Silicate HR PP M352

1 - 90 mg/L SiO_2 SiHr

Silicomolybdate

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 110, MD 600, MD 610, MD 640, MultiDirect	ø 24 mm	430 nm	1 - 90 mg/L SiO_2
SpectroDirect, XD 7000, XD 7500	ø 24 mm	452 nm	1 - 100 mg/L SiO_2

Material

Required material (partly optional):

Reagents	Packaging Unit	Part Number
VARIO Silica HR Reagent, Set F10	1 Set	535700

Application List

- Boiler Water
- Raw Water Treatment

Preparation

1. The temperature of the sample should be between 15 °C and 25 °C.

Notes

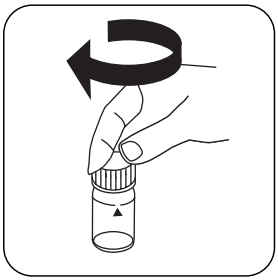
1. The method measures in the flank of the absorption curve of the resulting coloration. For filter photometers, the accuracy of the method can therefore be improved, if necessary, by user adjustment using a silicate standard (approx. 70 mg/L SiO_2).

Determination of Silicate dioxide HR with Vario Powder Packs

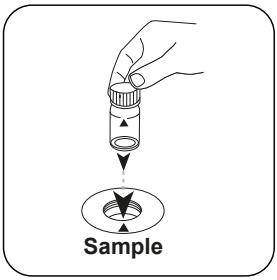
Select the method on the device.

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

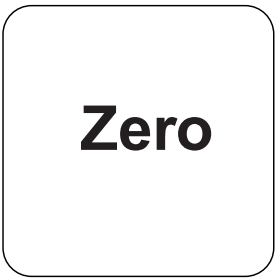
Fill 24 mm vial with **10 mL sample**.



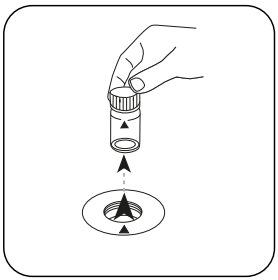
Close vial(s).



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

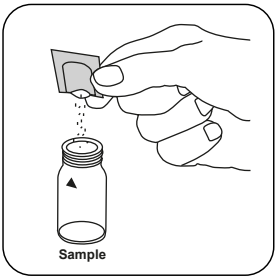


Press the **ZERO** button.

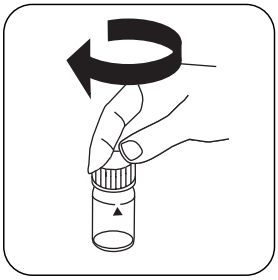


Remove the vial from the sample chamber.

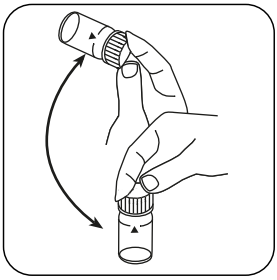
For devices that require **no ZERO measurement** , **start here**.



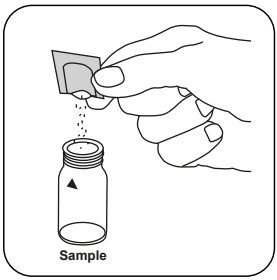
Add **Vario Silica HR Molybdate F10 powder pack**.



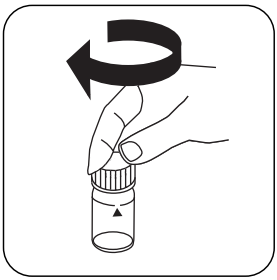
Close vial(s).



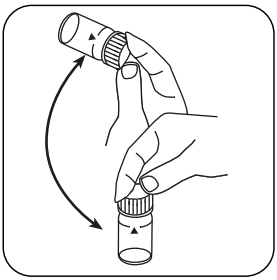
Swirl around to dissolve the powder.



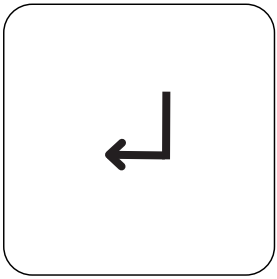
Add **Vario Silica HR Acid Rgt. F10 powder pack**.



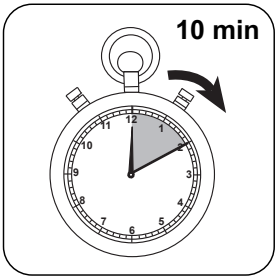
Close vial(s).



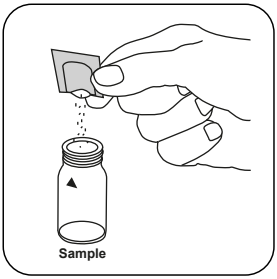
Invert several times to mix the contents.



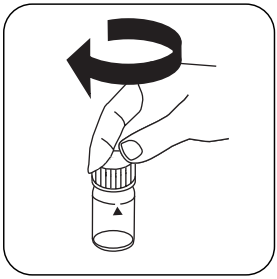
Press the **ENTER** button.



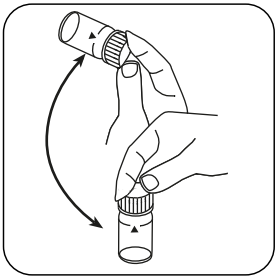
Wait for **10 minute(s) reaction time**.



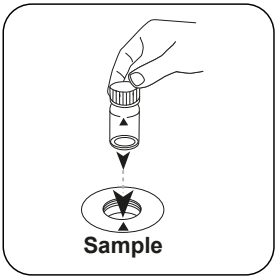
Add **Vario Silica Citric Acid F10 powder pack**.



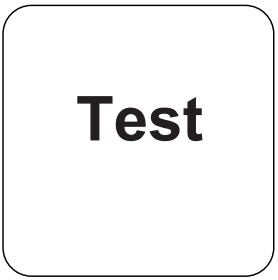
Close vial(s).

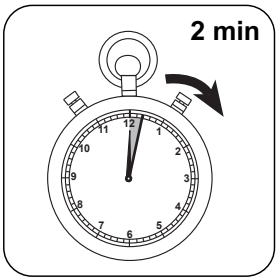


Swirl around to dissolve the powder.



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 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_2	1
mg/l	Si	0.47

Chemical Method

Silicomolybdate

Appendix

Calibration function for 3rd-party photometers

Conc. = a + b•Abs + c•Abs^2 + d•Abs^3 + e•Abs^4 + f•Abs^5

	ø 24 mm	□ 10 mm
a	$-4.11457 \cdot 10^{-1}$	$-4.11457 \cdot 10^{-1}$
b	$1.18844 \cdot 10^{+2}$	$2.55514 \cdot 10^{+2}$
c		
d		
e		
f		

Interferences

Removeable Interferences

- 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”).
- If silicon dioxide or phosphate are present, a yellow colour develops. The yellow colour caused by phosphate is eliminated by the addition of silica citric acid F10 powder packets.

Interference	from / [mg/L]	Influence
Fe	large quantities	
PO_4^{3-}	50	
PO_4^{3-}	60	The disturbance is about -2 %
PO_4^{3-}	75	The disturbance is about -11 %
S^{2-}	in all quantities	

Method Validation

Limit of Detection	0.38 mg/L
Limit of Quantification	1.14 mg/L
End of Measuring Range	100 mg/L
Sensitivity	120 mg/L / Abs
Confidence Intervall	1.69 mg/L
Standard Deviation	0.70 mg/L
Variation Coefficient	1.38 %

Derived from

Standard Method 4500-SiO2 C