



Copper L

M151

0.05 - 4 mg/L Cu<sup>a)</sup>

Bicinchoninate

## 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 600, MD 610, MD 640, XD 7000, XD 7500	ø 24 mm	560 nm	0.05 - 4 mg/L Cu <sup>a)</sup>

## Material

Required material (partly optional):

Reagents	Packaging Unit	Part Number
Copper Reagent Set (free + total)	1 pc.	56R023355
Copper No. 2	Tablet / 100	513560BT
Copper No. 2	Tablet / 250	513561BT
ValidCheck Copper 2 mg/l	1 pc.	48141525

The following accessories are required.

Accessories	Packaging Unit	Part Number
Stirring rod and spoon	1 pc.	56A006601

## 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.
2. The measuring spoon supplied with the reagents must be used for the correct dosage.



## Determination of Copper, free with liquid reagent

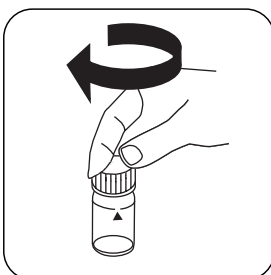
Select the method on the device.

In addition, choose the test: free

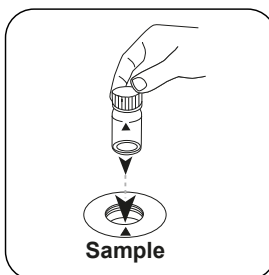
For this method, a ZERO measurement does not have to be carried out every time on the following devices: XD 7000, XD 7500



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



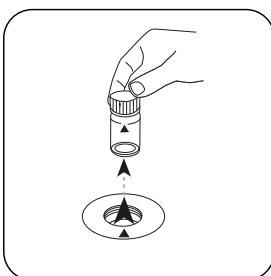
Close vial(s).



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

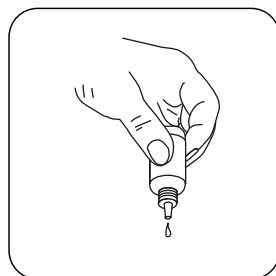


Press the **ZERO** button.

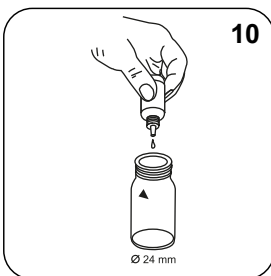


Remove the vial from the sample chamber.

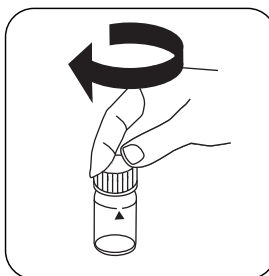
For devices that require **no ZERO measurement**, start here.



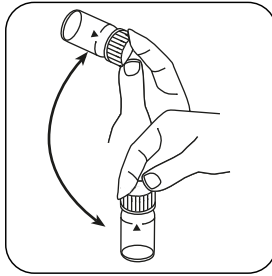
Hold cuvettes vertically and add equal drops by pressing slowly.



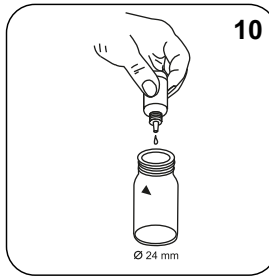
Add **10 drops KS240 (Coppercol Reagent 1)**.



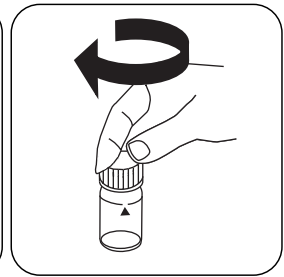
Close vial(s).



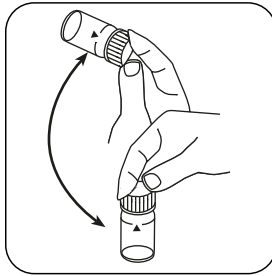
Invert several times to mix the contents.



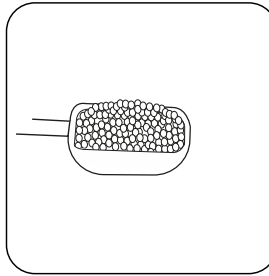
Add **10 drops** **KS241 (Coppercol Reagent 2)**.



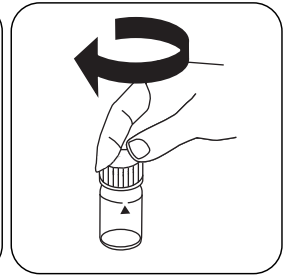
Close vial(s).



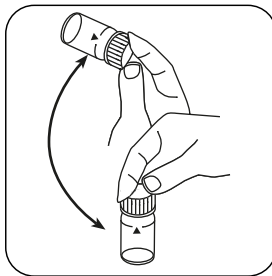
Invert several times to mix the contents.



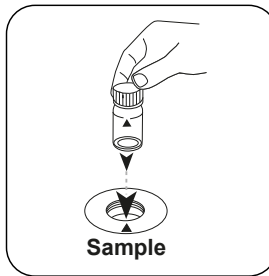
Add a **measuring scoop** **KP242 (Coppercol Reagent 3)**.



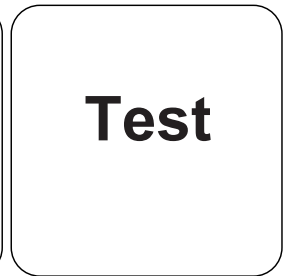
Close vial(s).



Swirl around to dissolve the powder.



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



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

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



## Determination of Copper, total with liquid reagent

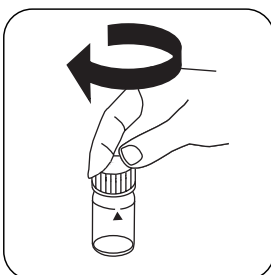
Select the method on the device.

In addition, choose the test: total

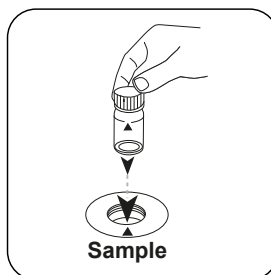
For this method, a ZERO measurement does not have to be carried out every time on the following devices: XD 7000, XD 7500



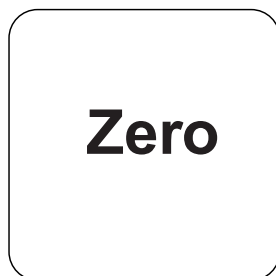
Fill 24 mm vial with **10 mL sample**.



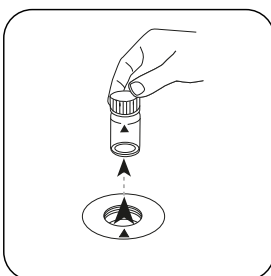
Close vial(s).



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

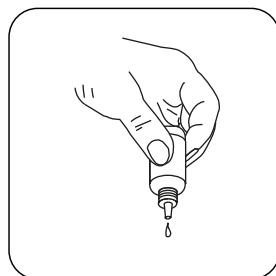


Press the **ZERO** button.

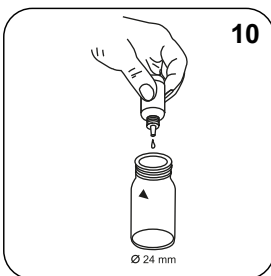


Remove the vial from the sample chamber.

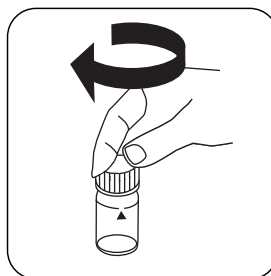
For devices that require **no ZERO measurement**, start here.



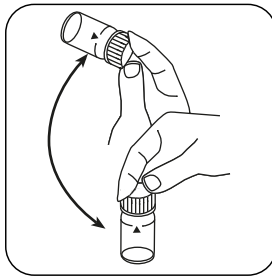
Hold cuvettes vertically and add equal drops by pressing slowly.



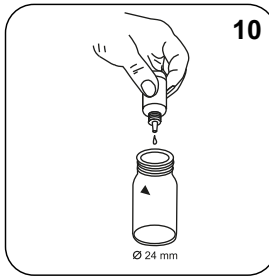
Add **10 drops KS240 (Coppercol Reagent 1)**.



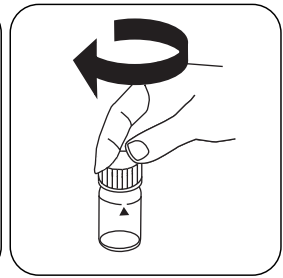
Close vial(s).



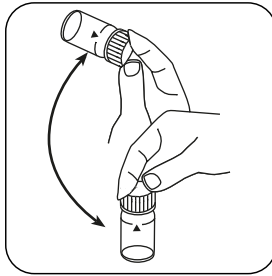
Invert several times to mix the contents.



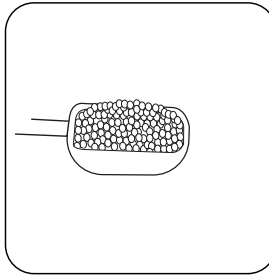
Add **10 drops**  
**KS241 (Coppercol**  
**Reagent 2).**



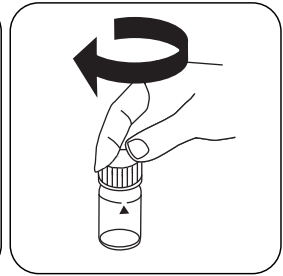
Close vial(s).



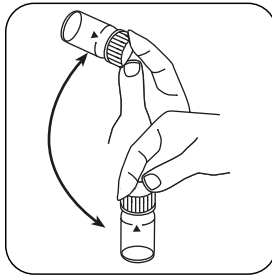
Invert several times to mix the contents.



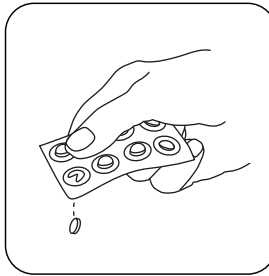
Add a **measuring scoop**  
**KP242 (Coppercol**  
**Reagent 3).**



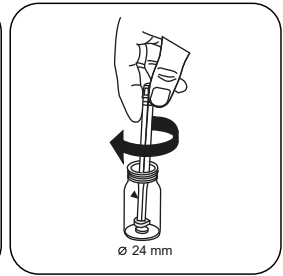
Close vial(s).



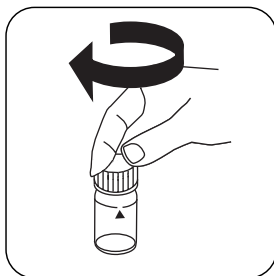
Swirl around to dissolve the powder.



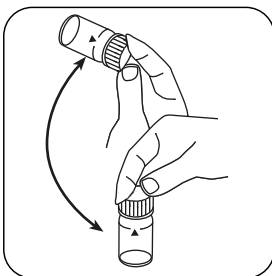
Add **COPPER No.2 tablet**.



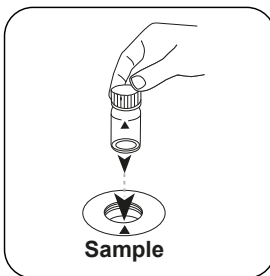
Crush tablet(s) by rotating slightly.



Close vial(s).



Dissolve tablet(s) by inverting.



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

# Test

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

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

## Determination of Copper, differentiated with liquid reagent

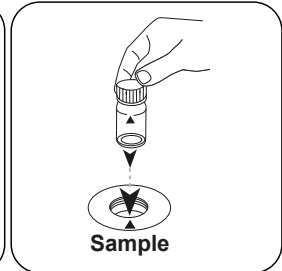
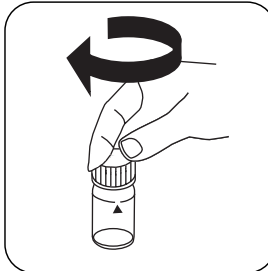
Select the method on the device.

In addition, choose the test: differentiated

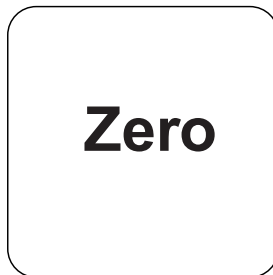
For this method, a ZERO measurement does not have to be carried out every time on the following devices: XD 7000, XD 7500



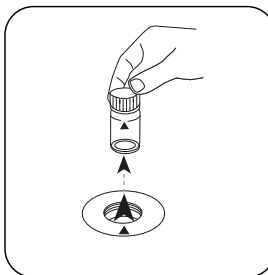
Fill 24 mm vial with **10 mL** **sample**.  
Close vial(s).



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

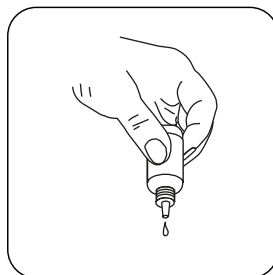


Press the **ZERO** button.

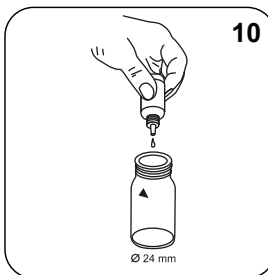


Remove the vial from the sample chamber.

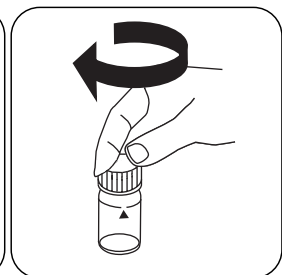
For devices that require **no ZERO measurement**, start here.



Hold cuvettes vertically and add equal drops by pressing slowly.



Add **10 drops** **KS240 (Coppercol Reagent 1)**.

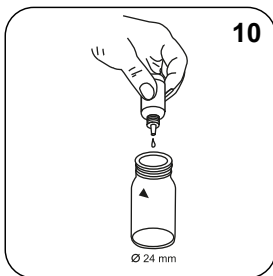


Close vial(s).

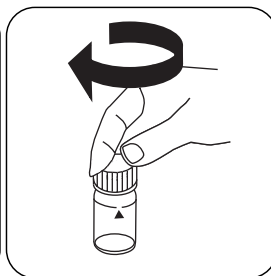




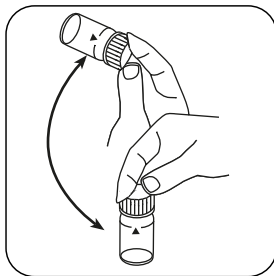
Invert several times to mix the contents.



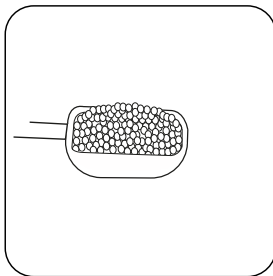
Add **10 drops** **KS241 (Coppercol Reagent 2)**.



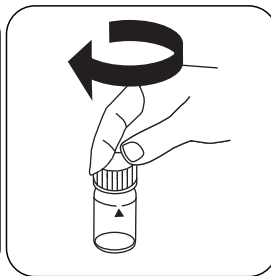
Close vial(s).



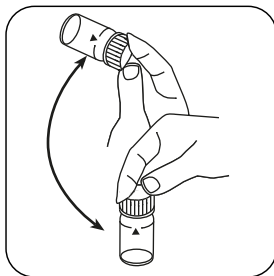
Invert several times to mix the contents.



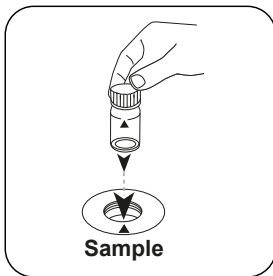
Add a **measuring scoop** **KP242 (Coppercol Reagent 3)**.



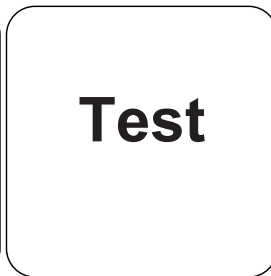
Close vial(s).



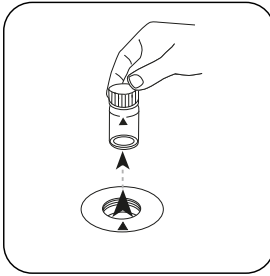
Swirl around to dissolve the powder.



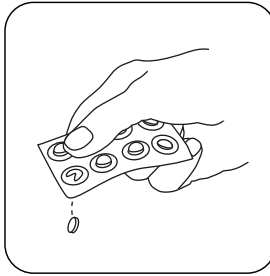
Place **sample vial** in the sample chamber. Pay attention to the positioning.



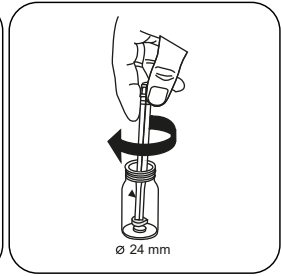
Press the **TEST (XD: START)** button.



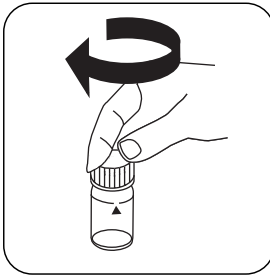
Remove the vial from the sample chamber.



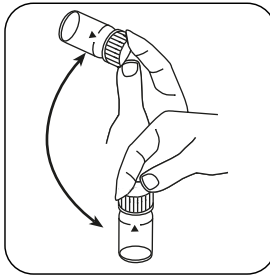
Add **COPPER No. 2 tablet**



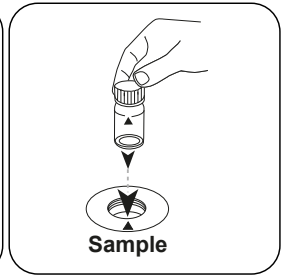
Crush tablet(s) by rotating slightly.



Close vial(s).



Dissolve tablet(s) by inverting.



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

## Test

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

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



## Chemical Method

Bicinchoninate

## Appendix

### Calibration function for 3rd-party photometers

$$\text{Conc.} = a + b \cdot \text{Abs} + c \cdot \text{Abs}^2 + d \cdot \text{Abs}^3 + e \cdot \text{Abs}^4 + f \cdot \text{Abs}^5$$

	∅ 24 mm	□ 10 mm
a	$-2.55142 \cdot 10^{-3}$	$-2.55142 \cdot 10^{-3}$
b	$4.00888 \cdot 10^{+0}$	$8.61909 \cdot 10^{+0}$
c		
d		
e		
f		

## Interferences

### Persistent Interferences

1. Cyanide  $\text{CN}^-$  and Silver  $\text{Ag}^+$  interfere with the test result.

### Bibliography

S. Nakano, Y. Zasshi, 82 486 - 491 (1962) [Chemical Abstracts, 58 3390e (1963)]

### Derived from

APHA Method 3500Cu

<sup>a)</sup> determination of free, combined and total