

Silicate LR PP

M351

0.1 - 1.6 mg/L SiO<sub>2</sub>

SiLr

Heteropolyblue

## 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	$\lambda$	Measuring Range
MD 100, MD 600, MD 610, MD 640, MultiDirect	ø 24 mm	660 nm	0.1 - 1.6 mg/L SiO <sub>2</sub>
SpectroDirect, XD 7000, XD 7500	ø 24 mm	815 nm	0.05 - 1.6 mg/L SiO <sub>2</sub>

## Material

Required material (partly optional):

Reagents	Packaging Unit	Part Number
VARIO Silica LR, Set F10	1 Set	535690

## Application List

- Boiler Water

## Notes

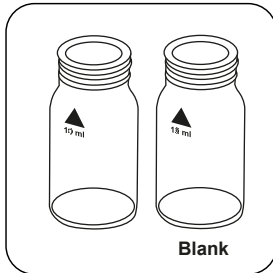
1. The given reaction time of 4 minutes refers to a sample temperature of 20 °C. At a sample temperature of 30 °C, a reaction time is 4 minutes and at 10 °C, a reaction time of 8 minutes.





## Determination of Silicon dioxide LR with Vario Powder Packs and liquid reagent

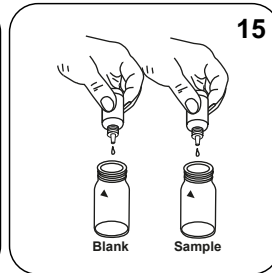
Select the method on the device.



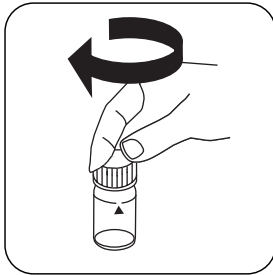
Prepare two clean 24 mm vials. Mark one as a blank.



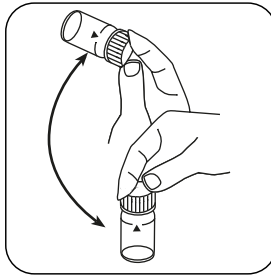
Place **10 mL sample** in each vial.



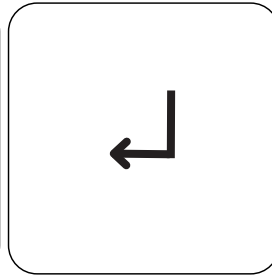
Add **15 drops Vario Molybdate 3 Reagenz- solution** to each vial.



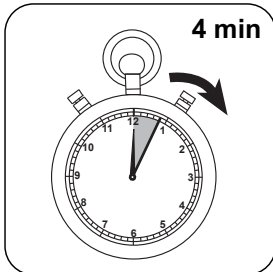
Close vial(s).



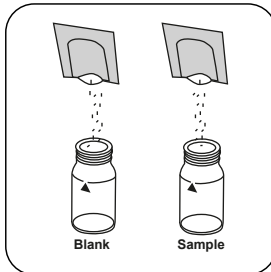
Invert several times to mix the contents.



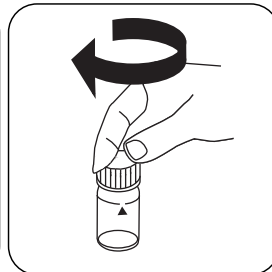
Press the **ENTER** button.



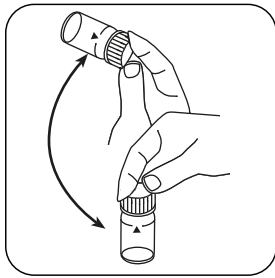
Wait for **4 minute(s) reaction time**.



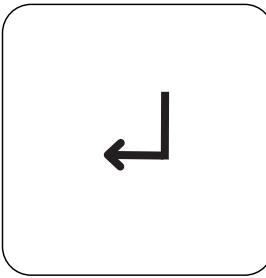
Add a **Vario Silica Citric Acid F10 powder pack** in each vial.



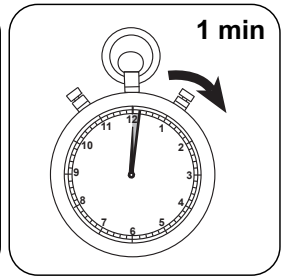
Close vial(s).



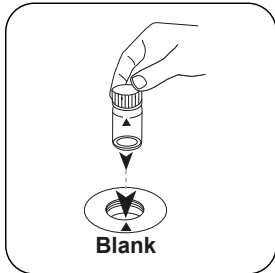
Swirl around to dissolve the powder.



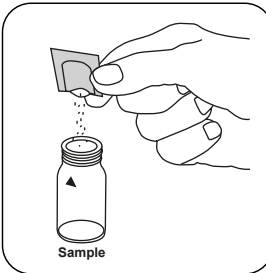
Press the **ENTER** button.



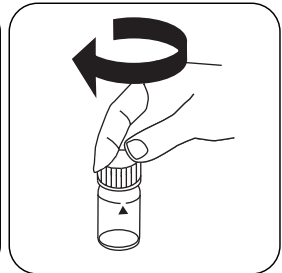
Wait for **1 minute(s) reaction time**.



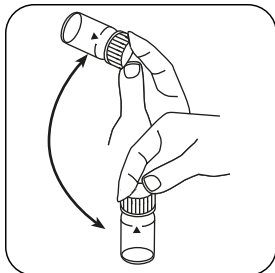
Place **blank** in the sample chamber. Pay attention to the positioning.



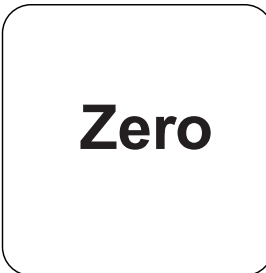
Add a **Vario Silica Amino Acid F10 powder pack** to the sample vial.



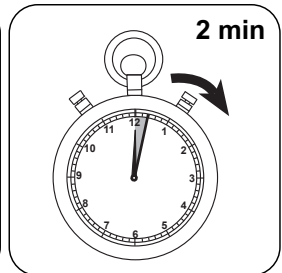
Close vial(s).



Swirl around to dissolve the powder.

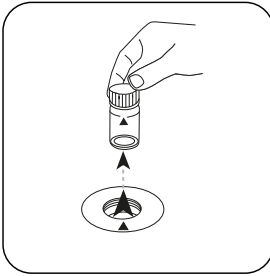


Press the **ZERO** button.

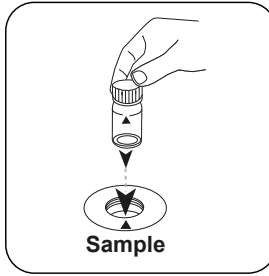


Wait for **2 minute(s) reaction time**.

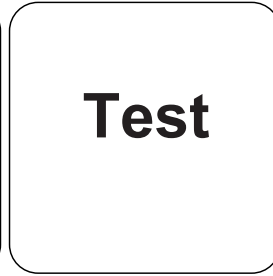
Once the reaction period is finished, the measurement takes place automatically.



Remove the vial from the sample chamber.



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



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

The result in mg/L Silica 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	SiO <sub>2</sub>	1
mg/l	Si	0.47

## Chemical Method

Heteropolyblue

## Appendix

### Calibration function for 3rd-party photometers

Conc. = a + b•Abs + c•Abs<sup>2</sup> + d•Abs<sup>3</sup> + e•Abs<sup>4</sup> + f•Abs<sup>5</sup>

	∅ 24 mm	□ 10 mm
a	-3.52432•10 <sup>-2</sup>	-3.52432•10 <sup>-2</sup>
b	1.45158•10 <sup>+0</sup>	3.1209•10 <sup>+0</sup>
c	-7.19729•10 <sup>-2</sup>	-3.32695•10 <sup>-1</sup>
d		
e		
f		

## Interferences

### Removeable Interferences

1. Close the vials with the cap immediately after adding the Vario Molybdate 3 reagent solution, otherwise low readings may result.
2. Occasionally water samples contain forms of silica which reacts very slowly with Molybdate. The nature of these forms is not known. A pre-treatment with Sodium hydrogencarbonate and then with Sulphuric Acid will make these forms reactive to Molybdate (pre-treatment is given in "Standard Methods for the Examination of Water and Wastewater" under "Silica Digestion with Sodium Bicarbonate").



<b>Interference</b>	<b>from / [mg/L]</b>
Fe	large quantities
PO <sub>4</sub> <sup>3-</sup>	50
S <sup>2-</sup>	in all quantities

## Method Validation

<b>Limit of Detection</b>	0.01 mg/L
<b>Limit of Quantification</b>	0.03 mg/L
<b>End of Measuring Range</b>	1.6 mg/L
<b>Sensitivity</b>	1.35 mg/L / Abs
<b>Confidence Intervall</b>	0.01 mg/L
<b>Standard Deviation</b>	0.004 mg/L
<b>Variation Coefficient</b>	0.46 %

### Derived from

Standard Method 4500-SiO<sub>2</sub> D