

Ozone 50 T

M299

0.02 - 0.5 mg/L O<sub>3</sub>

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	$\lambda$	Measuring Range
SpectroDirect, XD 7000, XD 7500	□ 50 mm	510 nm	0.02 - 0.5 mg/L O <sub>3</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
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
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
Glycine <sup>f)</sup>	Tablet / 100	512170BT
Glycine <sup>f)</sup>	Tablet / 250	512171BT
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/No. 3 High Calcium 100 Pc. #	100 each	517781BT
Set DPD No. 1/No. 3 High Calcium 250 Pc. #	250 each	517782BT
Set DPD No. 1/Glycine 100 Stck. #	100 each	517731BT
Set DPD No. 1/Glycine 250 Stck. #	250 each	517732BT



## Application List

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

## Preparation

1. Cleaning of vials:  
As many household cleaners (e.g. dishwasher detergent) contain reducing substances, the subsequent determination of oxidising agents (e.g. ozone and chlorine) may show lower results. 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. When preparing the sample, Ozone outgassing, e.g. through the pipette or shaking, must be avoided. The analysis must take place immediately after taking the sample.
3. 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).

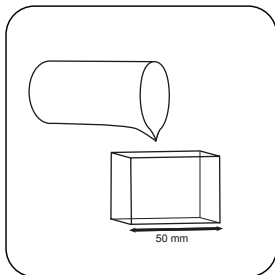


## Determination of Ozone, in presence of chlorine with tablet

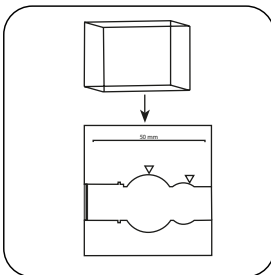
Select the method on the device.

In addition, choose the test: in presence of Chlorine

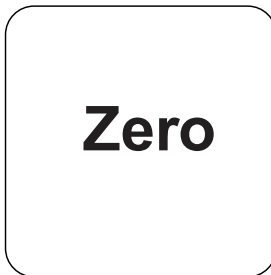
For this method, a ZERO measurement does not have to be carried out every time on the following devices: XD 7000, XD 7500



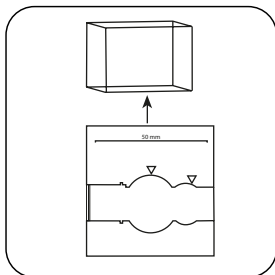
Fill 50 mm vial with sample.



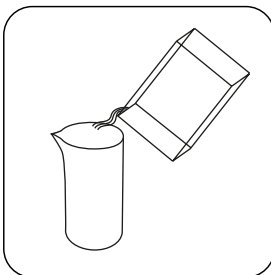
Place sample vial in the sample chamber. • Pay attention to the positioning.



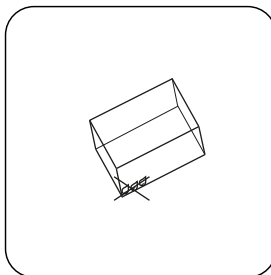
Press the **ZERO** button.



Remove **vial** from the sample chamber.

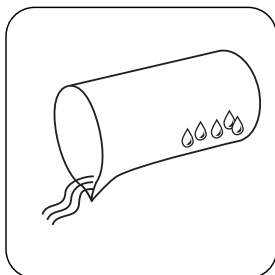


Empty vial.

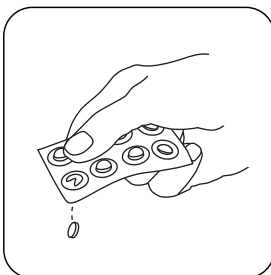


Dry the vial thoroughly.

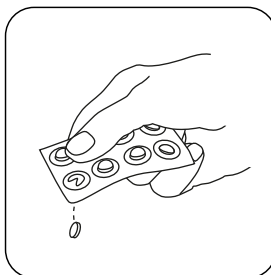
For devices that require **no ZERO measurement** , **start here.**



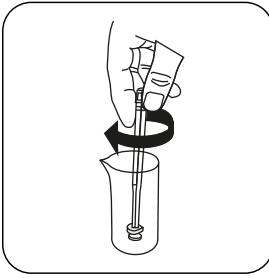
Rinse a beaker **with the sample and empty it, leaving a few drops remaining** in the beaker.



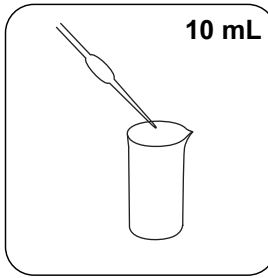
Add **DPD No. 1** tablet .



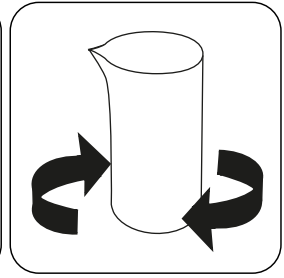
Add **DPD No. 3** tablet .



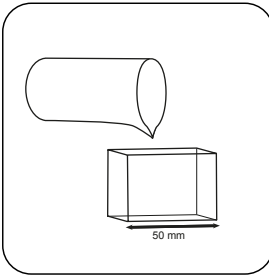
Crush tablet(s) by rotating slightly.



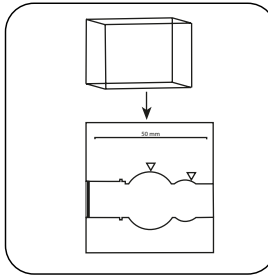
Add **10 mL sample**.



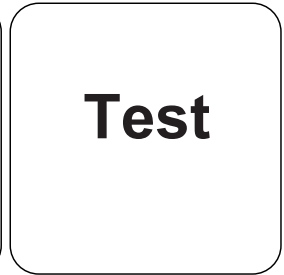
Dissolve tablet(s) by inverting.



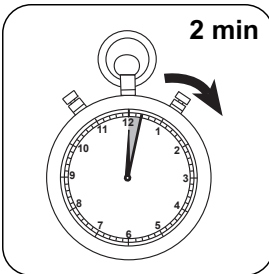
Fill **50 mm vial** with **sample**.



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

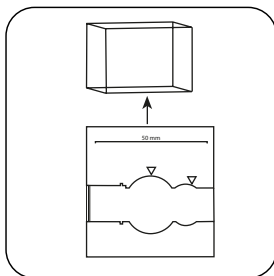


Press the **TEST (XD: START)** button.

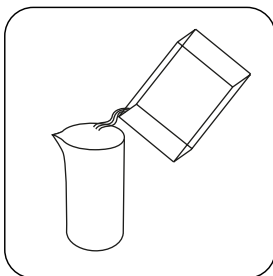


Wait for **2 minute(s) reaction time**.

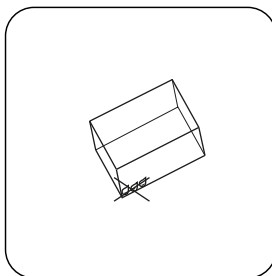
Once the reaction period is finished, the measurement takes place automatically.



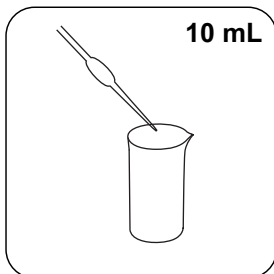
Remove **vial** from the sample chamber.



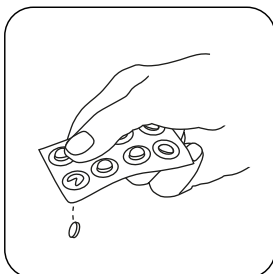
Empty vial.



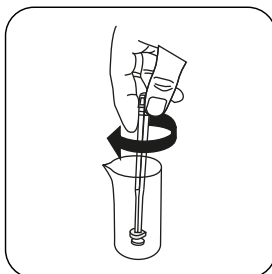
Dry the vial thoroughly.



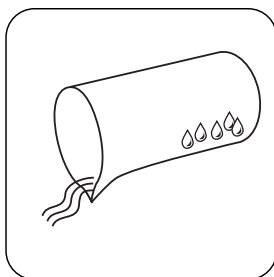
Fill a suitable sample vessel with **10 mL sample**



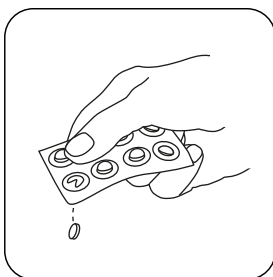
Add **Glycine tablet**.



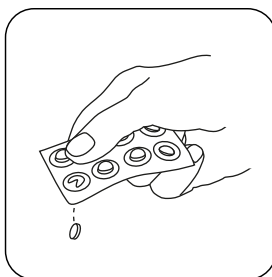
Crush tablet(s) by rotating slightly and dissolve.



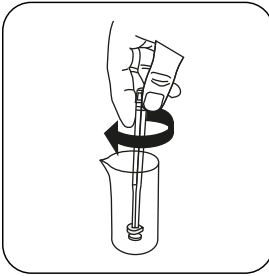
Rinse a beaker **with the sample and empty it, leaving a few drops remaining** in the beaker.



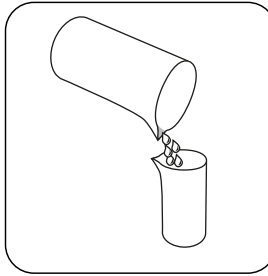
Add **DPD No. 1 tablet** .



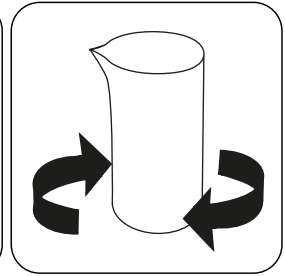
Add **DPD No. 3 tablet** .



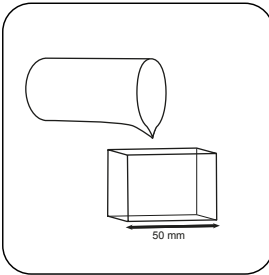
Crush tablet(s) by rotating slightly.



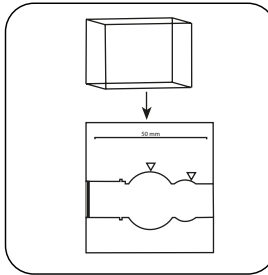
Fill prepared sample with prepared **glycine solution**.



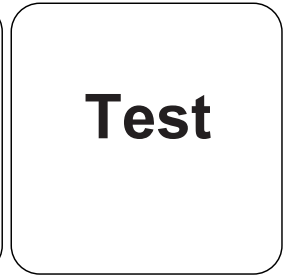
Dissolve tablet(s) by inverting.



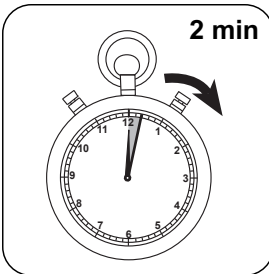
Fill 50 mm vial with **sample**.



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 Ozone; total chlorine appears on the display.

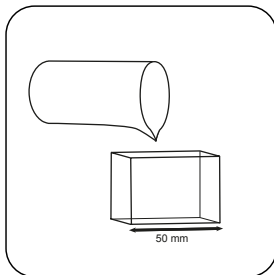


## Determination of Ozone, in absence of chlorine with tablet

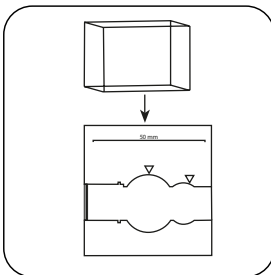
Select the method on the device.

In addition, choose the test: without Chlorine

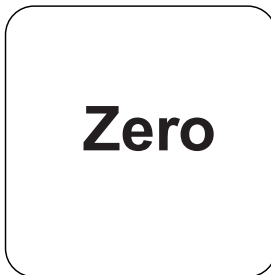
For this method, a ZERO measurement does not have to be carried out every time on the following devices: XD 7000, XD 7500



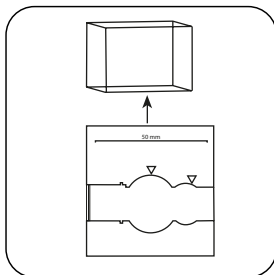
Fill 50 mm vial with sample.



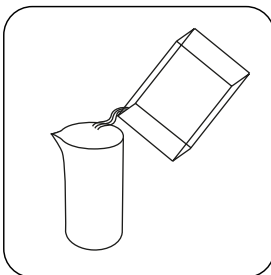
Place sample vial in the sample chamber. • Pay attention to the positioning.



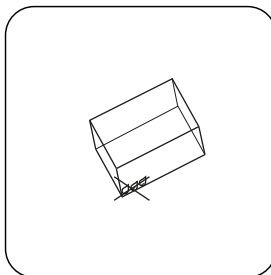
Press the **ZERO** button.



Remove **vial** from the sample chamber.

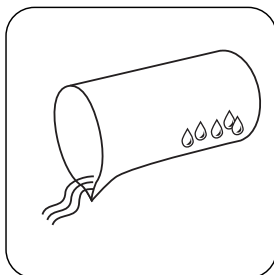


Empty vial.

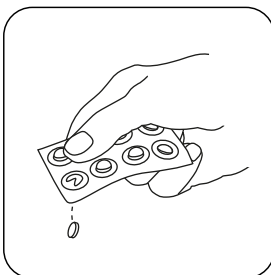


Dry the vial thoroughly.

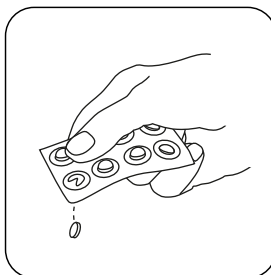
For devices that require **no ZERO measurement** , **start here.**



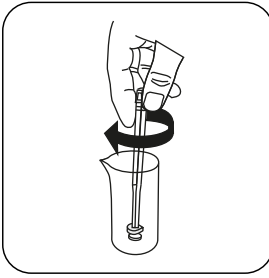
Rinse a beaker **with the sample and empty it, leaving a few drops remaining** in the beaker.



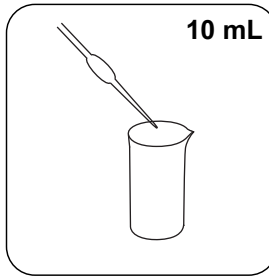
Add **DPD No. 1** tablet .



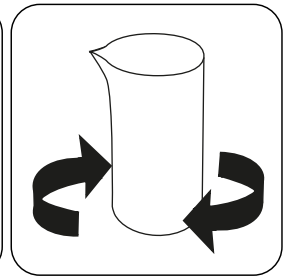
Add **DPD No. 3** tablet .



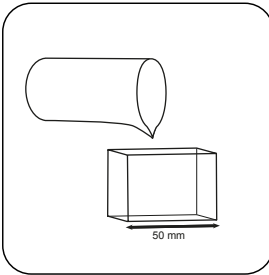
Crush tablet(s) by rotating slightly.



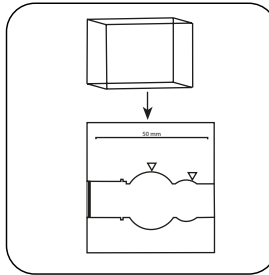
Add **10 mL sample**.



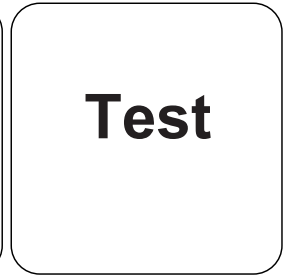
Dissolve tablet(s) by inverting.



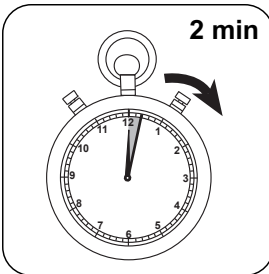
Fill **50 mm vial** with **sample**.



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



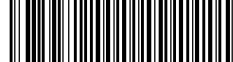
Press the **TEST (XD: START)** button.



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

Once the reaction period is finished, the measurement takes place automatically. The result in mg/L Ozone 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	O <sub>3</sub>	1
mg/l	Cl <sub>2</sub>	1.4771049

## Chemical Method

DPD / Glycine

## Appendix

### Calibration function for 3rd-party photometers

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

□ 50 mm

a	$-3.25456 \cdot 10^{-3}$
b	$4.78036 \cdot 10^{-1}$
c	$-3.91741 \cdot 10^{-2}$
d	
e	
f	

## Interferences

### Persistent Interferences

1. All oxidising agents in the samples react like chlorine, which leads to higher results.
2. Concentrations above 6 mg/L Ozone can lead to results within the measuring range of up to 0 mg/L. In this case, the water sample must be diluted. 10 ml of the diluted sample should be mixed with the reagent and the measurement taken again (plausibility test).

### Bibliography

Colorimetric Chemical Analytical Methods, 9th Edition, Lovibond

### Derived from

DIN 38408-3:2011-04



<sup>4)</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>5)</sup> additionally required for determination of bromine, chlorine dioxide and ozone in the presence of chlorine | \* including stirring rod, 10 cm