



Chlorine dioxide T

120

0.02 - 11 mg/l ClO<sub>2</sub>

CLO2

DPD / Glycine

## 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 200, MD 600, MD 610, MD 640, MultiDirect, PM 620, PM 630	ø 24 mm	530 nm	0.02 - 11 mg/l ClO <sub>2</sub>
XD 7000, XD 7500	ø 24 mm	510 nm	0.02 - 11 mg/l ClO <sub>2</sub>
SpectroDirect	ø 24 mm	510 nm	0.05 - 2.5 mg/l ClO <sub>2</sub>

## Material

Required material (partly optional):

Reagents	Packaging Unit	Part Number
DPD No. 1	Tablet / 100	511050BT
DPD No. 1	Tablet / 250	511051BT
DPD No. 1	Tablet / 500	511052BT
DPD No. 3	Tablet / 100	511080BT
DPD No. 3	Tablet / 250	511081BT
DPD No. 3	Tablet / 500	511082BT
Glycine <sup>h)</sup>	Tablet / 100	512170BT
Glycine <sup>h)</sup>	Tablet / 250	512171BT
DPD No. 3 High Calcium <sup>e)</sup>	Tablet / 100	515730BT
DPD No. 3 High Calcium <sup>e)</sup>	Tablet / 250	515731BT
DPD No. 3 High Calcium <sup>e)</sup>	Tablet / 500	515732BT
DPD No. 1 High Calcium <sup>e)</sup>	Tablet / 100	515740BT
DPD No. 1 High Calcium <sup>e)</sup>	Tablet / 250	515741BT
DPD No. 1 High Calcium <sup>e)</sup>	Tablet / 500	515742BT
Set DPD No. 1/No. 3 100 Pc.#	100 each	517711BT
Set DPD No. 1/No. 3 250 Pc.#	250 each	517712BT
Set DPD No. 1/Glycine 100 Stck.#	100 each	517731BT

Reagents	Packaging Unit	Part Number
Set DPD No. 1/Glycine 250 Stck.#	250 each	517732BT
Set DPD No. 1/No. 3 High Calcium 100 Pc.#	100 each	517781BT
Set DPD No. 1/No. 3 High Calcium 250 Pc.#	250 each	517782BT

## Application List

- Waste Water Treatment
- Disinfection Control
- Boiler Water
- Cooling Water
- Raw Water Treatment
- Pool Water Control
- Pool Water Treatment
- Drinking Water Treatment

## Sampling

1. When preparing the sample, Chlorine outgassing, e.g. through the pipette or shaking, must be avoided.
2. The analysis must take place immediately after taking the sample.

## Preparation

1. Cleaning of vials:  
As many household cleaners (e.g. dishwasher detergent) contain reducing substances, this can lead to lower results with the determination of Chlorine. To avoid measurement errors, the glassware used should be free of chlorine consumption. To achieve this, all glassware should be placed in a sodium hypochlorite solution (0.1 g/l) for one hour and then rinsed thoroughly with deionised water.
2. Strong alkaline or acidic water samples must be adjusted between pH 6 and pH 7 before the analysis (use 0.5 mol/l Sulphuric acid or 1 mol/l Sodium hydroxide).

## Implementation of the provision Chlorine Dioxide, in absence of chlorine with tablet

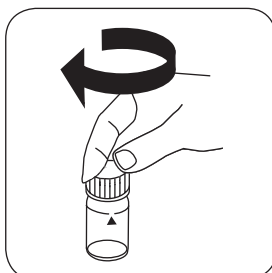
Select the method on the device

In addition, choose the test: without Chlorine

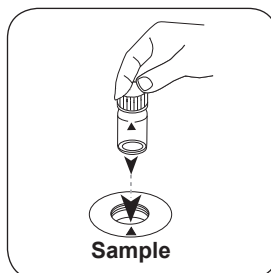
For this method, no ZERO measurements are to be carried out with the following devices: XD 7000, XD 7500



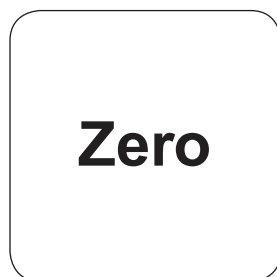
Fill 24 mm vial with **10 ml sample**.



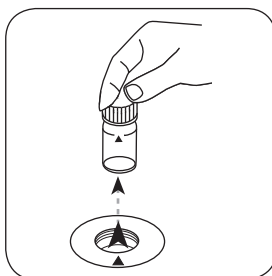
Close vial(s).



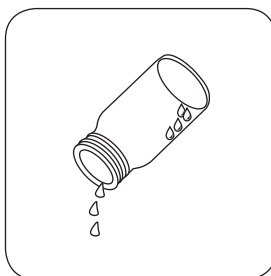
Place **sample vial** in the sample chamber. • Pay attention to the positioning.



Press the **ZERO** button.

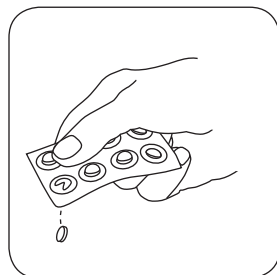


Remove the vial from the sample chamber.

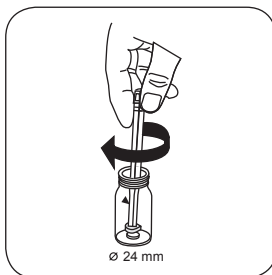


Empty vial except for a few drops.

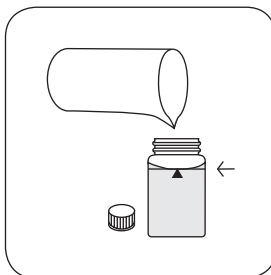
For devices that require **no ZERO measurement**, start here.



Add **DPD No.1 tablet**.



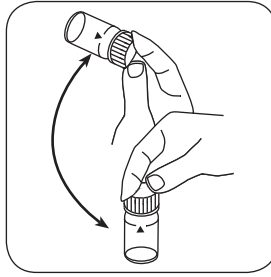
Crush tablet(s) by rotating slightly.



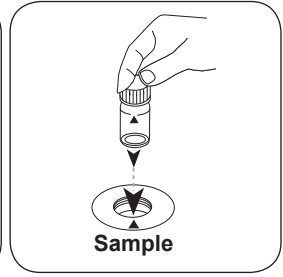
Fill up vial with **sample** to the **10 ml mark**.



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 Chlorine Dioxide appears on the display.

## Implementation of the provision Chlorine Dioxide, in presence of chlorine with tablet

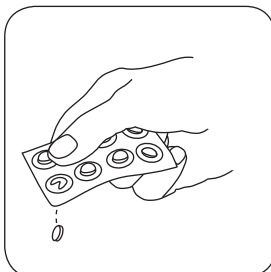
Select the method on the device

In addition, choose the test: in presence of Chlorine

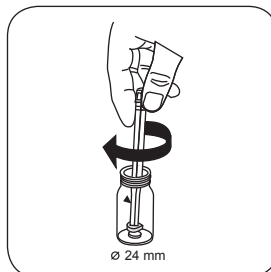
For this method, no ZERO measurements are to be carried out with the following devices: XD 7000, XD 7500



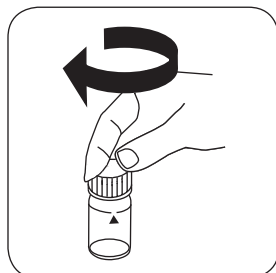
Fill 24 mm vial with **10 ml sample**.



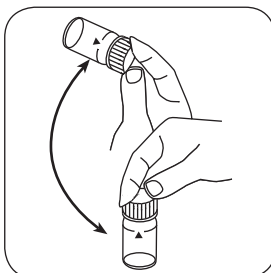
Add **GLYCINE** tablet.



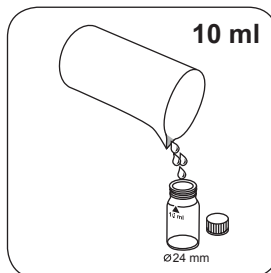
Crush tablet(s) by rotating slightly.



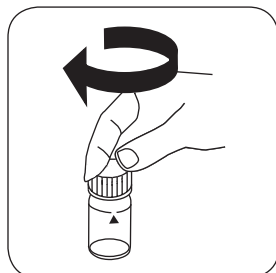
Close vial(s).



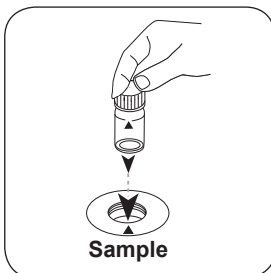
Dissolve tablet(s) by inverting.



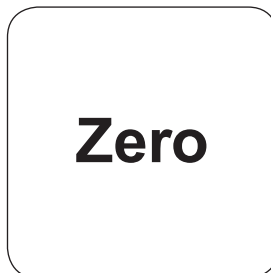
Fill a **second vial** with **10 ml sample**.



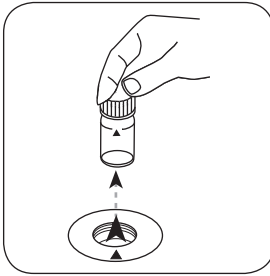
Close vial(s).



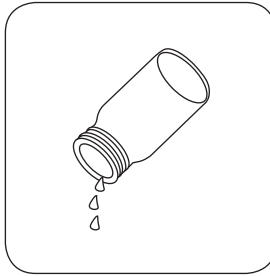
Place **sample vial** in the sample chamber. • Pay attention to the positioning.



Press the **ZERO** button.

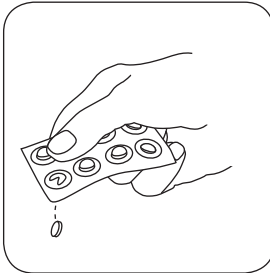


Remove the vial from the sample chamber.

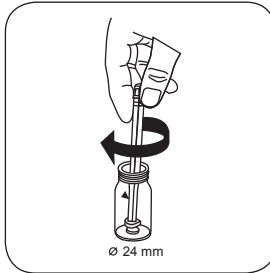


Empty vial.

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



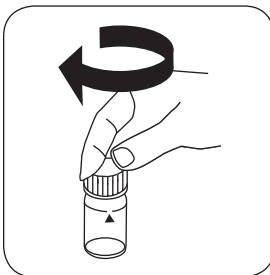
Add **DPD No. 1** tablet.



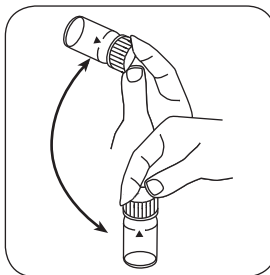
Crush tablet(s) by rotating slightly.



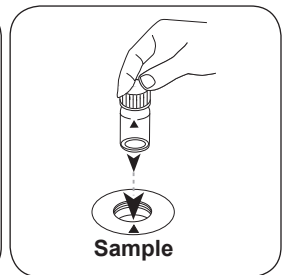
Fill prepared vial with prepared **glycine solution**.



Close vial(s).



Dissolve tablet(s) by inverting.



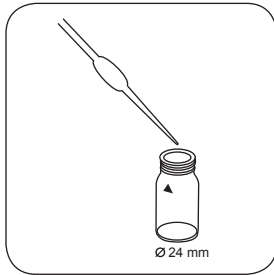
Place **sample vial** in the sample chamber. • Pay attention to the positioning.

# Test

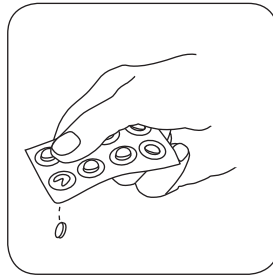
Press the **TEST** (XD: **START**) button.

Remove the vial from the sample chamber.

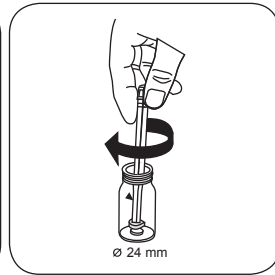
Thoroughly clean the vial and vial cap.



Fill vial with **some drops of** sample.



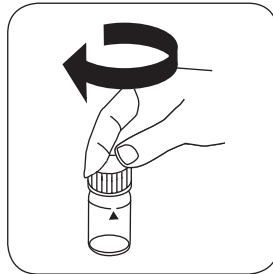
Add **DPD No. 1 tablet**.



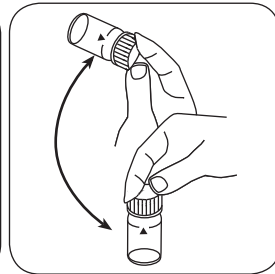
Crush tablet(s) by rotating slightly.



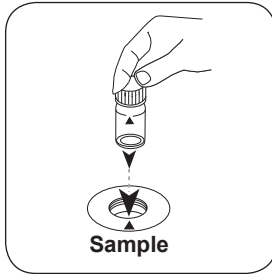
Fill up vial with **sample** to the **10 ml** mark.



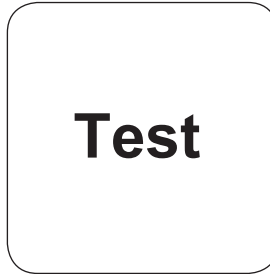
Close vial(s).



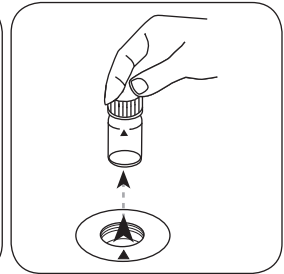
Dissolve tablet(s) by inverting.



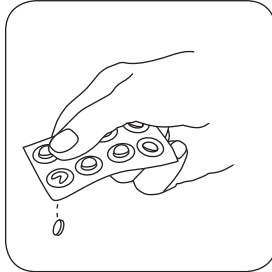
Place **sample vial** in the sample chamber. • Pay attention to the positioning.



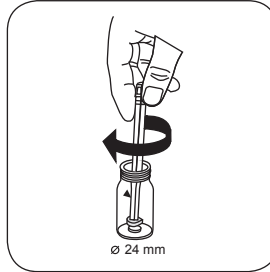
Press the **TEST** (XD: **START**) button.



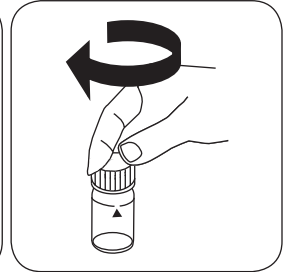
Remove the vial from the sample chamber.



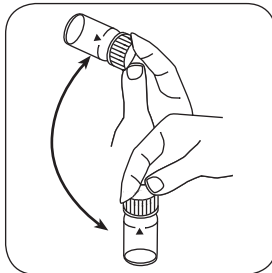
Add **DPD No.3 tablet**.



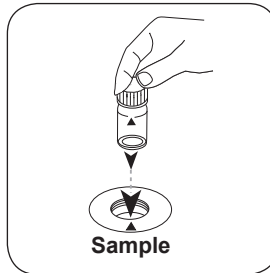
Crush tablet(s) by rotating slightly.



Close vial(s).



Dissolve tablet(s) by inverting.

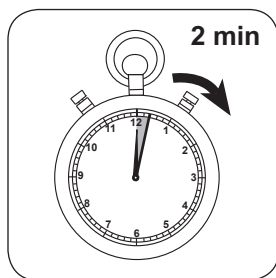


Place **sample vial** in the sample chamber. • Pay attention to the positioning.



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 Chlorine Dioxide 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	ClO <sub>2</sub>	1
mg/l	Cl <sub>2</sub> frei	0.525
mg/l	Cl <sub>2</sub> geb.	0.525
mg/l	ges. Cl <sub>2</sub>	0.525

## Chemical Method

DPD / Glycine

## Appendix

### Interferences

#### Persistent Interferences

1. All oxidising agents in the samples lead to higher results.

#### Removeable Interferences

1. Concentrations above 19 mg/l chlorine dioxide can lead to results within the measuring range of up to 0 mg/l. In this case, the water sample must be diluted with water that is free from chlorine dioxide. 10 ml of the diluted sample should be mixed with the reagent and the measurement taken again.

#### Derived from

DIN 38408, Section 5

<sup>a)</sup> determination of free, combined and total | <sup>b)</sup> Reactor is necessary for COD (150 °C), TOC (120 °C) and total -chromium, - phosphate, -nitrogen, (100 °C) | <sup>c)</sup> MultiDirect: Adapter is necessary for Vacu-vials® (Order code 19 20 75) | <sup>d)</sup> Spectroquant® is a Merck KGaA Trademark | <sup>e)</sup> alternative reagent, used instead of DPD No.1/No.3 in case of turbidity in the water sample caused by high concentration of calcium and/or high conductivity | <sup>f)</sup> additionally required for determination of bromine, chlorine dioxide and ozone in the presence of chlorine | <sup>g)</sup> Reagent recovers most insoluble iron oxides without digestion | <sup>h)</sup> additionally required for samples with hardness values above 300 mg/l CaCO<sub>3</sub> | <sup>i)</sup> high range by dilution | <sup>\*</sup> including stirring rod, 10 cm