 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

EN

Chemical Method

Phosphomolybdenum Blue

Appendix

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
Si(OH) ₄	10
S ²⁻	in all quantities
Zn	80

According to

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

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