



Chlorine HR PP

M111

0.1 - 8 mg/L Cl<sub>2</sub><sup>a)</sup>

CL8

DPD

## 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, PM 620, PM 630	Multy cuvette, type 3	530 nm	0.1 - 8 mg/L Cl <sub>2</sub> <sup>a)</sup>
MD 100	Multy cuvette, type 2	530 nm	0.1 - 8 mg/L Cl <sub>2</sub> <sup>a)</sup>

## Material

Required material (partly optional):

Reagents	Packaging Unit	Part Number
Chlorine Free DPD F10	Powder / 100 pc.	530100
Chlorine Free DPD F10	Powder / 1000 pc.	530103
Chlorine Total DPD F10	Powder / 100 pc.	530120
Chlorine Total DPD F10	Powder / 1000 pc.	530123

## Application List

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

## 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.



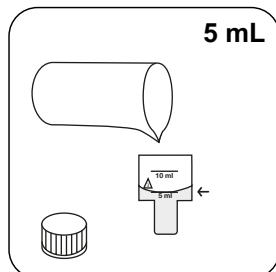
## Preparation

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. For individual testing of free and total Chlorine, the use of different sets of glassware is recommended (EN ISO 7393-2, 5.3)
3. The DPD colour development is carried out at a pH value of 6.2 to 6.5. The reagents therefore contain a buffer for the pH adjustment. Strong alkaline or acidic water samples must therefore be adjusted between pH 6 and pH 7 before the analysis (use 0.5 mol/l Sulphuric acid or 1 mol/l Sodium hydroxide).

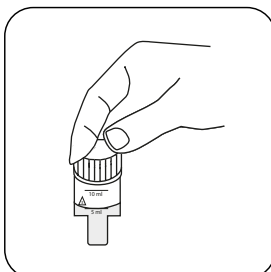


## Determination of free chlorine HR with powder packs

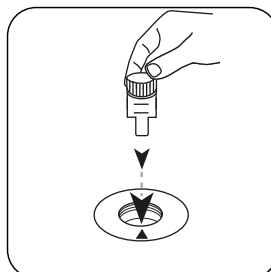
In addition, choose the test: free  
Select the method on the device.



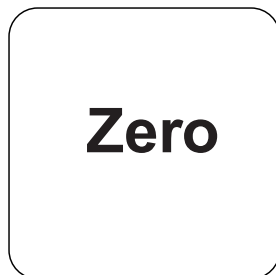
Fill 10 mm vial with **5 mL**  
**sample.**



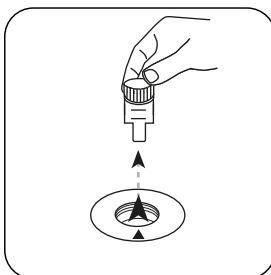
Close vial(s).



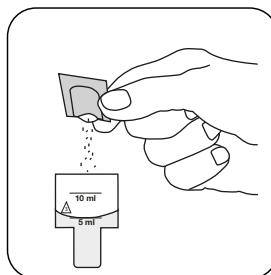
Place **sample vial** in the  
sample chamber. • Pay  
attention to the positioning.



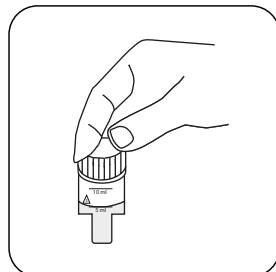
Press the **ZERO** button.



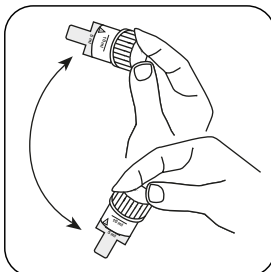
Remove **vial** from the  
sample chamber.



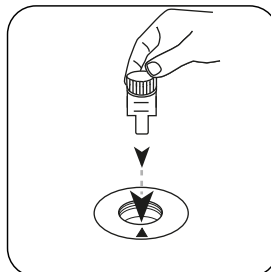
Add **two Chlorine FREE-  
DPD / F10 powder packs** .



Close vial(s).



Invert several times to mix  
the contents (20 sec.).



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



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

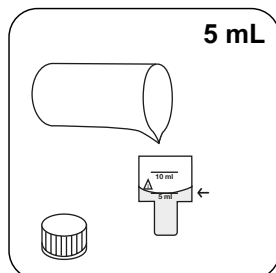
The result in mg/L free chlorine appears on the display.



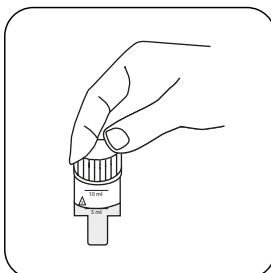
## Determination of totale Chlorine HR with powder packs

In addition, choose the test: total

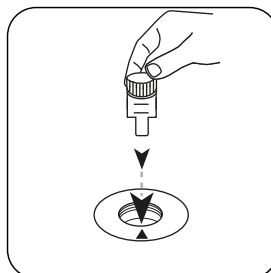
Select the method on the device.



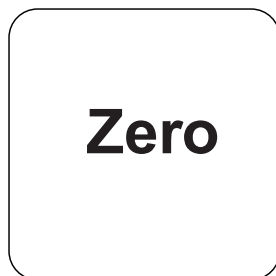
Fill 10 mm vial with **5 mL sample**.



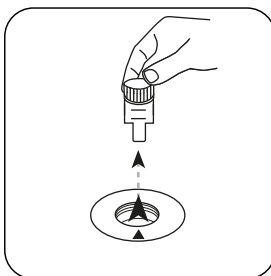
Close vial(s).



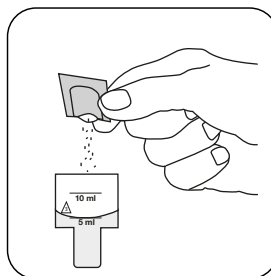
Place **sample vial** in the sample chamber. • Pay attention to the positioning.



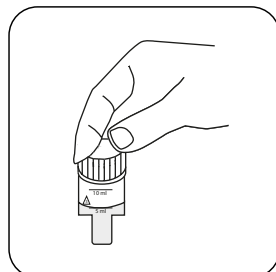
Press the **ZERO** button.



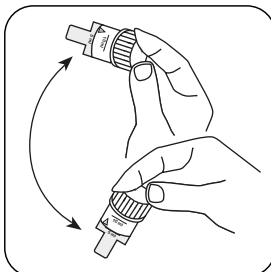
Remove **vial** from the sample chamber.



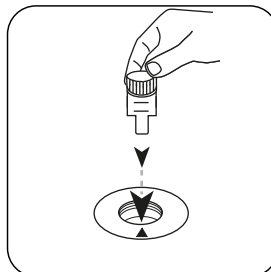
Add **two Chlorine TOTAL-DPD / F10 powder packs**.



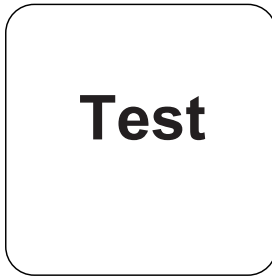
Close vial(s).



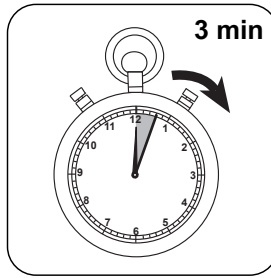
Invert several times to mix the contents (20 sec.).



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



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



Wait for **3 minute(s) reac-**  
**tion time.**

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

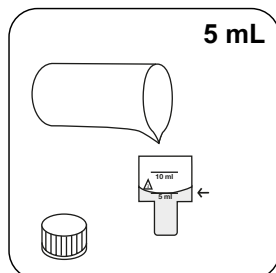
The result in mg/L total Chlorine appears on the display.



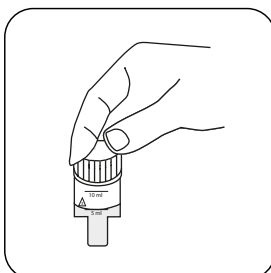
## Determination of Chlorine HR differentiated with powder packs

Select the method on the device.

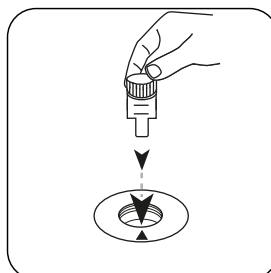
In addition, choose the test: differentiated



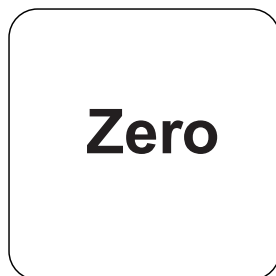
Fill 10 mm vial with **5 mL sample**.



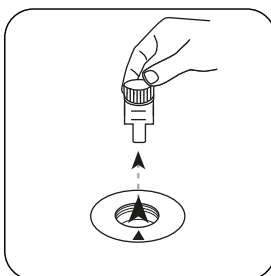
Close vial(s).



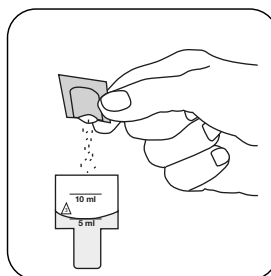
Place **sample vial** in the sample chamber. • Pay attention to the positioning.



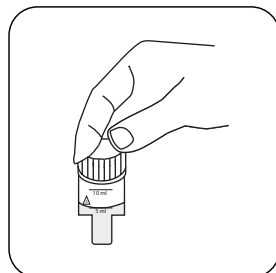
Press the **ZERO** button.



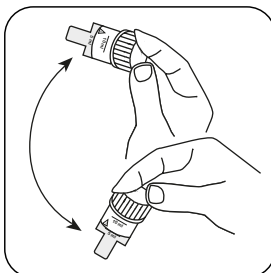
Remove **vial** from the sample chamber.



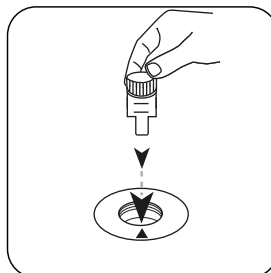
Add **two Chlorine FREE-DPD / F10 powder packs** .



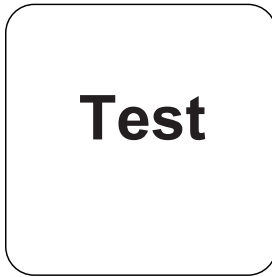
Close vial(s).



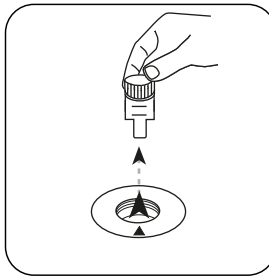
Invert several times to mix the contents (20 sec.).



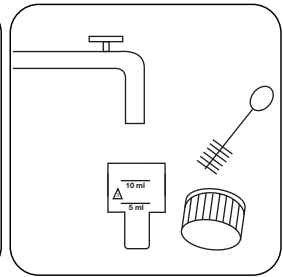
Place **sample vial** in the sample chamber. • Pay attention to the positioning.



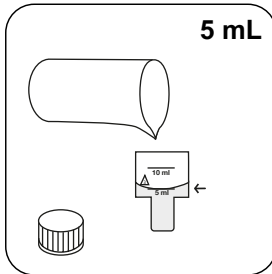
Press the **TEST** (XD:  
**START**) button.



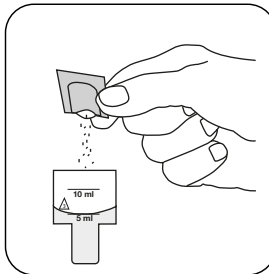
Remove **vial** from the  
sample chamber.



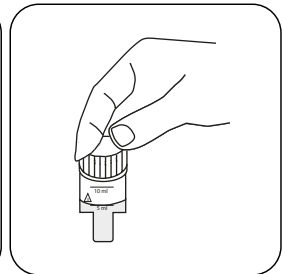
Thoroughly clean the vial and  
vial cap.



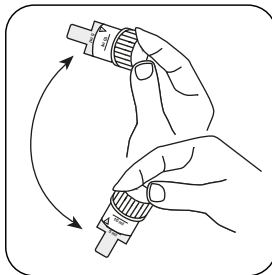
Fill 10 mm vial with **5 mL**  
**sample**.



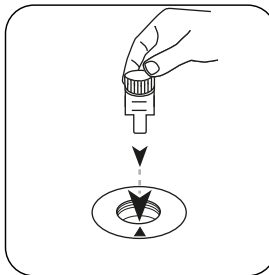
Add **two Chlorine TOTAL-  
DPD / F10 powder packs** .



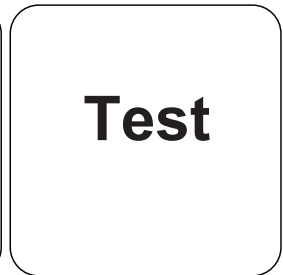
Close vial(s).



Invert several times to mix  
the contents (20 sec.).

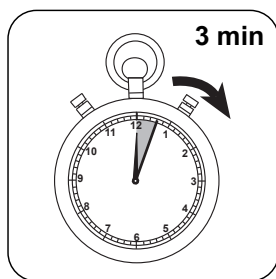


Place **sample vial** in the  
sample chamber. • Pay  
attention to the positioning.



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





Wait for **3 minute(s) reaction time**.

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

The result in mg/L free chlorine, mg/l combined chlorine, mg/l total chlorine appears on the display.



## Chemical Method

DPD

## Appendix

### Interferences

#### Persistent Interferences

- All oxidising agents in the samples react like chlorine, which leads to higher results.

#### Removeable Interferences

- Interference from Copper and Iron (III) are eliminated by the addition of EDTA.
- Concentrations above 8 mg/L Chlorine, in the event of using Powder Packs, can lead to results within the measuring range of up to 0 mg/L. In this case, the sample must be diluted with chlorine-free water. 10 ml of the diluted sample should be mixed with the reagent and the measurement taken again (plausibility test).

#### Conformity

EN ISO 7393-2

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