

Copper 50 T

M149

0.05 - 1 mg/L Cu<sup>a)</sup>

Biquinoline

## 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
SpectroDirect, XD 7000, XD 7500	□ 50 mm	559 nm	0.05 - 1 mg/L Cu <sup>a)</sup>

## Material

Required material (partly optional):

Reagents	Packaging Unit	Part Number
Copper No. 1	Tablet / 100	513550BT
Copper No. 1	Tablet / 250	513551BT
Copper No. 2	Tablet / 100	513560BT
Copper No. 2	Tablet / 250	513561BT
Set Copper No. 1/No. 2 100 Pc.#	100 each	517691BT
Set Copper No. 1/No. 2 250 Pc.#	250 each	517692BT

## Application List

- Cooling Water
- Boiler Water
- Waste Water Treatment
- Pool Water Control
- Drinking Water Treatment
- Galvanization

## Preparation

1. Strong alkaline or acidic water samples must be adjusted to pH 4 to 6 before analysis.



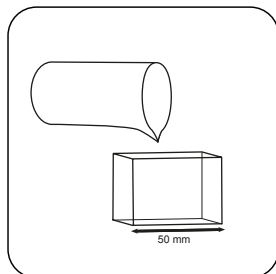


## Determination of Copper, free with tablet

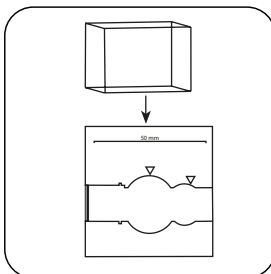
Select the method on the device.

In addition, choose the test: free

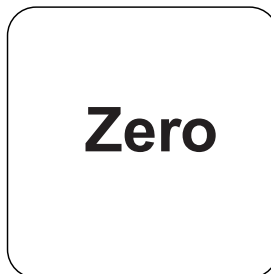
For this method, a ZERO measurement does not have to be carried out every time on the following devices: XD 7000, XD 7500



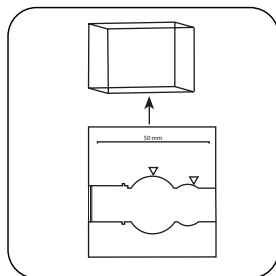
Fill **50 mm** vial with **sample**.



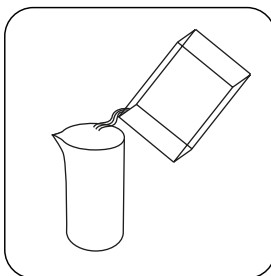
Place **sample vial** in the sample chamber. • Pay attention to the positioning.



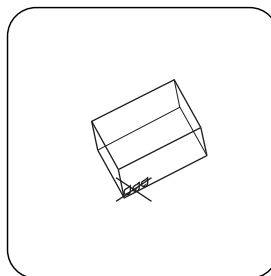
Press the **ZERO** button.



Remove **vial** from the sample chamber.

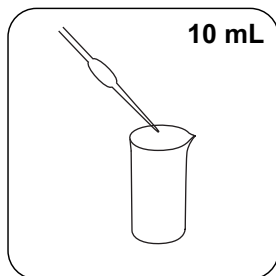


Empty vial.

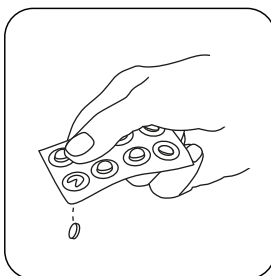


Dry the vial thoroughly.

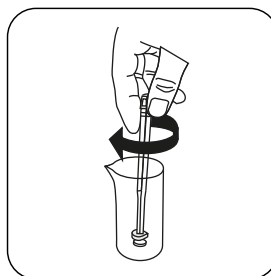
For devices that require **no ZERO measurement**, **start here**.



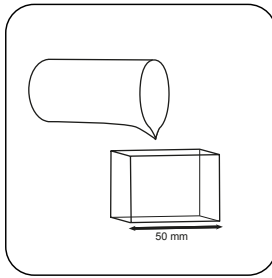
Fill a suitable sample vessel with **10 mL sample**.



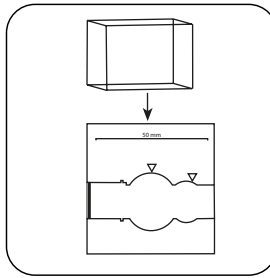
Add **COPPER No. 1 tablet**



Crush tablet(s) by rotating slightly and dissolve.



Fill **50 mm vial** with **sample**.



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



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

The result in mg/L free Copper appears on the display.

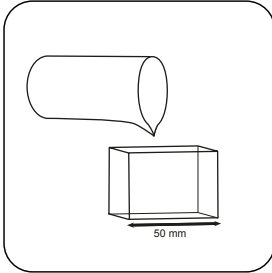


## Determination of Copper, total with tablet

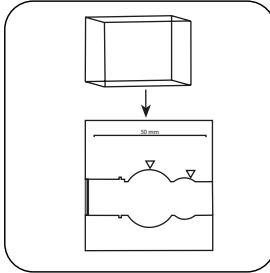
Select the method on the device.

In addition, choose the test: total

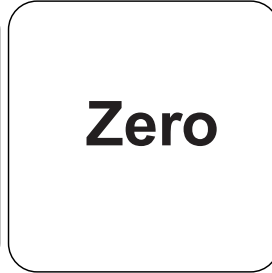
For this method, a ZERO measurement does not have to be carried out every time on the following devices: XD 7000, XD 7500



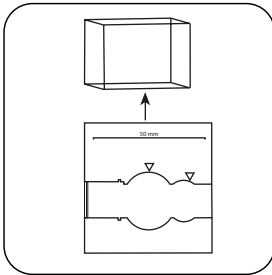
Fill 50 mm vial with sample.



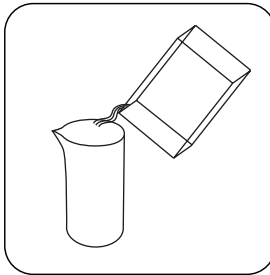
Place **sample vial** in the sample chamber. • Pay attention to the positioning.



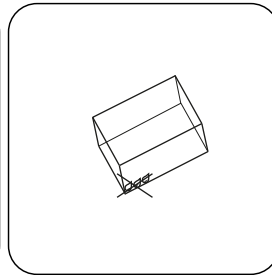
Press the **ZERO** button.



Remove **vial** from the sample chamber.

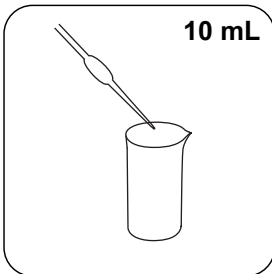


Empty vial.

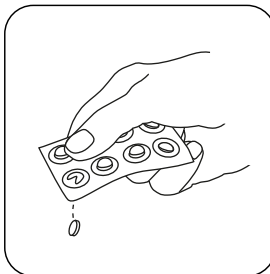


Dry the vial thoroughly.

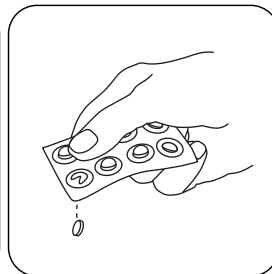
For devices that require **no ZERO measurement**, start here.



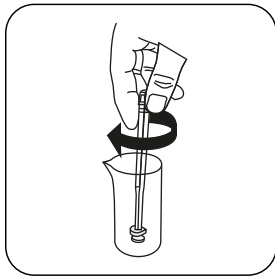
Fill a suitable sample vessel with **10 mL sample**.



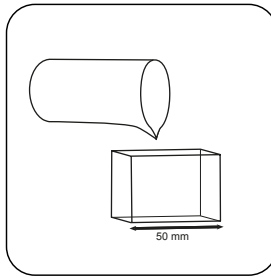
Add **COPPER No. 1 tablet**



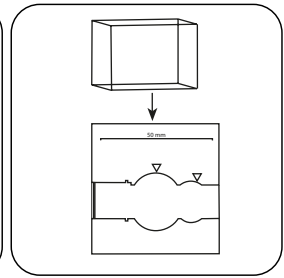
Add **COPPER No. 2 tablet**.



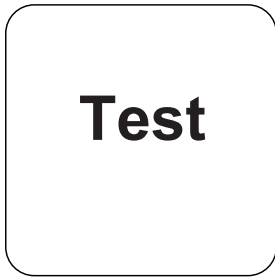
Crush tablet(s) by rotating slightly and dissolve.



Fill **50 mm** vial with **sample**.



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



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

The result in mg/L total Copper appears on the display.

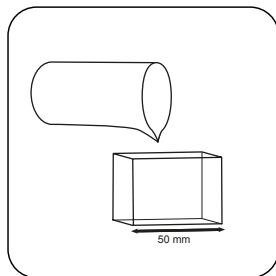


## Determination of Copper, differentiated with tablet

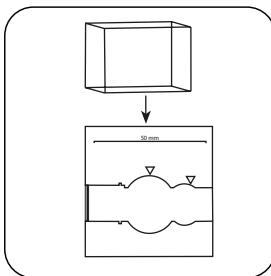
Select the method on the device.

In addition, choose the test: differentiated

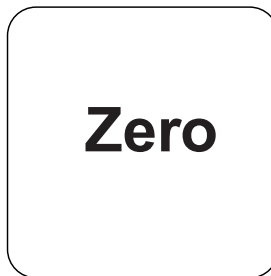
For this method, a ZERO measurement does not have to be carried out every time on the following devices: XD 7000, XD 7500



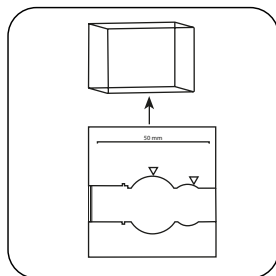
Fill 50 mm vial with sample.



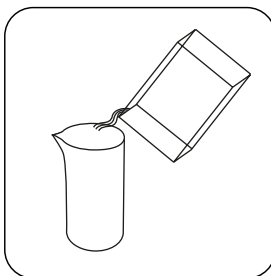
Place **sample vial** in the sample chamber. • Pay attention to the positioning.



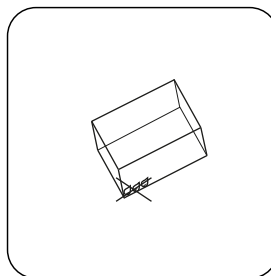
Press the **ZERO** button.



Remove **vial** from the sample chamber.

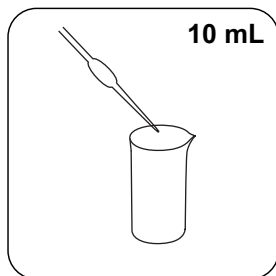


Empty vial.

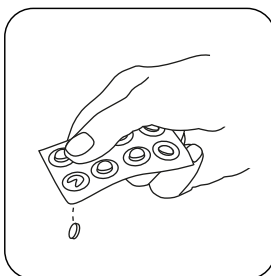


Dry the vial thoroughly.

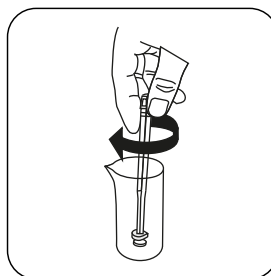
For devices that require **no ZERO measurement**, start here.



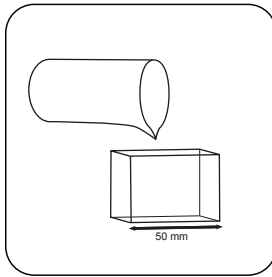
Fill a suitable sample vessel with **10 mL sample**.



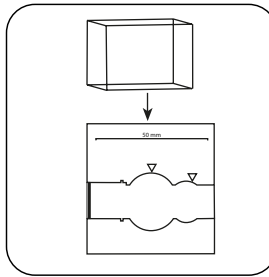
Add **COPPER No. 1 tablet**



Crush tablet(s) by rotating slightly and dissolve.



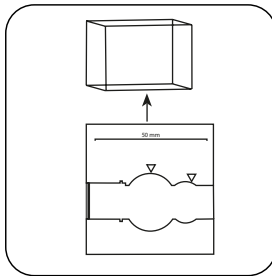
Fill **50 mm vial** with **sample**.



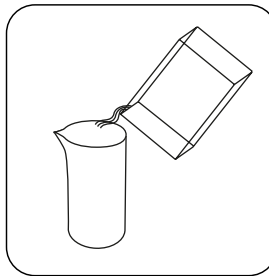
Place **sample vial** in the sample chamber. • Pay attention to the positioning.

# Test

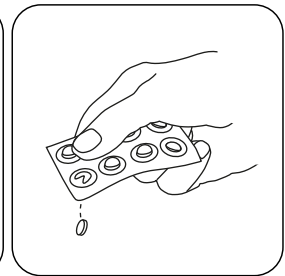
Press the **TEST** (XD: **START**) button.



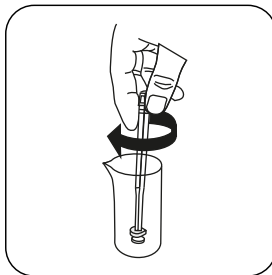
Remove **vial** from the sample chamber.



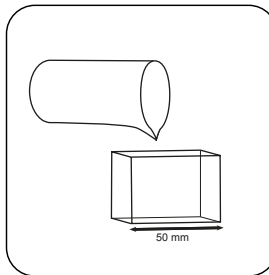
Return the sample solution completely to the sample vessel.



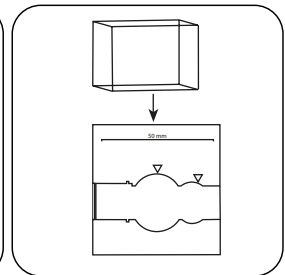
Add **COPPER No. 2 tablet** .



Crush tablet(s) by rotating slightly and dissolve.



Fill **50 mm vial** with **sample**.



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



A large, rounded square button with a thin black border. The word "Test" is centered inside the square in a bold, black, sans-serif font.

# Test

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

The result in mg/L free Copper; combined Copper; total Copper appears on the display.

## Chemical Method

Biquinoline

## Appendix

### Interferences

#### Persistent Interferences

1. Cyanide and Silver interfere with the test result.

### Method Validation

<b>Limit of Detection</b>	0.009 mg/L
<b>Limit of Quantification</b>	0.028 mg/L
<b>End of Measuring Range</b>	1 mg/L
<b>Sensitivity</b>	1.62 mg/L / Abs
<b>Confidence Intervall</b>	0.009 mg/L
<b>Standard Deviation</b>	0.004 mg/L
<b>Variation Coefficient</b>	0.71 %

### Bibliography

Photometrische Analyse, Lange/Vedjelek, Verlag Chemie 1980

<sup>a)</sup> determination of free, combined and total | <sup>\*</sup> including stirring rod, 10 cm