

Lovibond® Water Testing

Tintometer® Group



Manual of Methods

MD150

Chlorine | Cyanuric Acid | pH

(EN) MD150 Photometer

Page 4

(ES) Fotómetro MD150

Página 120

(PT) Fotómetro MD150

Página 240

(NL) MD150 Fotometer

Zijde 358

(RU) Фотометр MD150

Сторона 474

(DE) MD150 Photometer

Seite 62

(FR) MD150 Photomètre

Page 180

(IT) Fotometro MD150

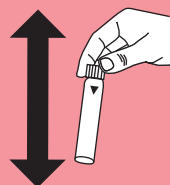
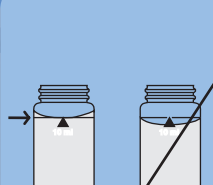
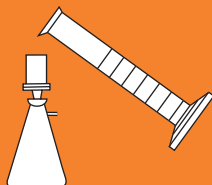
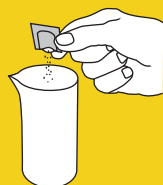
Pagina 298

(TR) MD150 fotometre

Sayfa 416

(ZH) MD150 光度计

Page 534



KS4.3 T / 20

Method name

Method number

Measuring range

Chemical Method



Bar code for the detection of the methods

K_{S4.3} T

0.1 - 4 mmol/l K_{S4.3}

Acid / Indicator

20

S:4.3

Display in the MD 100 / MD 110 / MD 200

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 200, MD 600, MD 610, MD 640, MultiDirect, PM 620, PM 630	ø 24 mm	610 nm	0.1 - 4 mmol/l K _{S4.3}
SpectroDirect, XD 7000, XD 7500	ø 24 mm	615 nm	0.1 - 4 mmol/l K _{S4.3}

Material

Required material (partly optional):

Reagents	Packaging Unit	Part Number
Alka-M-Photometer	Tablet / 100	513210BT
Alka-M-Photometer	Tablet / 250	513211BT

Application List

- Waste Water Treatment
- Drinking Water Treatment
- Raw Water Treatment

Notes

1. The terms Alkalinity-m, m-Value, total alkalinity and Acid demand to K_{S4.3} are identical.
2. For accurate results, exactly 10 ml of water sample must be used for the test.

Language codes ISO 639-1

EN

Revision status

Handbook of Methods 01/20

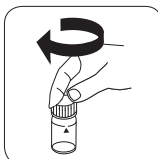
Performing test procedure
Implementation of the provision Acid capacity $K_{s4.3}$ with Tablet

Select the method on the device

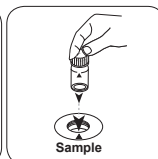
For this method, no ZERO measurements are to be carried out with the following devices: XD 7000, XD 7500



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

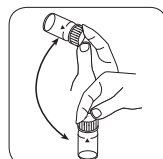


Close vial(s).

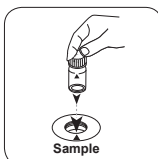


Place **sample vial** in the sample chamber. • Pay attention to the positioning.

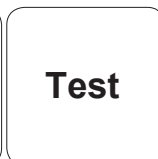
• • •



Dissolve tablet(s) by inverting.



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



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

The result in Acid Capacity $K_{s4.3}$ appears on the display.

**Chlorine T****M100****0.01 - 6.0 mg/L Cl₂ ^{a)}****CL6****DPD****Material**

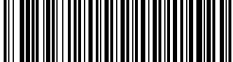
EN

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 ^{a)}	Tablet / 100	515740BT
DPD No. 1 High Calcium ^{a)}	Tablet / 250	515741BT
DPD No. 1 High Calcium ^{a)}	Tablet / 500	515742BT
DPD No. 3 High Calcium ^{a)}	Tablet / 100	515730BT
DPD No. 3 High Calcium ^{a)}	Tablet / 250	515731BT
DPD No. 3 High Calcium ^{a)}	Tablet / 500	515732BT
DPD No. 4	Tablet / 100	511220BT
DPD No. 4	Tablet / 250	511221BT
DPD No. 4	Tablet / 500	511222BT
DPD No. 3 Evo	Tablet / 100	511420BT
DPD No. 3 Evo	Tablet / 250	511421BT
DPD No. 3 Evo	Tablet / 500	511422BT
DPD No. 4 Evo	Tablet / 100	511970BT
DPD No. 4 Evo	Tablet / 250	511971BT
DPD No. 4 Evo	Tablet / 500	511972BT

Available Standards

Title	Packaging Unit	Part Number
ValidCheck Chlorine 1,5 mg/l	1 pc.	48105510



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).

Notes

1. EVO tablets can be used as an alternative to the corresponding standard tablet (e.g. DPD No. 3 EVO instead of DPD No. 3).



Determination of free chlorine with tablet

Select the method on the device.

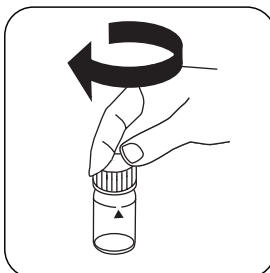
In addition, choose the test: free

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

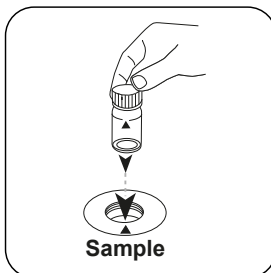
EN



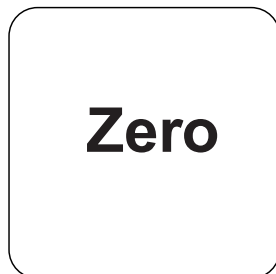
Fill 24 mm vial with **10 mL sample**.



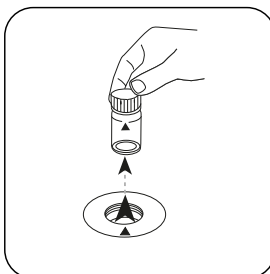
Close vial(s).



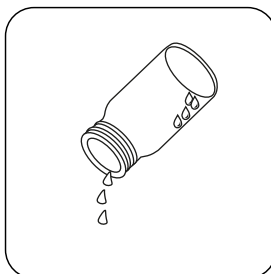
Place **sample vial** in the sample chamber. Pay attention to the positioning.



Perform Zero.

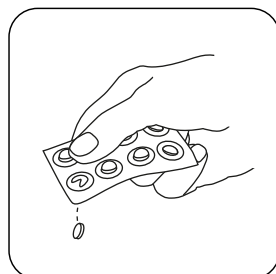


Remove the vial from the sample chamber.

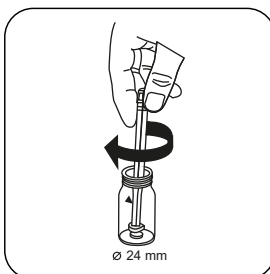


Empty vial except for a few drops.

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



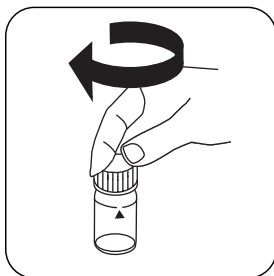
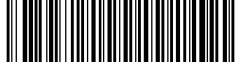
Add **DPD No. 1 tablet**.



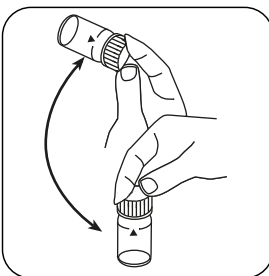
Crush tablet(s) by rotating slightly.



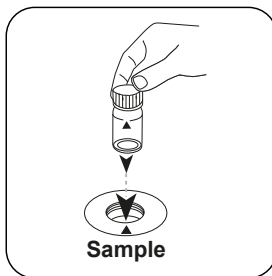
Fill up vial with **sample** to the **10 mL mark**.



Close vial(s).



Dissolve tablet(s) by inverting.



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

EN

Test

Perform test.

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

Determination of total Chlorine with tablet

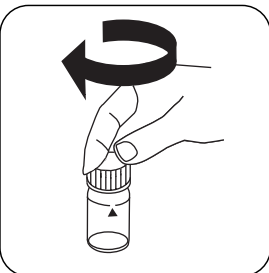
Select the method on the device.

In addition, choose the test: total

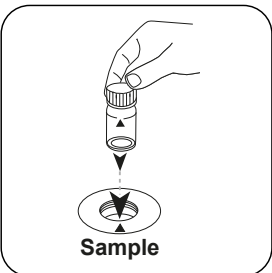
For this method, a ZERO measurement does not have to be carried out every time on the following devices: XD 7000, XD 7500



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



Close vial(s).

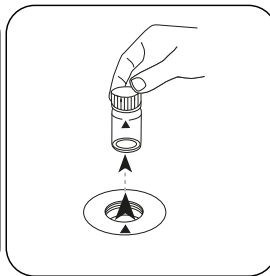


Place **sample vial** in the sample chamber. Pay attention to the positioning.

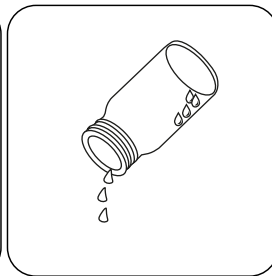


Zero

Perform Zero.

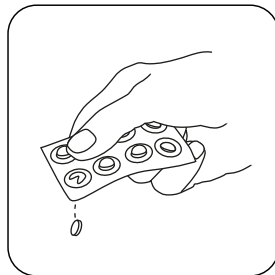


Remove the vial from the sample chamber.

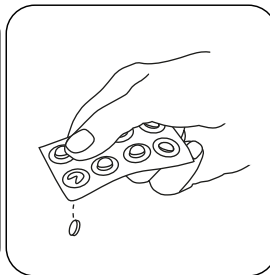


Empty vial except for a few drops.

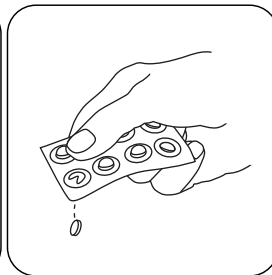
For devices that require **no ZERO measurement**, **start here**.



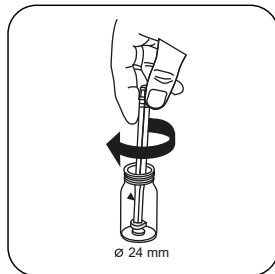
Add DPD No. 1 tablet .



Add DPD No. 3 tablet .



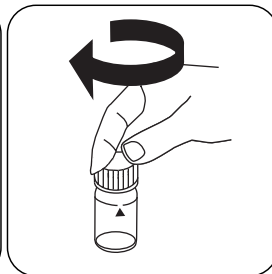
As an alternative to DPD No. 1 and No. 3 tablets, a DPD No. 4 tablet can be added.



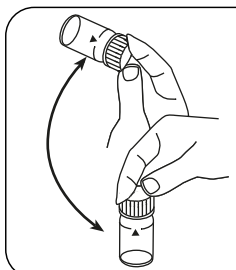
Crush tablet(s) by rotating slightly.



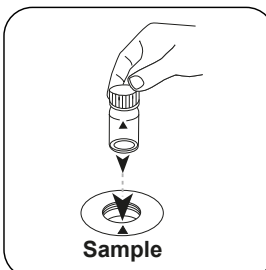
Fill up vial with **sample** to the **10 mL mark**.



Close vial(s).



Dissolve tablet(s) by inverting.

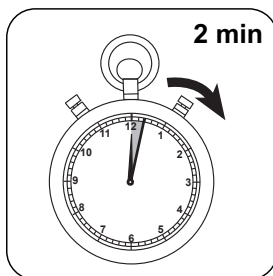


Place **sample vial** in the sample chamber. Pay attention to the positioning.

Test

Perform test.

EN



Wait for **2 minute(s)** reaction 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 differentiated with tablet

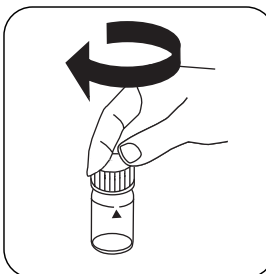
Select the method on the device.

In addition, choose the test: differentiated

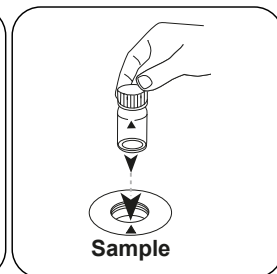
For this method, a ZERO measurement does not have to be carried out every time on the following devices: XD 7000, XD 7500



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



Close vial(s).

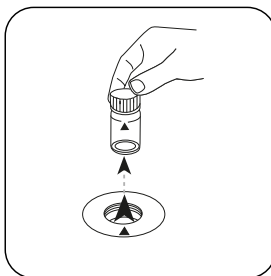


Place **sample vial** in the sample chamber. Pay attention to the positioning.

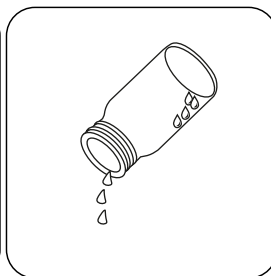


Zero

Perform Zero.

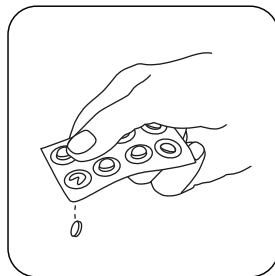


Remove the vial from the sample chamber.

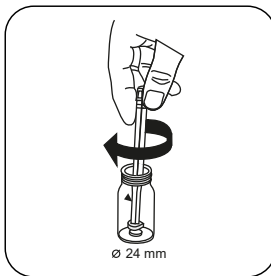


Empty vial except for a few drops.

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



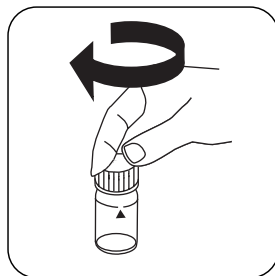
Add **DPD No. 1 tablet**.



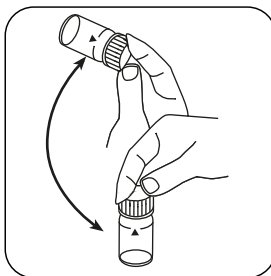
Crush tablet(s) by rotating slightly.



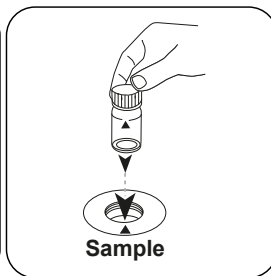
Fill up vial with **sample** to the **10 mL mark**.



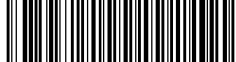
Close vial(s).



Dissolve tablet(s) by inverting.

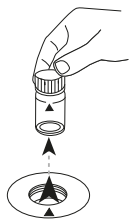


Place **sample vial** in the sample chamber. Pay attention to the positioning.

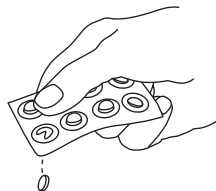


Test

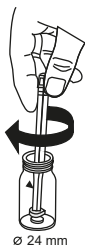
Perform test.



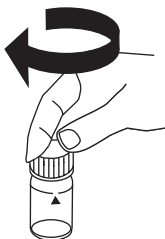
Remove the vial from the sample chamber.



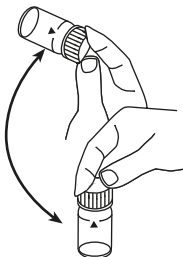
Add **DPD No. 3 tablet**.



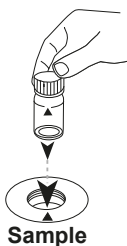
Crush tablet(s) by rotating slightly.



Close vial(s).



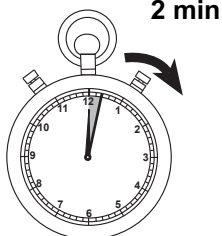
Dissolve tablet(s) by inverting.



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

Test

Perform test.



Wait for **2 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

EN

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.
- The use of reagent tablets in samples with high calcium content* and/or high conductivity* can lead to turbidity of the sample and therefore incorrect measurements. In this case, the alternative reagent tablet DPD No.1 High Calcium and reagent tablet DPD No.3 High Calcium should be used.
*it is not possible to give exact values, because the development of turbidity depends on the composition and nature of the sample.
- Concentrations above 10 mg/L chlorine, in the event of using fluid reagents, can lead to results within the measuring range of up to 0 mg/L. In the event of a high concentration of chlorine, 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).

Interference	from / [mg/L]
CrO_4^{2-}	0.01
MnO_2	0.01

Conformity

EN ISO 7393-2

^{a)} determination of free, combined and total | ^{a)} 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

**Chlorine L****M101****0.02 - 4.0 mg/L Cl₂ ^{a)}****CL6****DPD**

EN

Material

Required material (partly optional):

Reagents	Packaging Unit	Part Number
DPD 1 Buffer Solution, Blue Bottle	15 mL	471010
DPD 1 Buffer Solution	100 mL	471011
DPD 1 Buffer Solution	1 pc.	471016
DPD 1 Reagent Solution, Green Bottle	15 mL	471020
DPD 1 Reagent Solution	100 mL	471021
DPD 1 Reagent Solution	1 pc.	471026
DPD 3 Solution, Red Bottle	15 mL	471030
DPD 3 Solution	100 mL	471031
DPD 3 Solution	1 pc.	471036
DPD Reagent Set	1 pc.	471056

Available Standards

Title	Packaging Unit	Part Number
ValidCheck Chlorine 1,5 mg/l	1 pc.	48105510

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).

Notes

1. After use, ensure the cuvettes are once again closed with the respective same-coloured screw caps.
2. Reagent sets are to be stored in the cool at +6 °C to +10 °C.



Determination of free chlorine with liquid reagent

Select the method on the device.

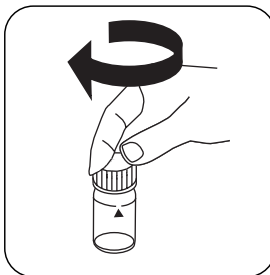
In addition, choose the test: free

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

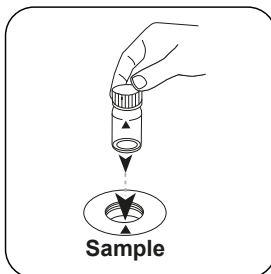
EN



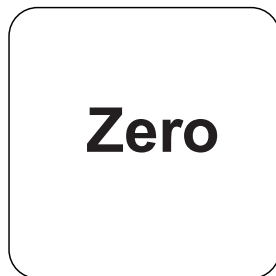
Fill 24 mm vial with **10 mL sample**.



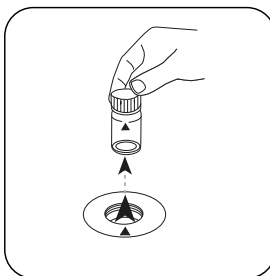
Close vial(s).



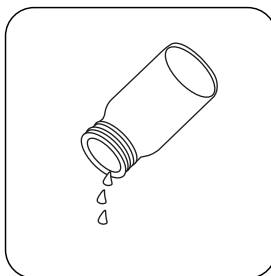
Place **sample vial** in the sample chamber. Pay attention to the positioning.



Perform Zero.

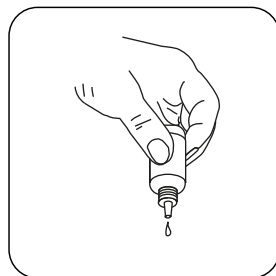


Remove the vial from the sample chamber.

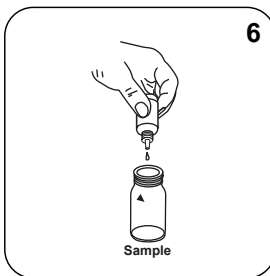


Empty vial.

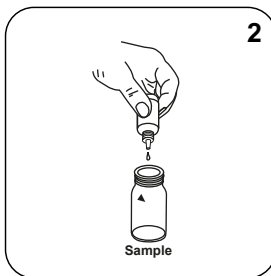
For devices that require **no ZERO measurement**, **start here**.



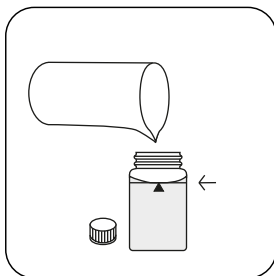
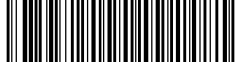
Hold cuvettes vertically and add equal drops by pressing slowly.



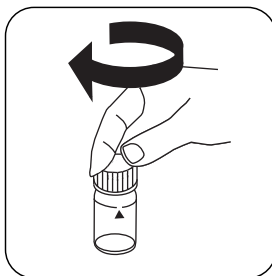
Add **6 drops DPD 1 Buffer Solution** to the **sample vial**.



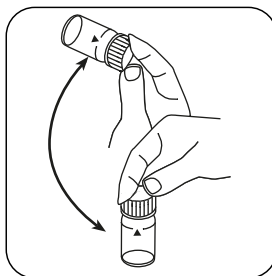
Add **2 drops DPD 1 Reagent Solution** to the **sample vial**.



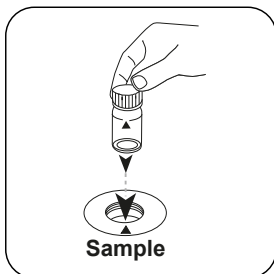
Fill up vial with **sample** to the **10 mL mark**.



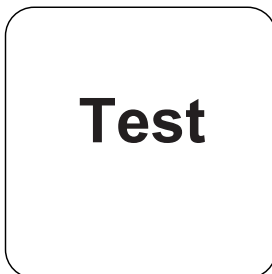
Close vial(s).



Invert several times to mix the contents.



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



Perform test.

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

Determination of totale Chlorine with liquid reagent

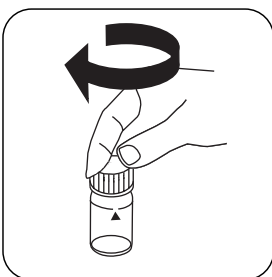
Select the method on the device.

In addition, choose the test: total

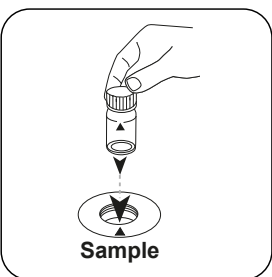
For this method, a ZERO measurement does not have to be carried out every time on the following devices: XD 7000, XD 7500



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



Close vial(s).

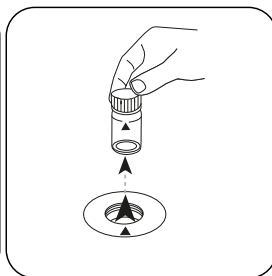


Place **sample vial** in the sample chamber. Pay attention to the positioning.

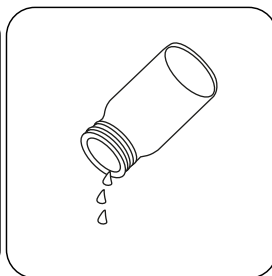


Zero

Perform Zero.

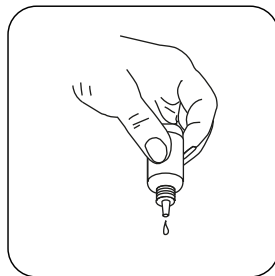


Remove the vial from the sample chamber.

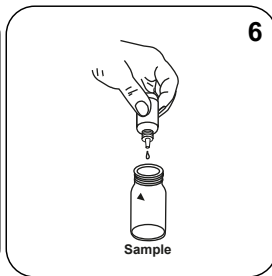


Empty vial.

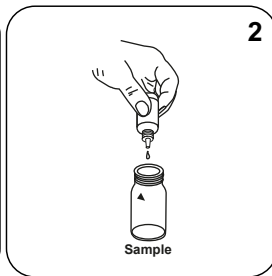
For devices that require **no ZERO measurement**, start here.



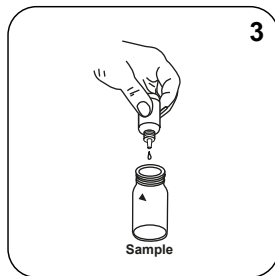
Hold cuvettes vertically and add equal drops by pressing slowly.



Add **6 drops DPD 1 Buffer Solution** to the sample vial.



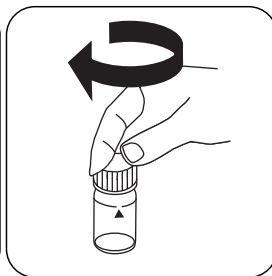
Add **2 drops DPD 1 Reagent Solution** to the sample vial.



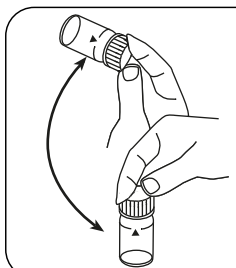
Add **3 drops DPD 3 Solution** to the sample vial.



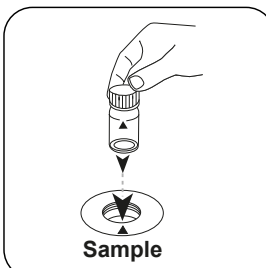
Fill up vial with **sample** to the **10 mL** mark.



Close vial(s).



Invert several times to mix the contents.

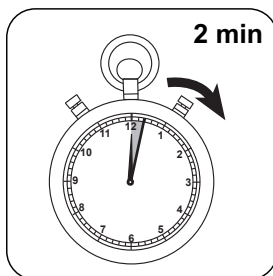


Place **sample vial** in the sample chamber. Pay attention to the positioning.

Test

Perform test.

EN



Wait for **2 minute(s)** reaction 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 differentiated with liquid reagent

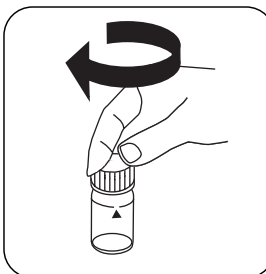
Select the method on the device.

In addition, choose the test: differentiated

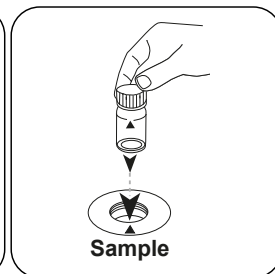
For this method, a ZERO measurement does not have to be carried out every time on the following devices: XD 7000, XD 7500



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



Close vial(s).

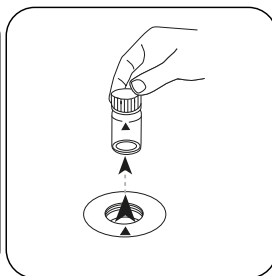


Place **sample vial** in the sample chamber. Pay attention to the positioning.

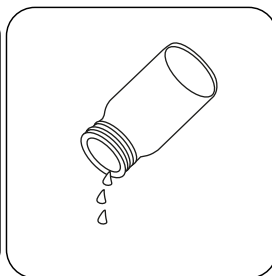


Zero

Perform Zero.

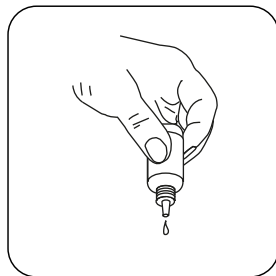


Remove the vial from the sample chamber.

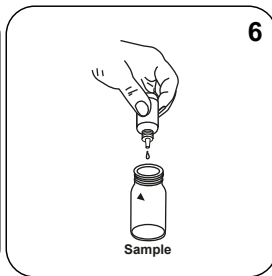


Empty vial.

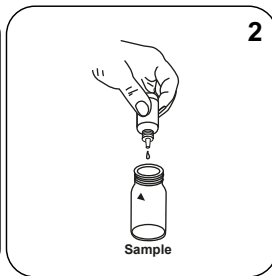
For devices that require **no ZERO measurement**, start here.



Hold cuvettes vertically and add equal drops by pressing slowly.



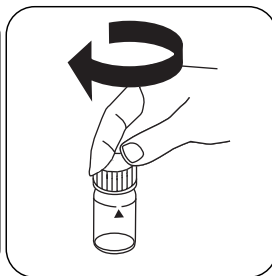
Add **6 drops DPD 1 Buffer Solution** to the sample vial.



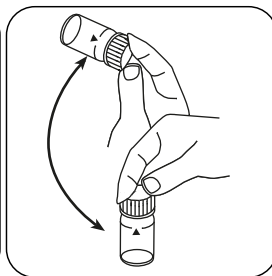
Add **2 drops DPD 1 Reagent Solution** to the sample vial.



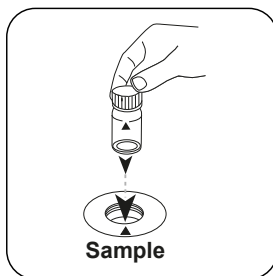
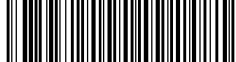
Fill up vial with **sample** to the **10 mL mark**.



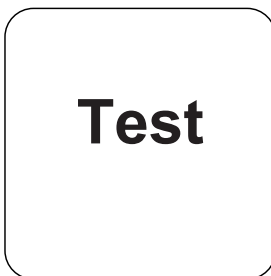
Close vial(s).



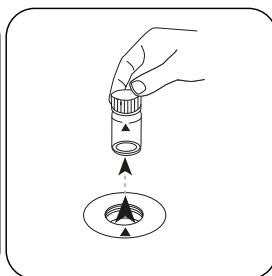
Invert several times to mix the contents.



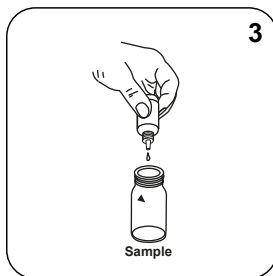
Place **sample vial** in the sample chamber. Pay attention to the positioning.



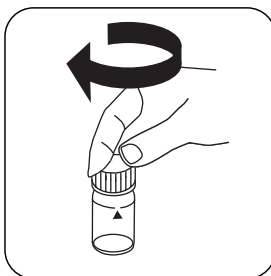
Perform test.



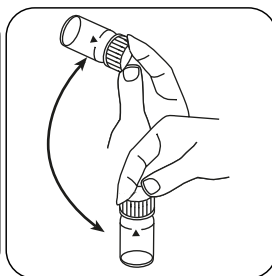
Remove the vial from the sample chamber.



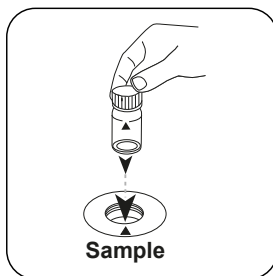
Add **3 drops DPD 3 Solution** to the **sample vial**.



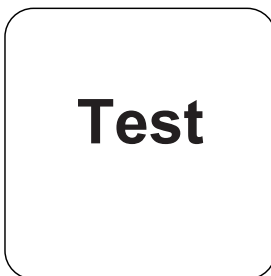
Close vial(s).



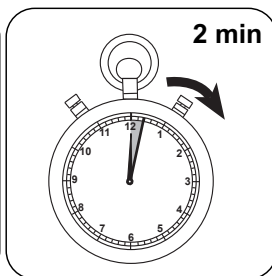
Invert several times to mix the contents.



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



Perform test.



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

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

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



Chemical Method

DPD

Appendix

EN

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 4 mg/L Chlorine, in the event of using fluid reagents, 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).

Interference	from / [mg/L]
CrO_4^{2-}	0,01
MnO_2	0,01

Conformity

EN ISO 7393-2

^{a)} determination of free, combined and total

**Chlorine HR T****M103****0.1 - 10 mg/L Cl₂ ^{a)}****CL10****DPD****Material**

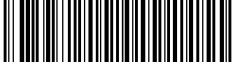
EN

Required material (partly optional):

Reagents	Packaging Unit	Part Number
DPD No. 1 HR	Tablet / 100	511500BT
DPD No. 1 HR	Tablet / 250	511501BT
DPD No. 1 HR	Tablet / 500	511502BT
DPD No. 3 HR	Tablet / 100	511590BT
DPD No. 3 HR	Tablet / 250	511591BT
DPD No. 3 HR	Tablet / 500	511592BT
Set DPD No. 1 HR/No. 3 HR 100 Pc. #	100 each	517791BT
Set DPD No. 1 HR/No. 3 HR 250 Pc. #	250 each	517792BT
DPD No. 1 High Calcium ^{a)}	Tablet / 100	515740BT
DPD No. 1 High Calcium ^{a)}	Tablet / 250	515741BT
DPD No. 1 High Calcium ^{a)}	Tablet / 500	515742BT
DPD No. 3 High Calcium ^{a)}	Tablet / 100	515730BT
DPD No. 3 High Calcium ^{a)}	Tablet / 250	515731BT
DPD No. 3 High Calcium ^{a)}	Tablet / 500	515732BT
DPD No.3 HR Evo	Tablet / 100	511920BT
DPD No. 3 HREvo	Tablet / 250	511921BT
DPD No. 3 HREvo	Tablet / 500	511922BT

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).

Notes

1. Evo tablets can be used as an alternative to the corresponding standard tablet (e.g. DPD No.3 Evo instead of DPD No.3).



Determination of free chlorine HR with tablet

Select the method on the device.

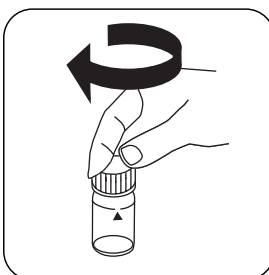
In addition, choose the test: free

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

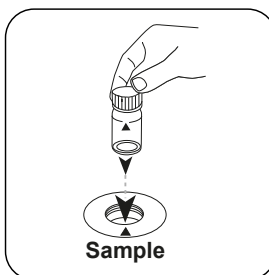
EN



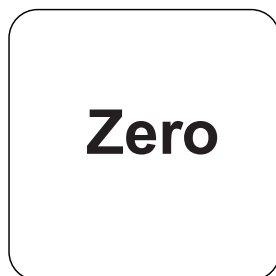
Fill 24 mm vial with **10 mL sample**.



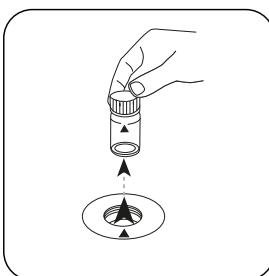
Close vial(s).



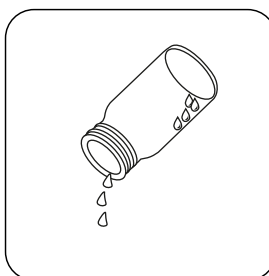
Place **sample vial** in the sample chamber. Pay attention to the positioning.



Perform Zero.

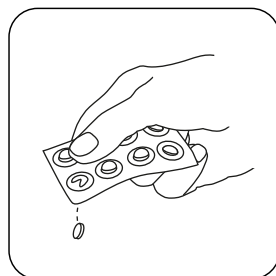


Remove the vial from the sample chamber.

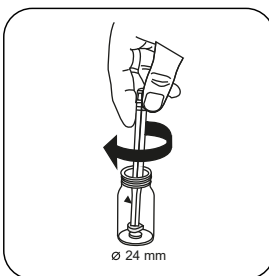


Empty vial except for a few drops.

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



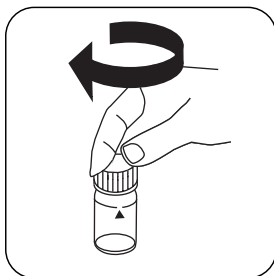
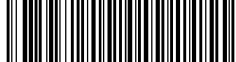
Add **DPD No. 1 HR tablet**.



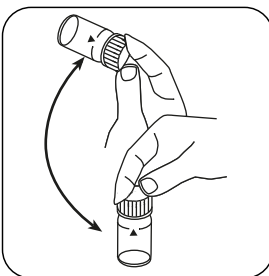
Crush tablet(s) by rotating slightly.



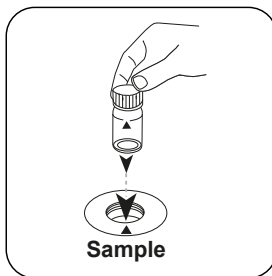
Fill up vial with **sample** to the **10 mL mark**.



Close vial(s).



Dissolve tablet(s) by inverting.



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

EN

Test

Perform test.

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

Determination of total Chlorine HR with tablet

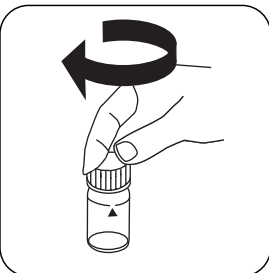
Select the method on the device.

In addition, choose the test: total

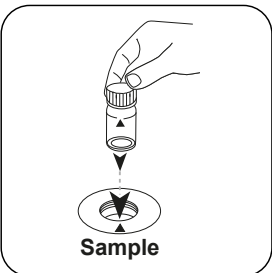
For this method, a ZERO measurement does not have to be carried out every time on the following devices: XD 7000, XD 7500



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



Close vial(s).

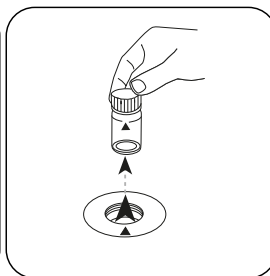


Place **sample vial** in the sample chamber. Pay attention to the positioning.

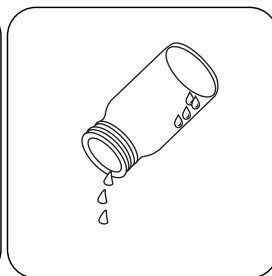


Zero

Perform Zero.

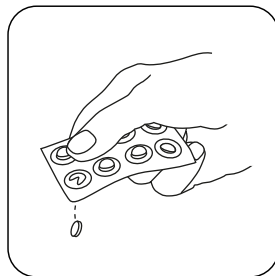


Remove the vial from the sample chamber.

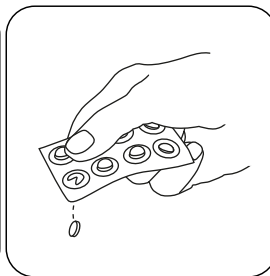


Empty vial except for a few drops.

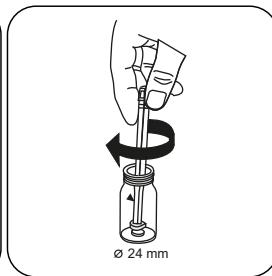
For devices that require **no ZERO measurement**, start here.



Add **DPD No. 1 HR tablet**.



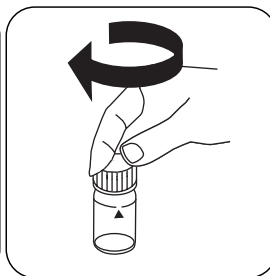
Add **DPD No. 3 HR tablet**.



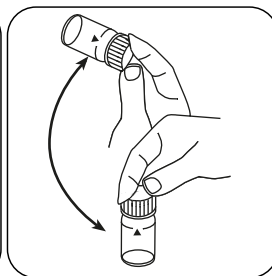
Crush tablet(s) by rotating slightly.



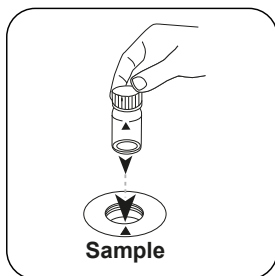
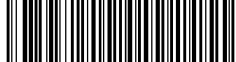
Fill up vial with **sample** to the **10 mL mark**.



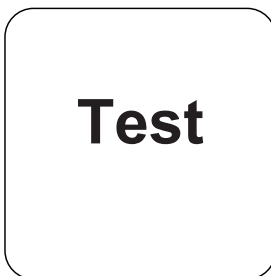
Close vial(s).



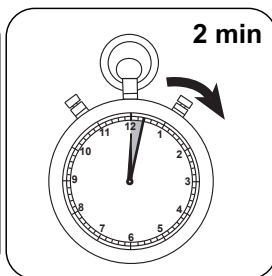
Dissolve tablet(s) by inverting.



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



Perform test.



Wait for **2 minute(s) reaction 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 tablet

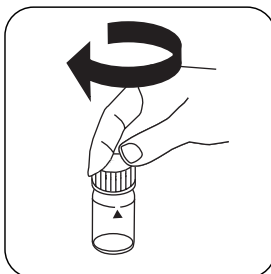
Select the method on the device.

In addition, choose the test: differentiated

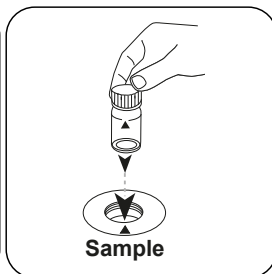
For this method, a ZERO measurement does not have to be carried out every time on the following devices: XD 7000, XD 7500



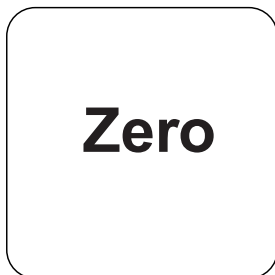
Fill 24 mm vial with **10 mL sample**.



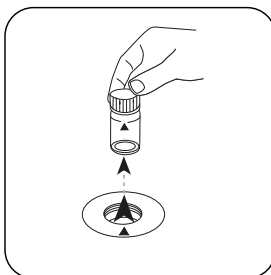
Close vial(s).



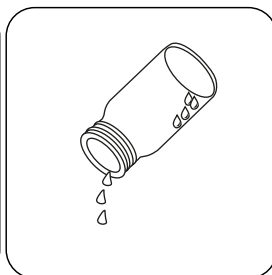
Place **sample vial** in the sample chamber. Pay attention to the positioning.



Perform Zero.



Remove the vial from the sample chamber.

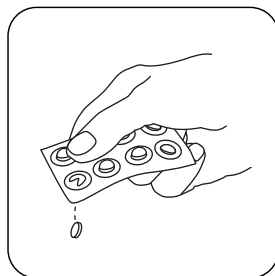
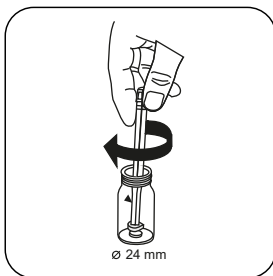


Empty vial except for a few drops.

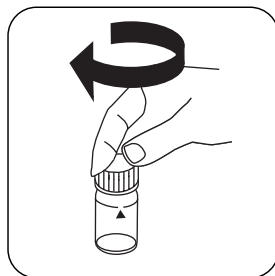
For devices that require **no ZERO measurement**, start here.



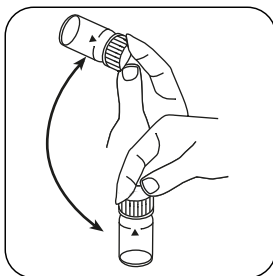
EN

Add **DPD No. 1 HR tablet**.

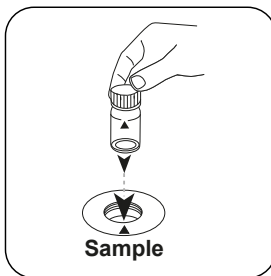
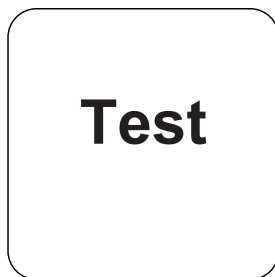
Crush tablet(s) by rotating slightly.

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

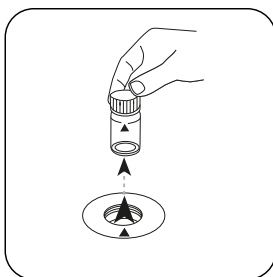
Close vial(s).



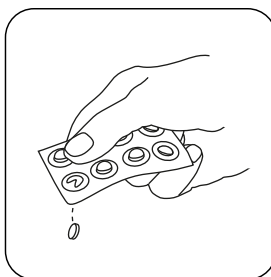
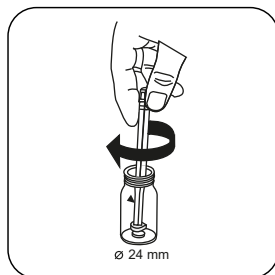
Dissolve tablet(s) by inverting.

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

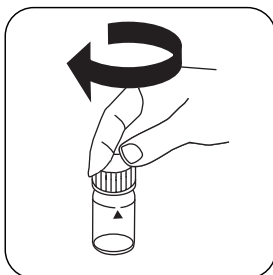
Perform test.



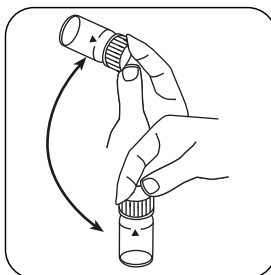
Remove the vial from the sample chamber.

Add **DPD No. 3 HR tablet**.

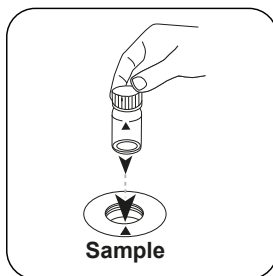
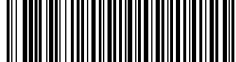
Crush tablet(s) by rotating slightly.



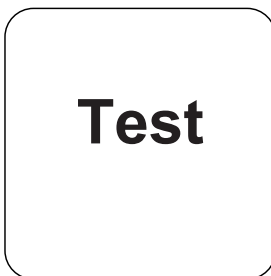
Close vial(s).



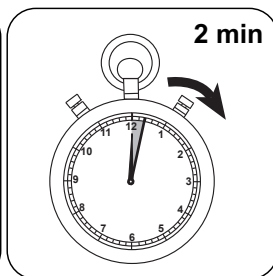
Dissolve tablet(s) by inverting.



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



Perform test.



Wait for **2 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.

EN



Chemical Method

DPD

Appendix

EN

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.
- The use of reagent tablets in samples with high Calcium content* and/or high conductivity* can lead to turbidity of the sample and therefore incorrect measurements. In this case, the alternative reagent tablet DPD No. 1 High Calcium and reagent tablet DPD No. 3 High Calcium should be used.
*it is not possible to give exact values, because the development of turbidity depends on the composition and nature of the sample.

Conformity

EN ISO 7393-2

^{a)} determination of free, combined and total | ^{a)} 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 | * including stirring rod, 10 cm

**Chlorine PP****M110****0.02 - 2 mg/L Cl₂ ^{a)}****CL2****DPD**

Material

EN

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

Available Standards

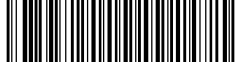
Title	Packaging Unit	Part Number
ValidCheck Chlorine 1,5 mg/l	1 pc.	48105510

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 with powder packs

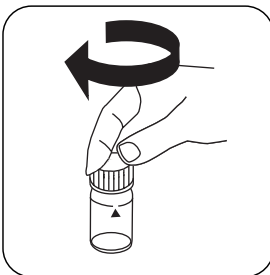
Select the method on the device.

In addition, choose the test: free

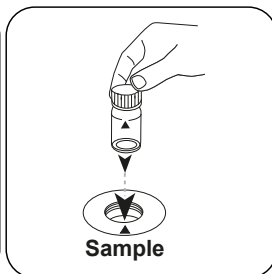
For this method, a ZERO measurement does not have to be carried out every time on the following devices: XD 7000, XD 7500



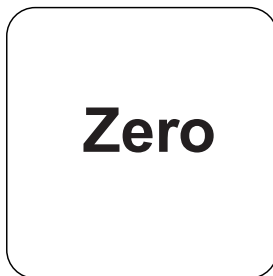
Fill 24 mm vial with **10 mL sample**.



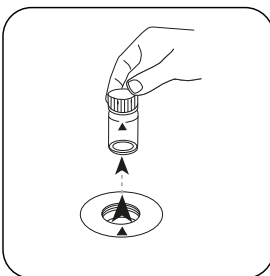
Close vial(s).



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

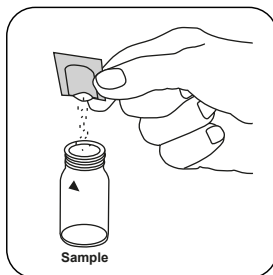


Perform Zero.

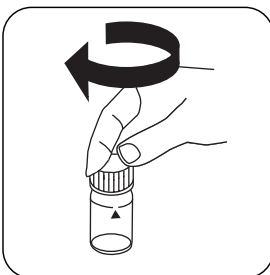


Remove the vial from the sample chamber.

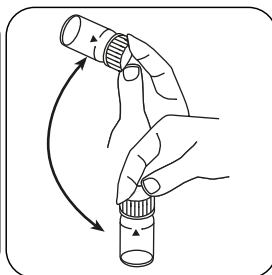
For devices that require **no ZERO measurement**, start here.



Add **Chlorine FREE-DPD/ F10 powder pack**.



Close vial(s).

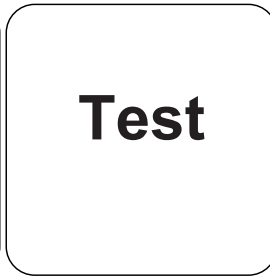
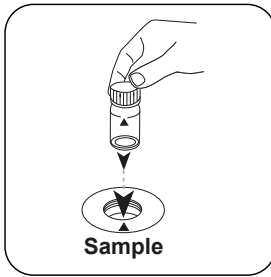


Invert several times to mix the contents (20 sec.).

EN



EN



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

Perform test.

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

Determination of totale Chlorine with powder packs

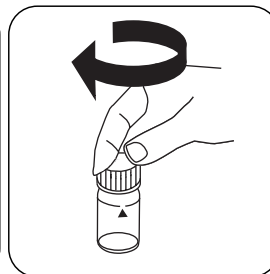
Select the method on the device.

In addition, choose the test: total

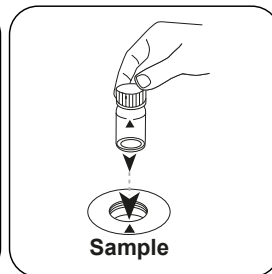
For this method, a ZERO measurement does not have to be carried out every time on the following devices: XD 7000, XD 7500



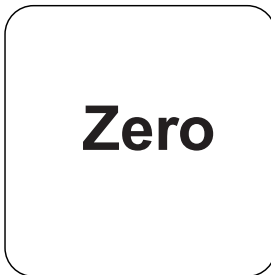
Fill 24 mm vial with **10 mL sample**.



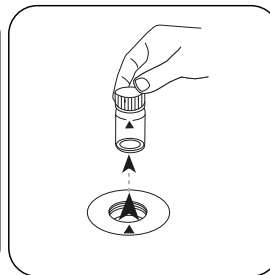
Close vial(s).



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

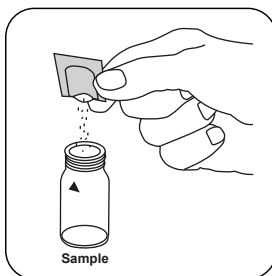


Perform Zero.

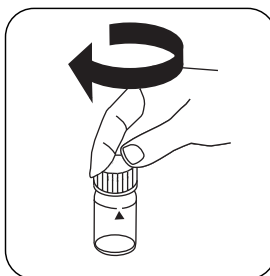


Remove the vial from the sample chamber.

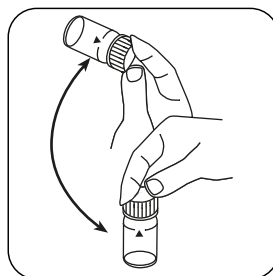
For devices that require **no ZERO measurement**, start here.



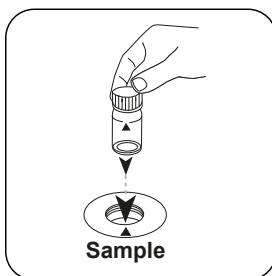
Add **Chlorine TOTAL-DPD/ F10 powder pack**.



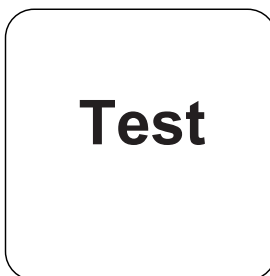
Close vial(s).



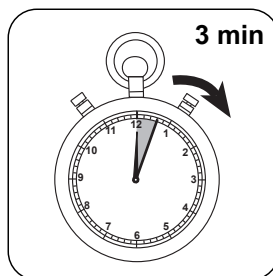
Invert several times to mix the contents (20 sec.).



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



Perform test.



Wait for **3 minute(s) reaction 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 differentiated with powder packs

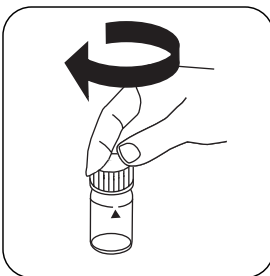
Select the method on the device.

In addition, choose the test: differentiated

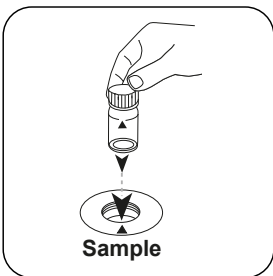
For this method, a ZERO measurement does not have to be carried out every time on the following devices: XD 7000, XD 7500



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



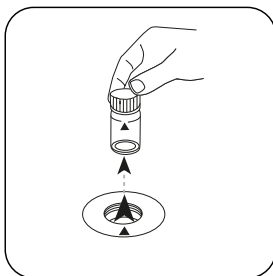
Close vial(s).



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



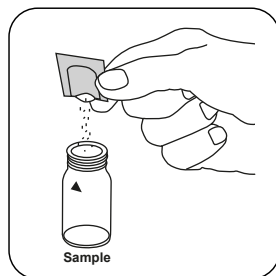
Zero



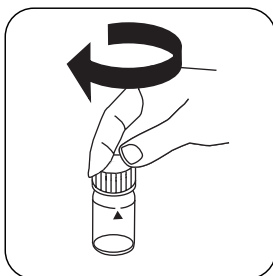
Perform Zero.

Remove the vial from the sample chamber.

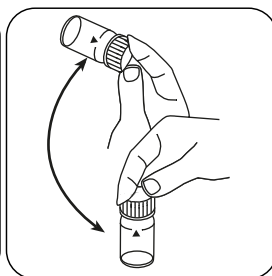
For devices that require **no ZERO measurement**, start here.



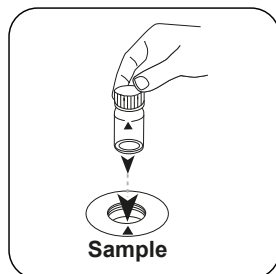
Add **Chlorine FREE-DPD/ F10 powder pack**.



Close vial(s).



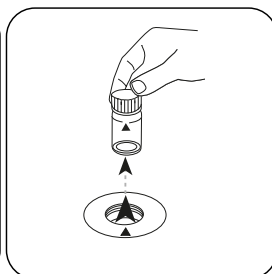
Invert several times to mix the contents (20 sec.).



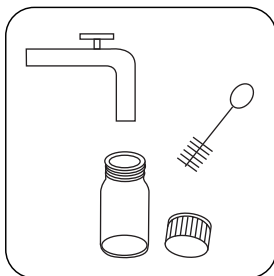
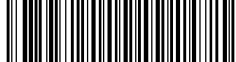
Place **sample vial** in the sample chamber. Pay attention to the positioning.

Test

Perform test.



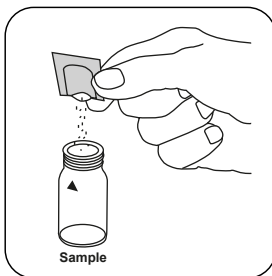
Remove the vial from the sample chamber.



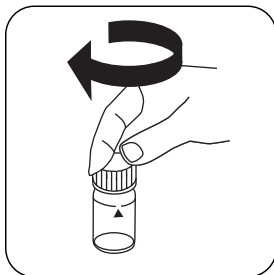
Thoroughly clean the vial and vial cap.



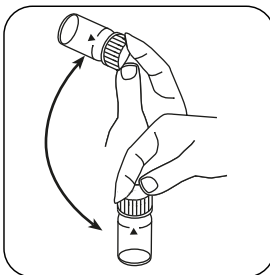
Fill 24 mm vial with **10 mL sample**.



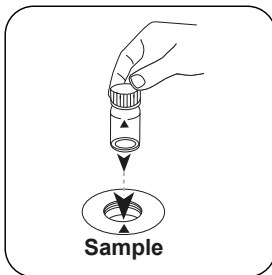
Add **TOTAL-DPD/F10 powder pack**.



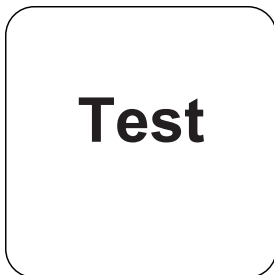
Close vial(s).



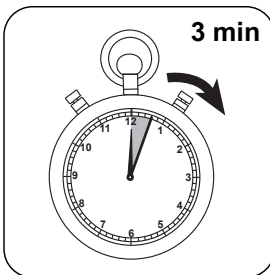
Invert several times to mix the contents (20 sec.).



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



Perform test.



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

EN

Interferences

Persistent Interferences

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

Removeable Interferences

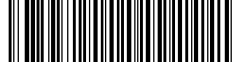
- Interference from Copper and Iron (III) are eliminated by the addition of EDTA.
- Concentrations above 2 mg/L Chlorine, in the event of using Powder Packs, can lead to results within the measuring range of up to 0 mg/L. In this case, the sample must be diluted with chlorine-free water. 10 ml of the diluted sample should be mixed with the reagent and the measurement taken again (plausibility test).

Interference	from / [mg/L]
CrO_4^{2-}	0,01
MnO_2	0,01

Conformity

EN ISO 7393-2

^{a)} determination of free, combined and total



Chlorine HR 2 PP

M112-2
0.1 - 10 mg/L Cl₂
DPD

EN

Material

Required material (partly optional):

Reagents	Packaging Unit	Part Number
VARIO Chlorine Free DPD F25	Powder / 100 pc.	530110
VARIO Chlorine Total DPD F25	Powder / 100 pc.	530130
Chlorine Free DPD F10	Powder / 100 pc.	530100
Chlorine Total DPD F10	Powder / 100 pc.	530120

Sampling

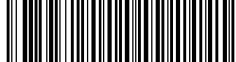
1. When preparing the sample, Chlorine outgassing, e.g. through the pipette or shaking, must be avoided.
2. The analysis must take place immediately after taking the sample.

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).

Notes

1. To perform the test in the MD50/150, a 24 mm Ø cuvette is used instead of the multicuvette.

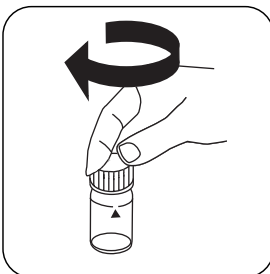


Determination of free chlorine HR 2 with powder packs (MD50/MD150)

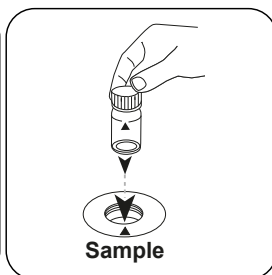
Select the method on the device.



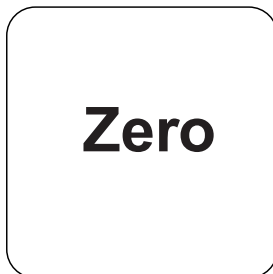
Fill 24 mm vial with **10 mL sample**.



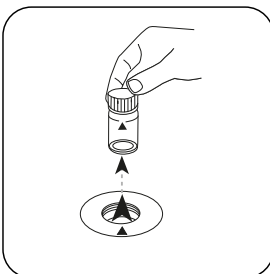
Close vial(s).



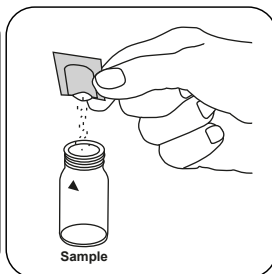
Place **sample vial** in the sample chamber. Pay attention to the positioning.



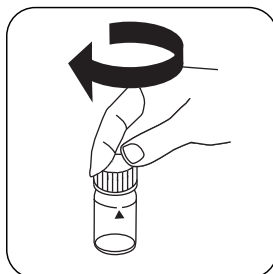
Perform Zero.



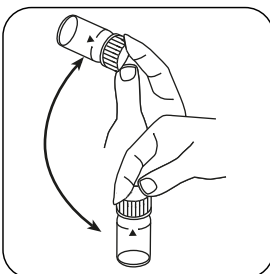
Remove the vial from the sample chamber.



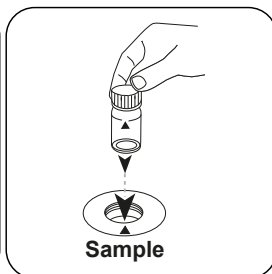
Add **1 Vario Chlorine Free / F25 or 2 Chlorine Total / F10 powder pack**.



Close vial(s).

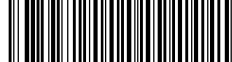


Invert several times to mix the contents (20 sec.).



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

EN



Test

EN

Perform test.

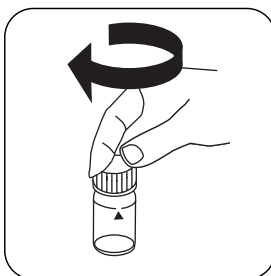
The result in mg/L chlorine appears on the display.

Determination of totale chlorine HR 2 with powder packs (MD50/MD150)

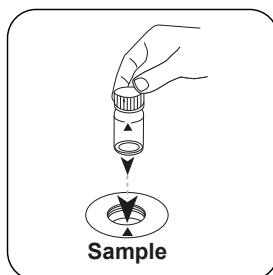
Select the method on the device.



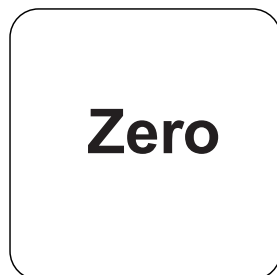
Fill 24 mm vial with **10 mL sample**.



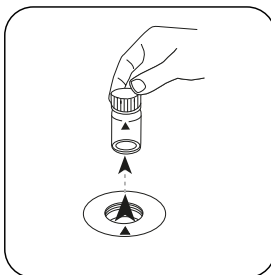
Close vial(s).



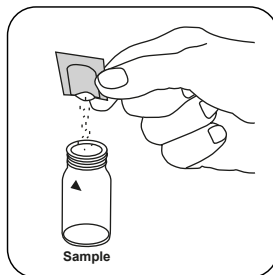
Place **sample vial** in the sample chamber. Pay attention to the positioning.



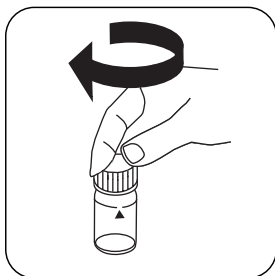
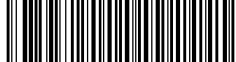
Perform Zero.



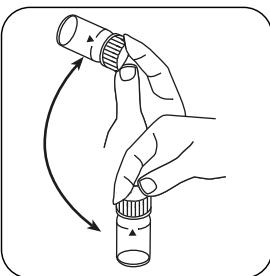
Remove the vial from the sample chamber.



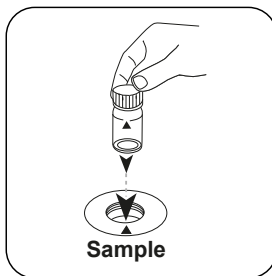
Add **1 Vario Chlorine Free / F25** or **2 Chlorine Total / F10** powder pack.



Close vial(s).

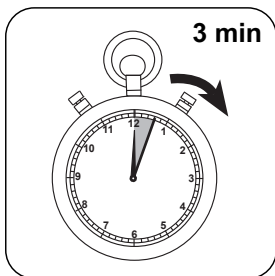


Invert several times to mix the contents (20 sec.).

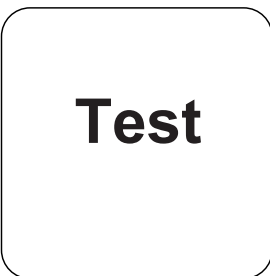


Place **sample vial** in the sample chamber. Pay attention to the positioning.

EN

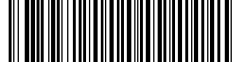


Wait for **3 minute(s) reaction time**.



Perform test.

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



Chemical Method

DPD

Appendix

EN

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 10 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. 5 ml of the diluted sample should be mixed with the reagent and the measurement taken again (plausibility test).

Conformity

EN ISO 7393-2

**CyA HR T****M161****10 - 200 mg/L CyA****CyAH****Melamine**

EN

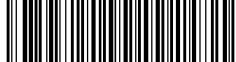
Material

Required material (partly optional):

Reagents	Packaging Unit	Part Number
CyA HR-Test	Tablet / 100	511430BT
CyA HR-Test	Tablet / 250	511431BT

Notes

1. Cyanuric acid causes an extremely fine distributed turbidity with a milky appearance. Individual particles are not attributable to the presence of cyanuric acid.
2. After addition of the CyA-HR-Test tablet, it dissolves automatically within two minutes.



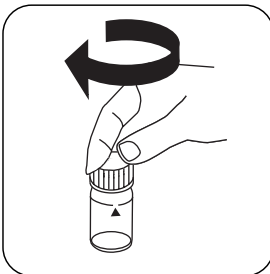
Determination of Cyanuric Acid Test with Tablet

Select the method on the device.

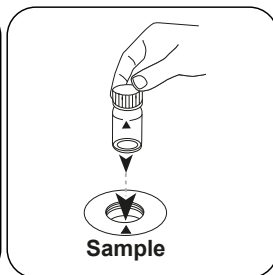
For this method, a ZERO measurement does not have to be carried out every time on the following devices: XD 7000, XD 7500



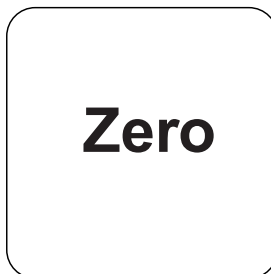
Fill 24 mm vial with **10 mL sample**.



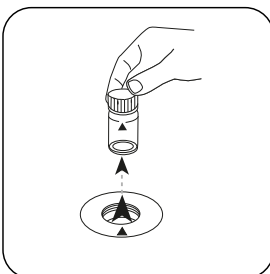
Close vial(s).



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

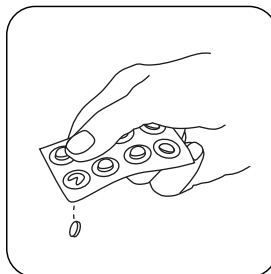


Perform Zero.

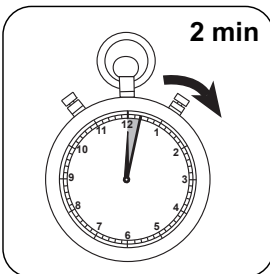


Remove the vial from the sample chamber.

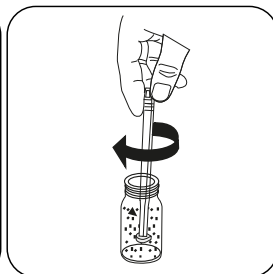
For devices that require **no ZERO measurement**, start here.



Add **CyA HR Test tablet**.

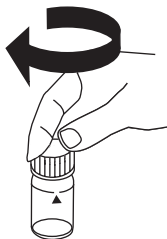


Wait for **2 minute(s) reaction time**.

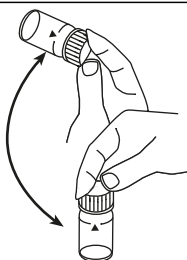


Dissolve the tablets using a clean stirring rod.

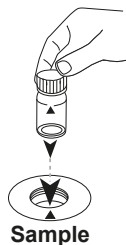
EN



Close vial(s).



Invert several times to mix the contents (do not shake).

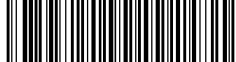


Place **sample vial** in the sample chamber. Pay attention to the positioning.

Test

Perform test.

The result in mg/L Cyanuric Acid appears on the display.



Chemical Method

Melamine

Interferences

Persistent Interferences

1. Undissolved particles may lead to higher results.

EN

Method Validation

Limit of Detection	2.07 mg/L
Limit of Quantification	6.2 mg/L
End of Measuring Range	200 mg/L
Sensitivity	77.47 mg/L / Abs
Confidence Intervall	4.6 mg/L
Standard Deviation	4.78 mg/L
Variation Coefficient	4.55 %

**pH-value T****M330****6.5 - 8.4 pH****PH****Phenol Red**

EN

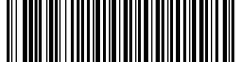
Material

Required material (partly optional):

Reagents	Packaging Unit	Part Number
Phenol Red Photometer	Tablet / 100	511770BT
Phenol Red Photometer	Tablet / 250	511771BT
Phenol Red Photometer	Tablet / 500	511772BT

Notes

1. For photometric determination of pH values only use PHENOL RED tablets in black printed foil pack and marked with PHOTOMETER.



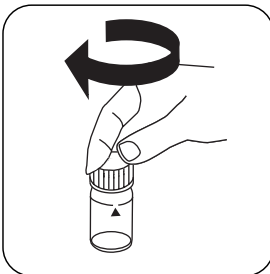
Determination of pH-value with Tablet

Select the method on the device.

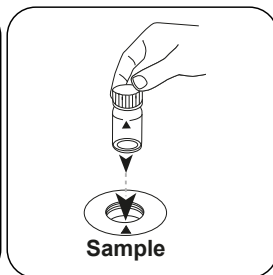
For this method, a ZERO measurement does not have to be carried out every time on the following devices: XD 7000, XD 7500



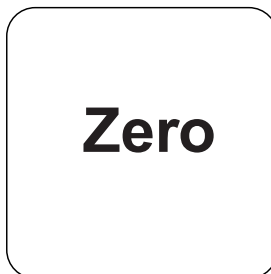
Fill 24 mm vial with **10 mL sample**.



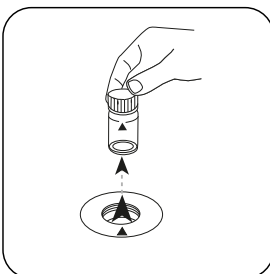
Close vial(s).



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

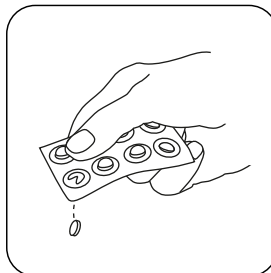


Perform Zero.

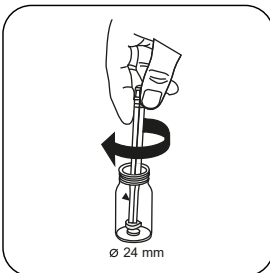


Remove the vial from the sample chamber.

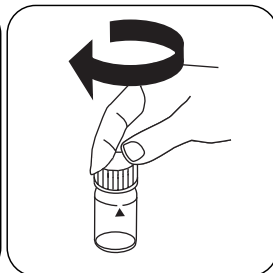
For devices that require **no ZERO measurement**, start here.



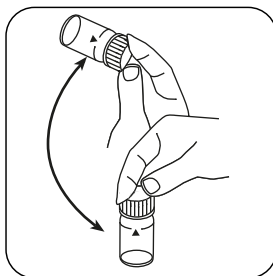
Add **PHENOL RED PHOTOMETER** tablet.



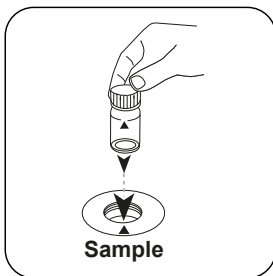
Crush tablet(s) by rotating slightly.



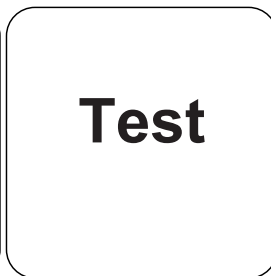
Close vial(s).



Dissolve tablet(s) by inverting.

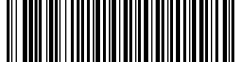


Place **sample vial** in the sample chamber. Pay attention to the positioning.



Perform test.

The result in pH value appears on the display.



Chemical Method

Phenol Red

Appendix

Interferences

EN

Persistent Interferences

1. Water samples with little Carbonate hardness* can lead to false pH values.
* $K_{S4.3} < 0.7 \text{ mmol/l} \triangleq \text{total alkalinity} < 35 \text{ mg/L CaCO}_3$.

Removeable Interferences

1. pH values below 6.5 and above 8.4 can produce results inside the measuring range. A plausibility test (pH-meter) is recommended.
2. Salt error
For salt concentrations below 2 g/L, no significant error, is expected due to the salt concentration of the reagent tablet. For higher salt concentrations the measurement values have to be adjusted as follows:

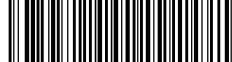
Salt content per sample in g/L	30 (seawater)	60	120	180
Correction	-0.15 ¹⁾	-0.21 ²⁾	-0.26 ²⁾	-0.29 ²⁾

¹⁾ according to Kolthoff (1922)

²⁾ according to Parson and Douglas (1926)

Bibliography

Colorimetric Chemical Analytical Methods, 9th Edition, London



pH value L

M331

6.5 - 8.4 pH

PH

Phenol Red

EN

Material

Required material (partly optional):

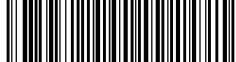
Reagents	Packaging Unit	Part Number
Phenol Red Solution	15 mL	471040
Phenol Red Solution	100 mL	471041
Phenol Red Solution in 6-pack	1 pc.	471046

Preparation

1. Due to differing drop sizes results can show a discrepancy in accuracy by comparison with tablets.
This can be minimised by using a pipette (0.18 ml equivalent to 6 drops).

Notes

1. After use, ensure the cuvette is once again closed with the same-coloured screw caps.
2. Reagents are to be stored in the cool at +6 °C to +10 °C.



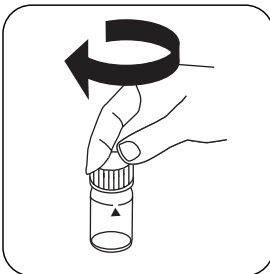
Determination of pH-value with liquid reagent

Select the method on the device.

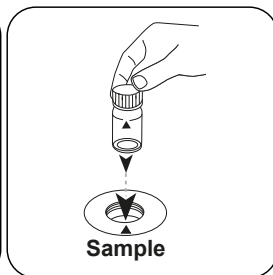
For this method, a ZERO measurement does not have to be carried out every time on the following devices: XD 7000, XD 7500



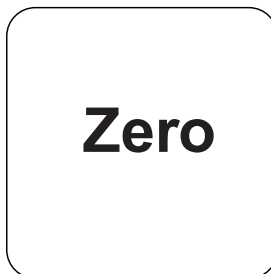
Fill 24 mm vial with **10 mL sample**.



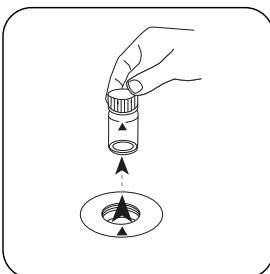
Close vial(s).



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

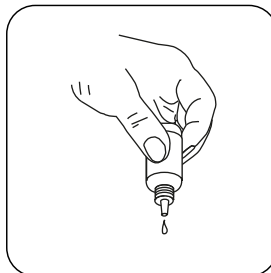


Perform Zero.

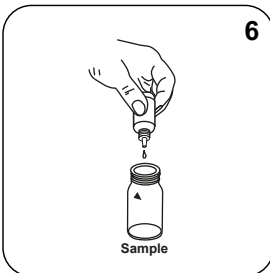


Remove the vial from the sample chamber.

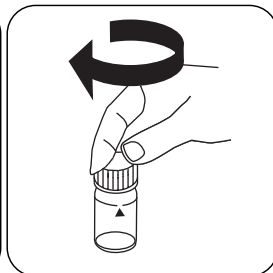
For devices that require **no ZERO measurement**, start here.



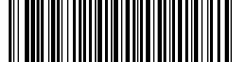
Hold cuvettes vertically and add equal drops by pressing slowly.



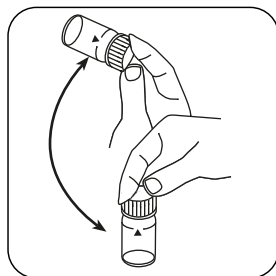
Add **6 drops PHENOL Red-Lösung** to the **sample vial**.



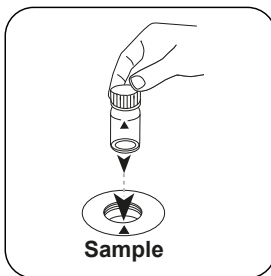
Close vial(s).



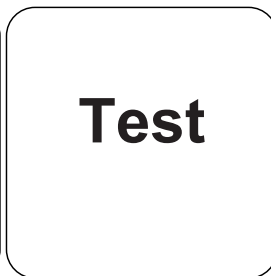
EN



Invert several times to mix the contents.

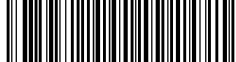


Place **sample vial** in the sample chamber. Pay attention to the positioning.



Perform test.

The result in pH value appears on the display.



Chemical Method

Phenol Red

Appendix

Interferences

EN

Removeable Interferences

1. Salt error Correction of test results (average values) for samples with salt contents of:

2.	Salt content of the sample	30 g/L (seawater)	60 g/L	120 g/L	180 g/L
	Correction	-0.15 ¹⁾	-0.21 ²⁾	- 0.26 ²⁾	- 0.29 ²⁾

¹⁾ according to Kolthoff (1922)

²⁾ according to Parson and Douglas (1926)

3. When testing chlorinated water the residual chlorine contents can influence the colour reaction of the liquid reagent. This can be avoided by adding a small crystal of Sodiumthiosulphate ($\text{Na}_2\text{S}_2\text{O}_3 \cdot 5 \text{H}_2\text{O}$) to the sample solution before adding the PHENOL RED solution.

Bibliography

Colorimetric Chemical Analytical Methods, 9th Edition, London

KS4.3 T / 20



Methoden Name

Methodennummer

Barcode zur
Methodenerkennung

Messbereich

$K_{S4.3} T$ 20
0,1 - 4 mmol/l $K_{S4.3}$ S:4.3
Säure / Indikator

Displayanzeige
im MD 100 MD 110
/ MD 200

Chemische Methode

Instrumentenspezifische Informationen

Der Test kann auf den folgenden Geräten durchgeführt werden. Zusätzlich sind die benötigte Küvette und der Absorptionsbereich der Photometer angegeben.

Geräte	Küvette	λ	Messbereich
MD 200, MD 600, MD 610, MD 640, MultiDirect, PM 620, PM 630	ø 24 mm	610 nm	0,1 - 4 mmol/l $K_{S4.3}$
SpectroDirect, XD 7000, XD 7500	ø 24 mm	615 nm	0,1 - 4 mmol/l $K_{S4.3}$

Material

Benötigtes Material (zum Teil optional):

Reagenzien	Form/Menge	Bestell-Nr.
Alka-M-Photometer	Tablette / 100	513210BT
Alka-M-Photometer	Tablette / 250	513211BT

Anwendungsbereich

- Abwasserbehandlung
- Trinkwasseraufbereitung
- Rohwasserbehandlung

Anmerkungen

- Die Begriffe Alkalität-m, m-Wert, Gesamtalkalität und Säurekapazität $K_{S4.3}$ sind identisch.
- Die exakte Einhaltung des Probevolumens von 10 ml ist für die Genauigkeit des Analyseergebnisses entscheidend.

Sprachkürzel nach
ISO 639-1

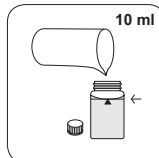
Revisionsstand

DE Methodenhandbuch 01/20

Durchführung der
Messung**Durchführung der Bestimmung Säurekapazität $K_{s4.3}$ mit Tablette**

Die Methode im Gerät auswählen.

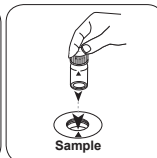
Für diese Methode muss bei folgenden Geräten keine ZERO-Messung durchgeführt werden: XD 7000, XD 7500



24-mm-Küvette mit **10 ml Probe** füllen.

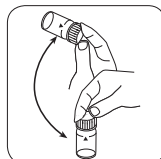


Küvette(n) verschließen.

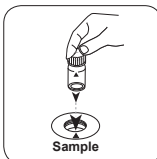


Die **Probenküvette** in den Messschacht stellen. Positionierung beachten.

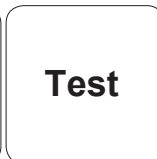
• • •



Tablette(n) durch Umschwenken lösen.



Die **Probenküvette** in den Messschacht stellen. Positionierung beachten.



Taste **TEST** (XD: **START**) drücken.

In der Anzeige erscheint das Ergebnis als Säurekapazität $K_{s4.3}$.

Test

**Chlor T****M100****0,01 - 6,0 mg/L Cl₂ ^{a)}****CL6****DPD****Material**

DE

Benötigtes Material (zum Teil optional):

Reagenzien	Form/Menge	Bestell-Nr.
DPD No. 1	Tablette / 100	511050BT
DPD No. 1	Tablette / 250	511051BT
DPD No. 1	Tablette / 500	511052BT
DPD No. 3	Tablette / 100	511080BT
DPD No. 3	Tablette / 250	511081BT
DPD No. 3	Tablette / 500	511082BT
DPD No. 1 High Calcium ^{a)}	Tablette / 100	515740BT
DPD No. 1 High Calcium ^{a)}	Tablette / 250	515741BT
DPD No. 1 High Calcium ^{a)}	Tablette / 500	515742BT
DPD No. 3 High Calcium ^{a)}	Tablette / 100	515730BT
DPD No. 3 High Calcium ^{a)}	Tablette / 250	515731BT
DPD No. 3 High Calcium ^{a)}	Tablette / 500	515732BT
DPD No. 4	Tablette / 100	511220BT
DPD No. 4	Tablette / 250	511221BT
DPD No. 4	Tablette / 500	511222BT
DPD No. 3 Evo	Tablette / 100	511420BT
DPD No. 3 Evo	Tablette / 250	511421BT
DPD No. 3 Evo	Tablette / 500	511422BT
DPD No. 4 Evo	Tablette / 100	511970BT
DPD No. 4 Evo	Tablette / 250	511971BT
DPD No. 4 Evo	Tablette / 500	511972BT

Verfügbare Standards

Titel	Verpackungseinheit	Bestell-Nr.
ValidCheck Chlor 1,5 mg/L	1 St.	48105510



Probenahme

1. Bei der Probenvorbereitung muss das Ausgasen von Chlor, z.B. durch Pipettieren und Schütteln, vermieden werden.
2. Die Analyse muss unmittelbar nach der Probenahme erfolgen.

Vorbereitung

1. Reinigung der Küvetten:
Da viele Haushaltsreiniger (z.B. Geschirrspülmittel) reduzierende Stoffe enthalten, kann es bei der Bestimmung von Chlor zu Minderbefunden kommen. Um diesen Messfehler auszuschließen, sollten die Glasgeräte chlorzehrungsfrei sein. Dazu werden die Glasgeräte für eine Stunde unter Natriumhypochloritlösung (0,1 g/L) aufbewahrt und danach gründlich mit VE-Wasser (Vollentsalztes Wasser) gespült.
2. Für die Einzelbestimmung von freiem Chlor und Gesamtchlor ist es sinnvoll, jeweils einen eigenen Satz Küvetten zu verwenden (siehe EN ISO 7393-2, Abs. 5.3).
3. Die DPD-Farbentwicklung erfolgt bei einem pH-Wert von 6,2 bis 6,5. Die Reagenzien enthalten daher einen Puffer zur pH-Wert Einstellung. Stark alkalische oder saure Wässer müssen jedoch vor der Analyse in einen pH-Bereich zwischen 6 und 7 gebracht werden (mit 0,5 mol/l Schwefelsäure bzw. 1 mol/l Natronlauge).

Anmerkungen

1. EVO-Tabletten können alternativ zu der entsprechenden Standard-Tablette verwendet werden (z.B. DPD Nr. 3 EVO anstatt DPD Nr. 3).



Durchführung der Bestimmung freies Chlor mit Tablette

Die Methode im Gerät auswählen.

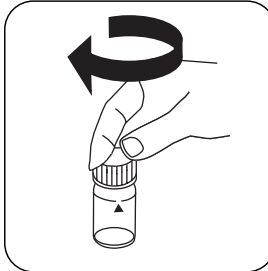
Wählen Sie zudem die Bestimmung: frei

Für diese Methode muss bei folgenden Geräten nicht jedes mal eine ZERO-Messung durchgeführt werden: XD 7000, XD 7500

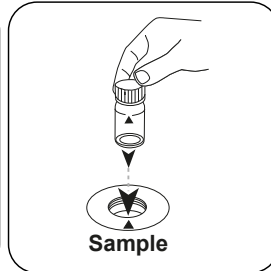
DE



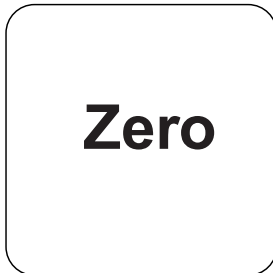
24-mm-Küvette mit **10 mL Probe** füllen.



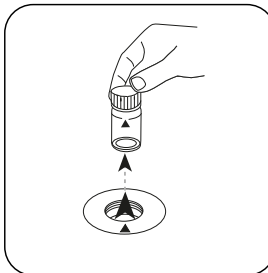
Küvette(n) verschließen.



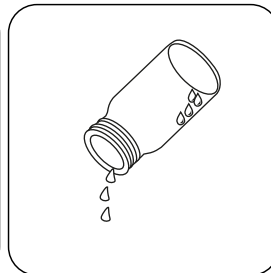
Die **Probeküvette** in den Messschacht stellen. Positionierung beachten.



Zero durchführen.

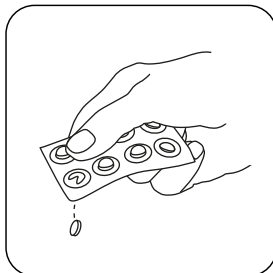


Küvette aus dem Messschacht nehmen.

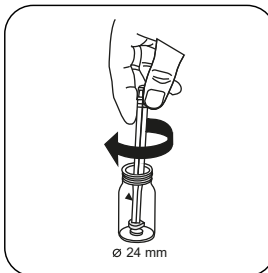


Die Küvette bis auf einige Tropfen entleeren.

Bei Geräten, die **keine ZERO-Messung** erfordern, **hier beginnen**.



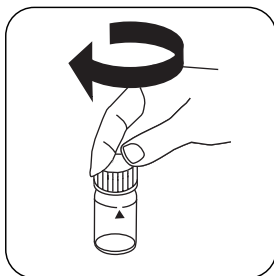
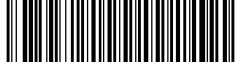
Eine **DPD No. 1 Tablette** zugeben.



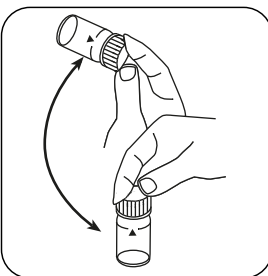
Tablette(n) unter leichter Drehung zerdrücken.



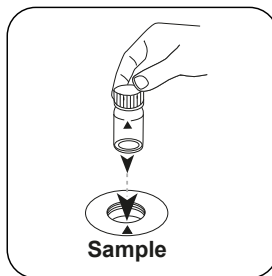
Küvette bis zur **10-mL-Marke** mit der **Probe** auffüllen.



Küvette(n) verschließen.



Tablette(n) durch Umschwenken lösen.



Die **Probenküvette** in den Messschacht stellen. Positionierung beachten.

Test

Test durchführen.

In der Anzeige erscheint das Ergebnis in mg/L freies Chlor.

Durchführung der Bestimmung gesamt Chlor mit Tablette

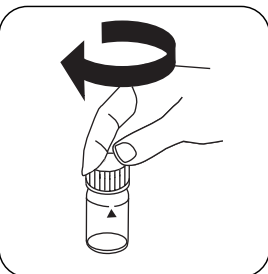
Die Methode im Gerät auswählen.

Wählen Sie zudem die Bestimmung: gesamt

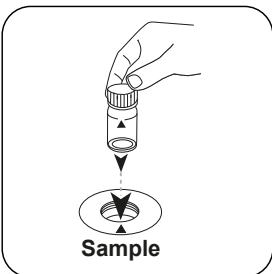
Für diese Methode muss bei folgenden Geräten nicht jedes mal eine ZERO-Messung durchgeführt werden: XD 7000, XD 7500



24-mm-Küvette mit **10 mL Probe** füllen.



Küvette(n) verschließen.

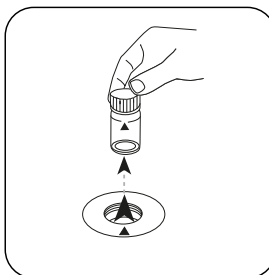


Die **Probenküvette** in den Messschacht stellen. Positionierung beachten.

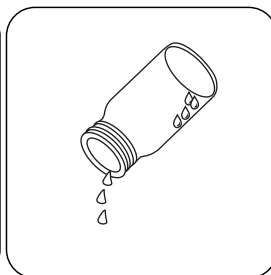


Zero

Zero durchführen.

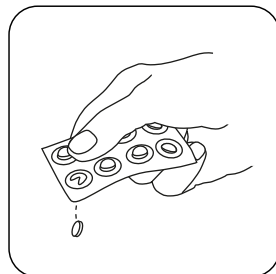


Küvette aus dem Messschacht nehmen.

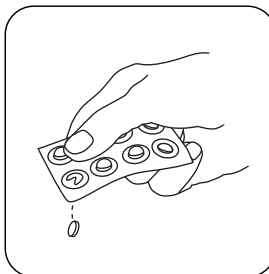


Die Küvette bis auf einige Tropfen entleeren.

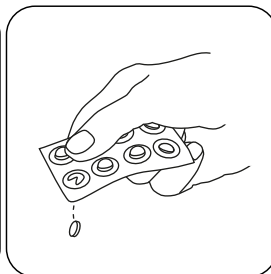
Bei Geräten, die **keine ZERO-Messung** erfordern, **hier beginnen**.



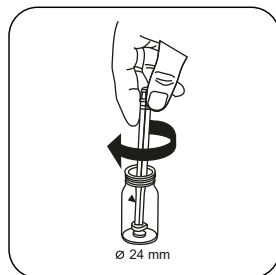
Eine **DPD No. 1** Tablette zugeben.



Eine **DPD No. 3** Tablette zugeben.



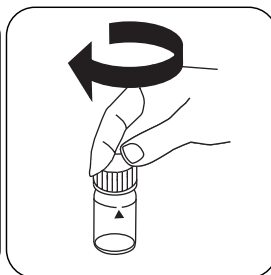
Alternativ zur DPD Nr. 1 und Nr. 3 Tablette kann eine DPD Nr. 4 Tablette zugegeben werden.



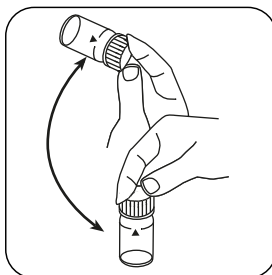
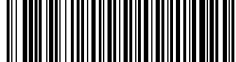
Tablette(n) unter leichter Drehung zerdrücken.



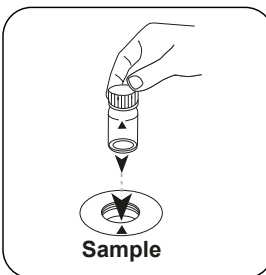
Küvette bis zur **10-mL-Marke** mit der **Probe** auffüllen.



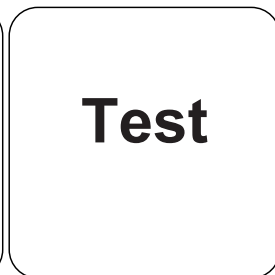
Küvette(n) verschließen.



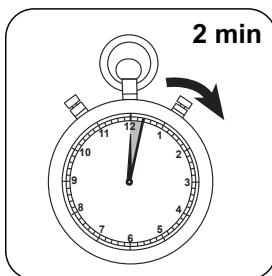
Tablette(n) durch Umschwenken lösen.



Die **Probenküvette** in den Messschacht stellen. Positionierung beachten.



Test durchführen.



2 Minute(n) Reaktionszeit abwarten.

Nach Ablauf der Reaktionszeit erfolgt automatisch die Messung.

In der Anzeige erscheint das Ergebnis in mg/L Gesamtchlor.

Durchführung der Bestimmung differenziertes Chlor mit Tablette

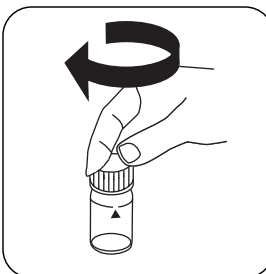
Die Methode im Gerät auswählen.

Wählen Sie zudem die Bestimmung: differenziert

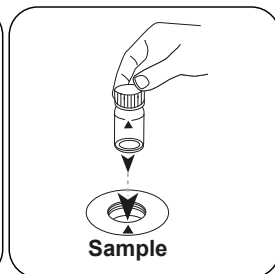
Für diese Methode muss bei folgenden Geräten nicht jedes mal eine ZERO-Messung durchgeführt werden: XD 7000, XD 7500



24-mm-Küvette mit **10 mL Probe** füllen.



Küvette(n) verschließen.

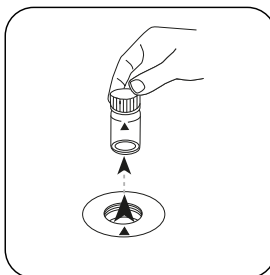


Die **Probenküvette** in den Messschacht stellen. Positionierung beachten.

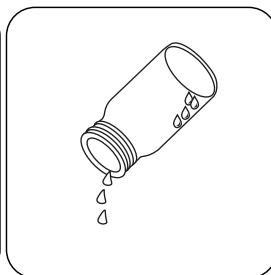


Zero

Zero durchführen.

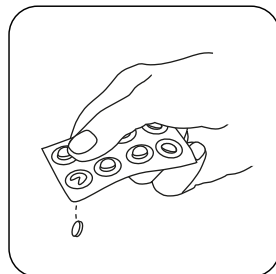


Küvette aus dem Messschacht nehmen.

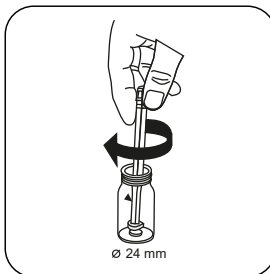


Die Küvette bis auf einige Tropfen entleeren.

Bei Geräten, die **keine ZERO-Messung** erfordern, **hier beginnen**.



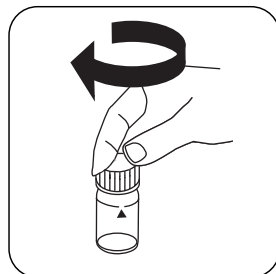
Eine **DPD No. 1 Tablette** zugeben.



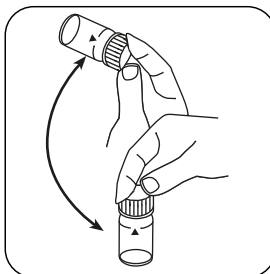
Tablette(n) unter leichter Drehung zerdrücken.



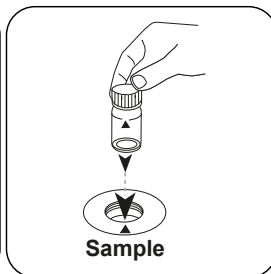
Küvette bis zur **10-mL-Marke** mit der **Probe** auffüllen.



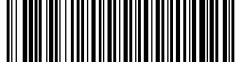
Küvette(n) verschließen.



Tablette(n) durch Umschwenken lösen.

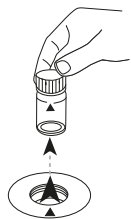


Die **Probeküvette** in den Messschacht stellen. Positionierung beachten.

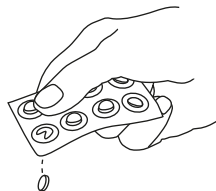


Test

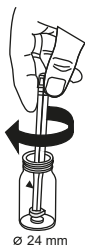
Test durchführen.



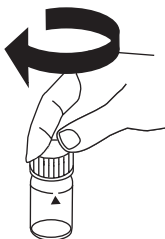
Küvette aus dem Messschacht nehmen.



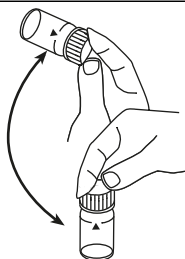
Eine **DPD No. 3** Tablette zugeben.



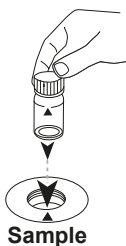
Tablette(n) unter leichter Drehung zerdrücken.



Küvette(n) verschließen.



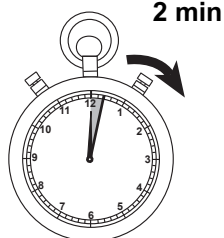
Tablette(n) durch Umschwenken lösen.



Die **Probenküvette** in den Messschacht stellen. Positionierung beachten.

Test

Test durchführen.



2 Minute(n) Reaktionszeit abwarten.

Nach Ablauf der Reaktionszeit erfolgt automatisch die Messung.

In der Anzeige erscheint das Ergebnis in mg/L freies Chlor, mg/l gebundenes Chlor, mg/l Gesamtchlor.



Chemische Methode

DPD

Appendix

DE

Störungen

Permanente Störungen

- Alle in den Proben vorhandenen Oxidationsmittel reagieren wie Chlor, was zu Mehrbefunden führt.

Ausschließbare Störungen

- Störungen durch Kupfer und Eisen(III) sind durch EDTA zu beseitigen.
- Bei Proben mit hohem Calciumgehalt* und/oder hoher Leitfähigkeit* kann es bei der Verwendung der Reagenztabletten zu einer Eintrübung der Probe und damit verbundener Fehlmessung kommen. In diesem Fall sind alternativ die Reagenztablette DPD No. 1 High Calcium und die Reagenztablette DPD No. 3 High Calcium zu verwenden.
*exakte Werte können nicht angegeben werden, da die Entstehung einer Trübung von Art und Zusammensetzung des Probenwassers abhängt.
- Konzentrationen über 10 mg/L Chlor, bei Verwendung von Tabletten, können zu Ergebnissen innerhalb des Messbereichs bis hin zu 0 mg/L führen. Bei einer zu hohen Chlorkonzentration muss die Probe mit chlorfreiem Wasser verdünnt werden. 10 ml der verdünnten Probe werden mit Reagenz versetzt und die Messung wiederholt (Plausibilitätstest).

Störung	Stört ab / [mg/L]
CrO_4^{2-}	0.01
MnO_2	0.01

Konform

EN ISO 7393-2

^{a)} Bestimmung von frei, gebunden, gesamt möglich | ^{a)} Hilfsreagenz, alternativ zur DPD No. 1 / No. 3 bei Eintrübungen der Probe durch hohen Calciumionengehalt und/oder hohe Leitfähigkeit

**Chlor L****M101****0,02 - 4,0 mg/L Cl₂ ^{a)}****CL6****DPD**

DE

Material

Benötigtes Material (zum Teil optional):

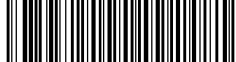
Reagenzien	Form/Menge	Bestell-Nr.
DPD 1 Pufferlösung, blaue Flasche	15 mL	471010
DPD 1 Pufferlösung	100 mL	471011
DPD 1 Pufferlösung im 6-er Pack	1 St.	471016
DPD 1 Reagenzlösung, grüne Flasche	15 mL	471020
DPD 1 Reagenzlösung	100 mL	471021
DPD 1 Reagenzlösung im 6-er Pack	1 St.	471026
DPD 3 Lösung, rote Flasche	15 mL	471030
DPD 3 Lösung	100 mL	471031
DPD 3 Lösung im 6-er Pack	1 St.	471036
DPD Reagenzien Set	1 St.	471056

Verfügbare Standards

Titel	Verpackungseinheit	Bestell-Nr.
ValidCheck Chlor 1,5 mg/L	1 St.	48105510

Probenahme

1. Bei der Probenvorbereitung muss das Ausgasen von Chlor, z.B. durch Pipettieren und Schütteln, vermieden werden.
2. Die Analyse muss unmittelbar nach der Probenahme erfolgen.



Vorbereitung

1. Reinigung der Küvetten:
Da viele Haushaltsreiniger (z.B. Geschirrspülmittel) reduzierende Stoffe enthalten, kann es bei der Bestimmung von Chlor zu Minderbefunden kommen. Um diesen Messfehler auszuschließen, sollten die Glasgeräte chlorzehrungsfrei sein. Dazu werden die Glasgeräte für eine Stunde unter Natriumhypochloritlösung (0,1 g/L) aufbewahrt und danach gründlich mit VE-Wasser (Vollentsalztes Wasser) gespült.
2. Für die Einzelbestimmung von freiem Chlor und Gesamtchlor ist es sinnvoll, jeweils einen eigenen Satz Küvetten zu verwenden (siehe EN ISO 7393-2, Abs. 5.3).
3. Die DPD-Farbentwicklung erfolgt bei einem pH-Wert von 6,2 bis 6,5. Die Reagenzien enthalten daher einen Puffer zur pH-Wert Einstellung. Stark alkalische oder saure Wässer müssen jedoch vor der Analyse in einen pH-Bereich zwischen 6 und 7 gebracht werden (mit 0,5 mol/l Schwefelsäure bzw. 1 mol/l Natronlauge).

Anmerkungen

1. Nach Gebrauch sind die Tropfflaschen mit der jeweils gleichfarbigen Schraubkappe sofort wieder zu verschließen.
2. Den Reagenziensatz bei +6 °C bis +10 °C kühl lagern.



Durchführung der Bestimmung freies Chlor mit Flüssigreagenz

Die Methode im Gerät auswählen.

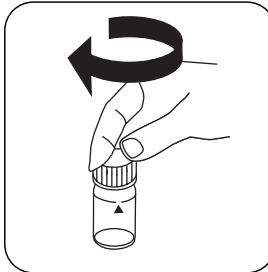
Wählen Sie zudem die Bestimmung: frei

Für diese Methode muss bei folgenden Geräten nicht jedes mal eine ZERO-Messung durchgeführt werden: XD 7000, XD 7500

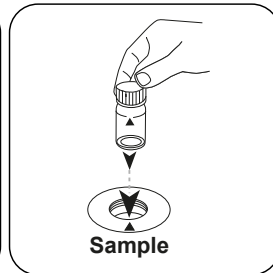
DE



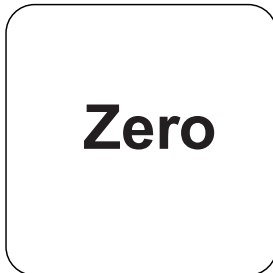
24-mm-Küvette mit **10 mL Probe** füllen.



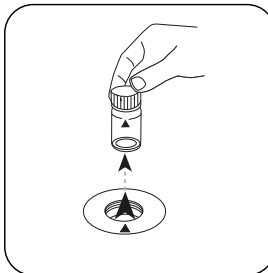
Küvette(n) verschließen.



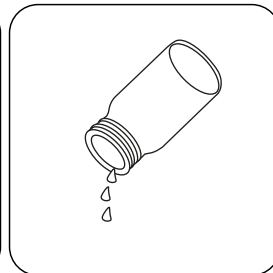
Die **Probeküvette** in den Messschacht stellen. Positionierung beachten.



Zero durchführen.

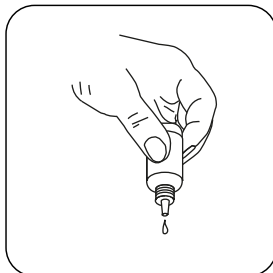


Küvette aus dem Messschacht nehmen.

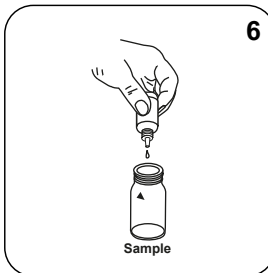


Küvette entleeren.

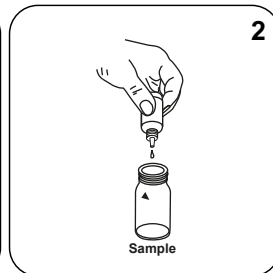
Bei Geräten, die **keine ZERO-Messung** erfordern, **hier beginnen**.



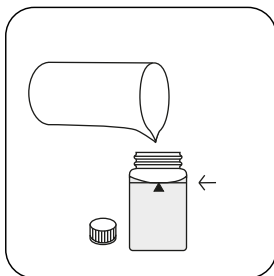
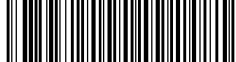
Die Tropfflaschen senkrecht halten und durch langsames Drücken gleich große Tropfen zugeben.



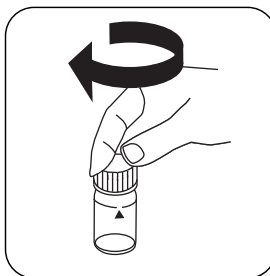
6 Tropfen DPD 1 Puffer-Lösung in die **Probeküvette** geben.



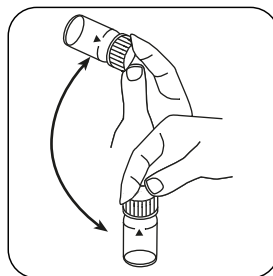
2 Tropfen DPD 1 Reagenz-Lösung in die **Probeküvette** geben.



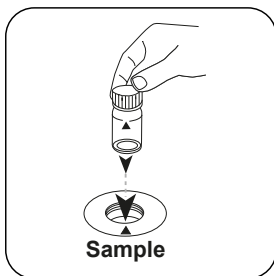
Küvette bis zur **10-mL-Marke** mit der **Probe** auffüllen.



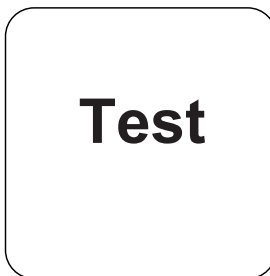
Küvette(n) verschließen.



Inhalt durch Umschwenken mischen.



Die **Probeküvette** in den Messschacht stellen. Positionierung beachten.



Test durchführen.

In der Anzeige erscheint das Ergebnis in mg/L freies Chlor.

Durchführung der Bestimmung gesamtes Chlor mit Flüssigreagenz

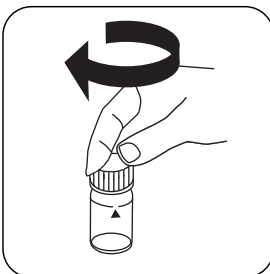
Die Methode im Gerät auswählen.

Wählen Sie zudem die Bestimmung: **gesamt**

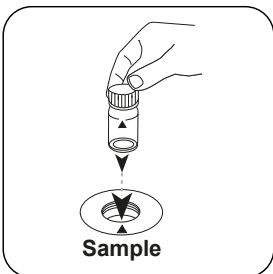
Für diese Methode muss bei folgenden Geräten nicht jedes mal eine ZERO-Messung durchgeführt werden: XD 7000, XD 7500



24-mm-Küvette mit **10 mL Probe** füllen.



Küvette(n) verschließen.

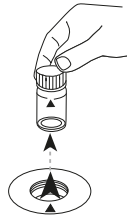


Die **Probeküvette** in den Messschacht stellen. Positionierung beachten.



Zero

Zero durchführen.

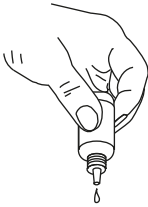


Küvette aus dem Messschacht nehmen.



Küvette entleeren.

Bei Geräten, die **keine ZERO-Messung** erfordern, **hier beginnen**.



Die Tropfflaschen senkrecht halten und durch langsames Drücken gleich große Tropfen zugeben.

6



6 Tropfen DPD 1 Puffer-Lösung in die **Probenküvette** geben.

2

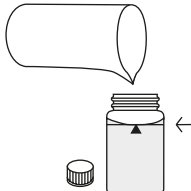


2 Tropfen DPD 1 Reagenz-Lösung in die **Probenküvette** geben.

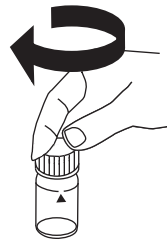
3



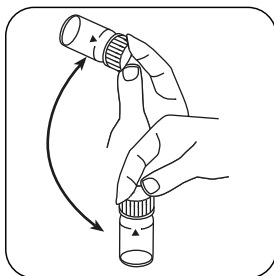
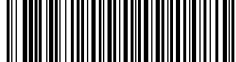
3 Tropfen DPD 3 Lösung in die **Probenküvette** geben.



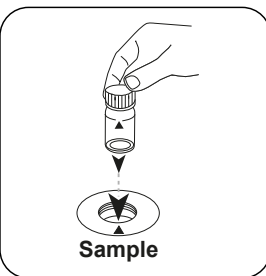
Küvette bis zur **10-mL-Marke** mit der **Probe** auffüllen.



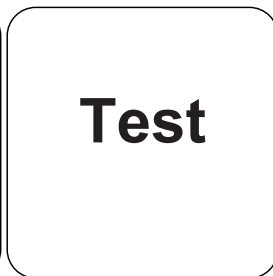
Küvette(n) verschließen.



Inhalt durch Umschwenken mischen.

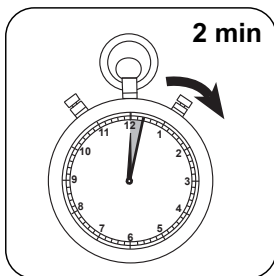


Die **Probenküvette** in den Messschacht stellen. Positionierung beachten.



Test

Test durchführen.



2 Minute(n) Reaktionszeit abwarten.

Nach Ablauf der Reaktionszeit erfolgt automatisch die Messung.

In der Anzeige erscheint das Ergebnis in mg/L Gesamtchlor.

Durchführung der Bestimmung differenziertes Chlor mit Flüssigreagenz

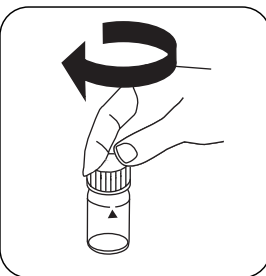
Die Methode im Gerät auswählen.

Wählen Sie zudem die Bestimmung: differenziert

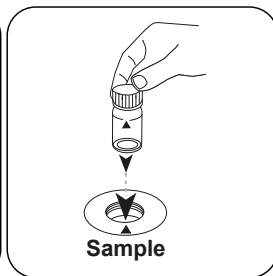
Für diese Methode muss bei folgenden Geräten nicht jedes mal eine ZERO-Messung durchgeführt werden: XD 7000, XD 7500



24-mm-Küvette mit **10 mL Probe** füllen.



Küvette(n) verschließen.

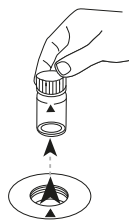


Die **Probenküvette** in den Messschacht stellen. Positionierung beachten.



Zero

Zero durchführen.

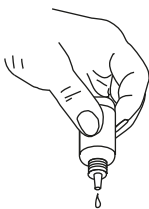


Küvette aus dem
Messschacht nehmen.



Küvette entleeren.

Bei Geräten, die **keine ZERO-Messung** erfordern, **hier beginnen**.



Die Tropfflaschen
senkrecht halten und durch
langames Drücken gleich
große Tropfen zugeben.

6

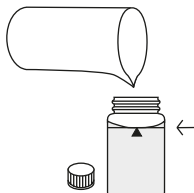


6 Tropfen DPD
1 Puffer-Lösung in die
Probenküvette geben.

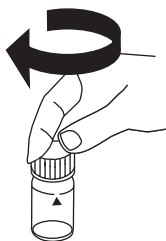
2



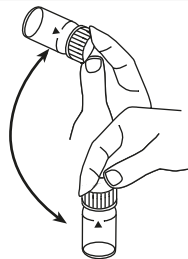
2 Tropfen DPD
1 Reagenz-Lösung in die
Probenküvette geben.



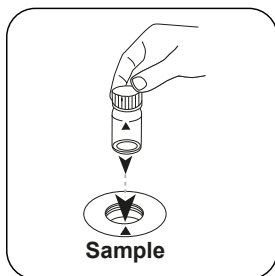
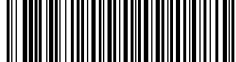
Küvette bis zur **10-mL-**
Marke mit der **Probe**
auffüllen.



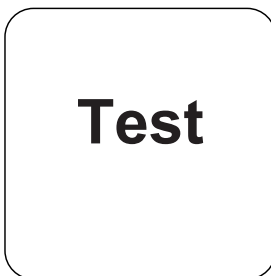
Küvette(n) verschließen.



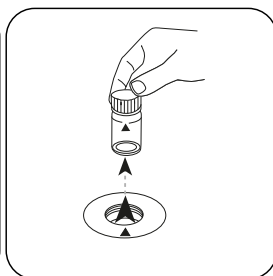
Inhalt durch Umschwenken
mischen.



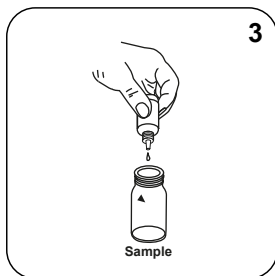
Die **Probenküvette** in den Messschacht stellen. Positionierung beachten.



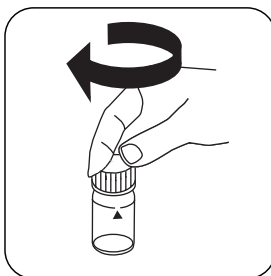
Test durchführen.



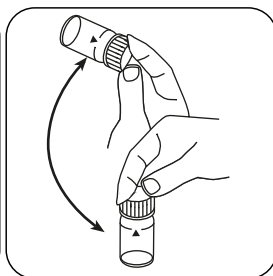
Küvette aus dem Messschacht nehmen.



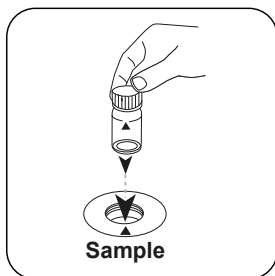
3 Tropfen DPD 3 Lösung in die **Probenküvette** geben.



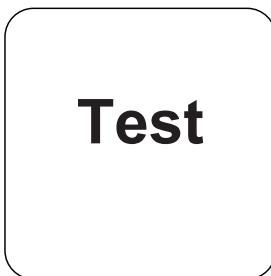
Küvette(n) verschließen.



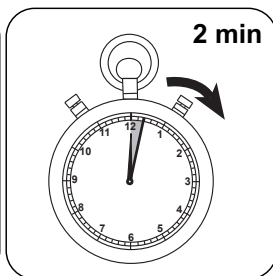
Inhalt durch Umschwenken mischen.



Die **Probenküvette** in den Messschacht stellen. Positionierung beachten.



Test durchführen.



2 Minute(n) Reaktionszeit abwarten.

Nach Ablauf der Reaktionszeit erfolgt automatisch die Messung.

In der Anzeige erscheint das Ergebnis in mg/L freies Chlor, mg/l gebundenes Chor, mg/l Gesamtchlor.



Chemische Methode

DPD

Appendix

DE

Störungen

Permanente Störungen

- Alle in den Proben vorhandenen Oxidationsmittel reagieren wie Chlor, was zu Mehrbefunden führt.

Ausschließbare Störungen

- Störungen durch Kupfer und Eisen(III) sind durch EDTA zu beseitigen.
- Konzentrationen über 4 mg/L Chlor, bei Verwendung von Flüssigreagenzien, können zu Ergebnissen innerhalb des Messbereichs bis hin zu 0 mg/L führen. In diesem Fall muss die Probe mit chlorfreiem Wasser verdünnt werden. 10 ml der verdünnten Probe werden mit Reagenz versetzt und die Messung wiederholt (Plausibilitätstest).

Störung	Stört ab / [mg/L]
CrO_4^{2-}	0,01
MnO_2	0,01

Konform

EN ISO 7393-2

^{a)} Bestimmung von frei, gebunden, gesamt möglich

**Chlor HR T****M103****0,1 - 10 mg/L Cl₂ ^{a)}****CL10****DPD**

DE

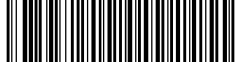
Material

Benötigtes Material (zum Teil optional):

Reagenzien	Form/Menge	Bestell-Nr.
DPD No. 1 HR	Tablette / 100	511500BT
DPD No. 1 HR	Tablette / 250	511501BT
DPD No. 1 HR	Tablette / 500	511502BT
DPD No. 3 HR	Tablette / 100	511590BT
DPD No. 3 HR	Tablette / 250	511591BT
DPD No. 3 HR	Tablette / 500	511592BT
Set DPD No. 1 HR/No. 3 HR [#]	je 100	517791BT
Set DPD No. 1 HR/No. 3 HR [#]	je 250	517792BT
DPD No. 1 High Calcium ^{e)}	Tablette / 100	515740BT
DPD No. 1 High Calcium ^{e)}	Tablette / 250	515741BT
DPD No. 1 High Calcium ^{e)}	Tablette / 500	515742BT
DPD No. 3 High Calcium ^{e)}	Tablette / 100	515730BT
DPD No. 3 High Calcium ^{e)}	Tablette / 250	515731BT
DPD No. 3 High Calcium ^{e)}	Tablette / 500	515732BT
DPD No.3 HREvo	Tablette / 100	511920BT
DPD No. 3 HREvo	Tablette / 250	511921BT
DPD No. 3 HREvo	Tablette / 500	511922BT

Probenahme

1. Bei der Probenvorbereitung muss das Ausgasen von Chlor, z.B. durch Pipettieren und Schütteln, vermieden werden.
2. Die Analyse muss unmittelbar nach der Probenahme erfolgen.



Vorbereitung

1. Reinigung der Küvetten:
Da viele Haushaltsreiniger (z.B. Geschirrspülmittel) reduzierende Stoffe enthalten, kann es bei der Bestimmung von Chlor zu Minderbefunden kommen. Um diesen Messfehler auszuschließen, sollten die Glasgeräte chlorzehrungsfrei sein. Dazu werden die Glasgeräte für eine Stunde unter Natriumhypochloritlösung (0,1 g/L) aufbewahrt und danach gründlich mit VE-Wasser (Vollentsalztes Wasser) gespült.
2. Für die Einzelbestimmung von freiem Chlor und Gesamtchlor ist es sinnvoll, jeweils einen eigenen Satz Küvetten zu verwenden (siehe EN ISO 7393-2, Abs. 5.3).
3. Die DPD-Farbentwicklung erfolgt bei einem pH-Wert von 6,2 bis 6,5. Die Reagenzien enthalten daher einen Puffer zur pH-Wert Einstellung. Stark alkalische oder saure Wässer müssen jedoch vor der Analyse in einen pH-Bereich zwischen 6 und 7 gebracht werden (mit 0,5 mol/L Schwefelsäure bzw. 1 mol/L Natronlauge).

Anmerkungen

1. Evo-Tabletten können alternativ zu der entsprechenden Standard-Tablette verwendet werden (z.B. DPD Nr. 3 Evo anstatt DPD Nr. 3).



Durchführung der Bestimmung freies Chlor HR mit Tablette

Die Methode im Gerät auswählen.

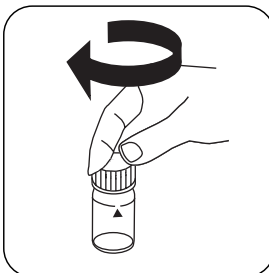
Wählen Sie zudem die Bestimmung: frei

Für diese Methode muss bei folgenden Geräten nicht jedes mal eine ZERO-Messung durchgeführt werden: XD 7000, XD 7500

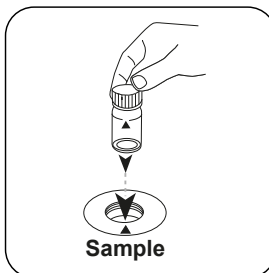
DE



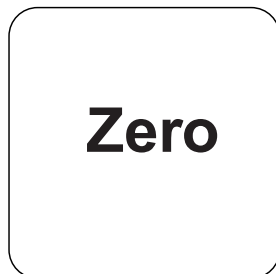
24-mm-Küvette mit **10 mL Probe** füllen.



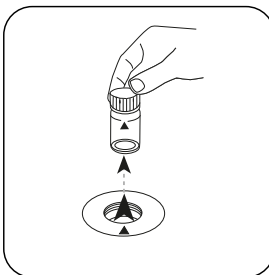
Küvette(n) verschließen.



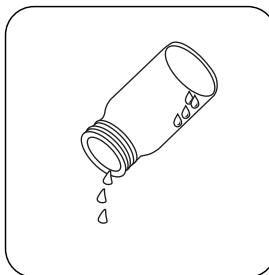
Die **Probeküvette** in den Messschacht stellen. Positionierung beachten.



Zero durchführen.

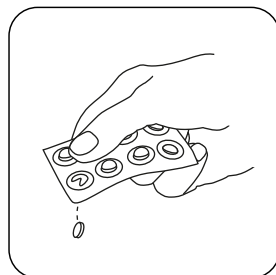


Küvette aus dem Messschacht nehmen.

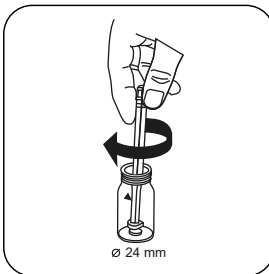


Die Küvette bis auf einige Tropfen entleeren.

Bei Geräten, die **keine ZERO-Messung** erfordern, **hier beginnen**.



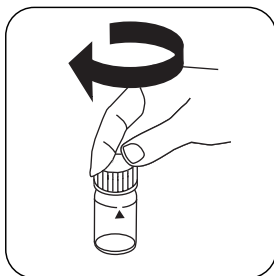
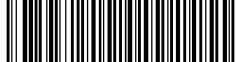
Eine **DPD No. 1 HR Tablette** zugeben.



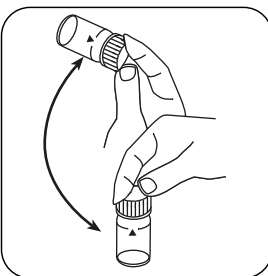
Tablette(n) unter leichter Drehung zerdrücken.



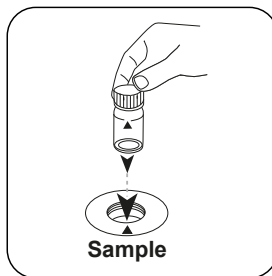
Küvette bis zur **10-mL-Marke** mit der **Probe** auffüllen.



Küvette(n) verschließen.



Tablette(n) durch Umschwenken lösen.



Die **Probenküvette** in den Messschacht stellen. Positionierung beachten.

Test

Test durchführen.

In der Anzeige erscheint das Ergebnis in mg/L freies Chlor.

Durchführung der Bestimmung gesamtes Chlor HR mit Tablette

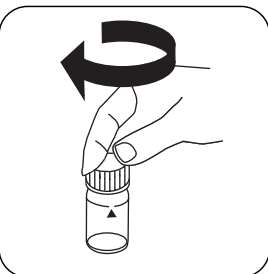
Die Methode im Gerät auswählen.

Wählen Sie zudem die Bestimmung: **gesamt**

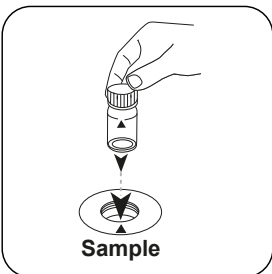
Für diese Methode muss bei folgenden Geräten nicht jedes mal eine ZERO-Messung durchgeführt werden: XD 7000, XD 7500



24-mm-Küvette mit **10 mL Probe** füllen.



Küvette(n) verschließen.

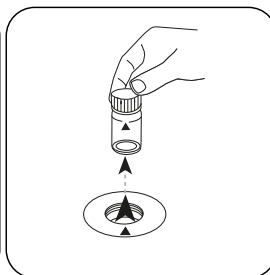


Die **Probenküvette** in den Messschacht stellen. Positionierung beachten.

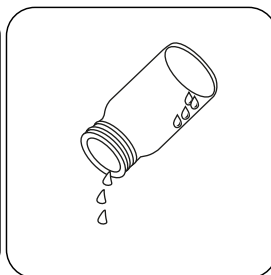


Zero

Zero durchführen.

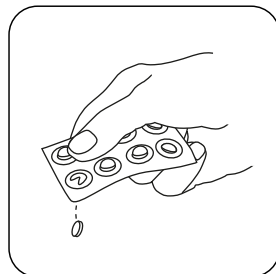


Küvette aus dem Messschacht nehmen.

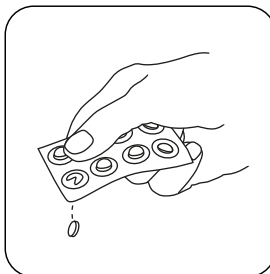


Die Küvette bis auf einige Tropfen entleeren.

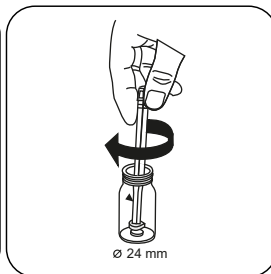
Bei Geräten, die **keine ZERO-Messung** erfordern, **hier beginnen**.



Eine **DPD No. 1 HR**
Tablette zugeben.



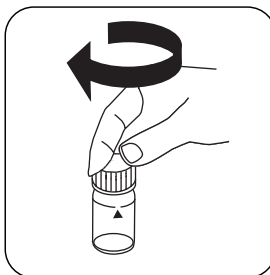
Eine **DPD No. 3 HR**
Tablette zugeben.



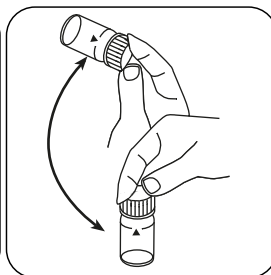
Tablette(n) unter leichter
Drehung zerdrücken.



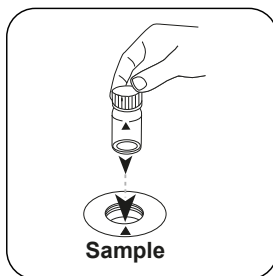
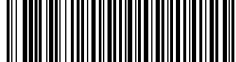
Küvette bis zur **10-mL-**
Marke mit der **Probe**
auffüllen.



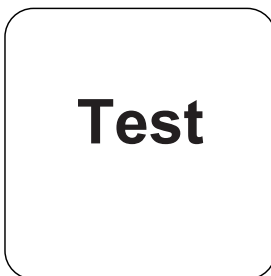
Küvette(n) verschließen.



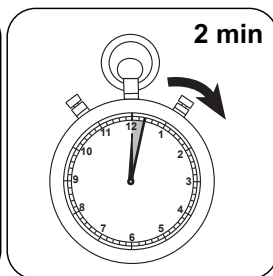
Tablette(n) durch
Umschwenken lösen.



Die **Probenküvette** in den Messschacht stellen. Positionierung beachten.



Test durchführen.



2 Minute(n) Reaktionszeit abwarten.

Nach Ablauf der Reaktionszeit erfolgt automatisch die Messung.

In der Anzeige erscheint das Ergebnis in mg/L Gesamtchlor.

Durchführung der Bestimmung differenziertes Chlor HR mit Tablette

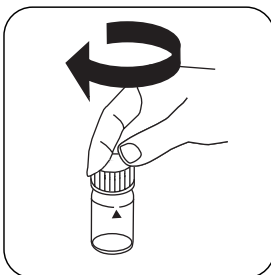
Die Methode im Gerät auswählen.

Wählen Sie zudem die Bestimmung: differenziert

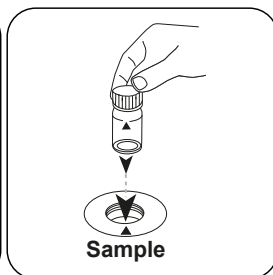
Für diese Methode muss bei folgenden Geräten nicht jedes mal eine ZERO-Messung durchgeführt werden: XD 7000, XD 7500



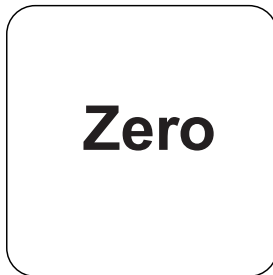
24-mm-Küvette mit **10 mL** **Probe** füllen.



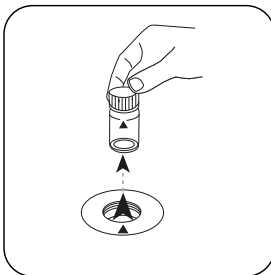
Küvette(n) verschließen.



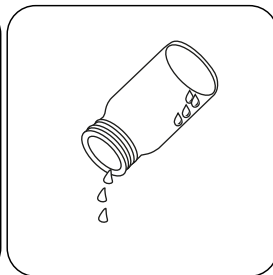
Die **Probenküvette** in den Messschacht stellen. Positionierung beachten.



Zero durchführen.



Küvette aus dem Messschacht nehmen.

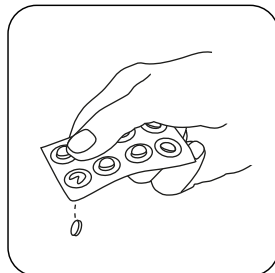


Die Küvette bis auf einige Tropfen entleeren.

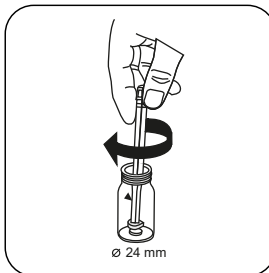


Bei Geräten, die **keine ZERO-Messung** erfordern, **hier beginnen**.

DE



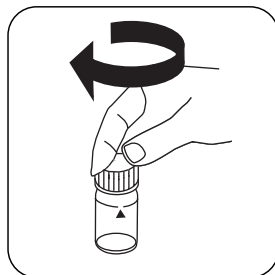
Eine **DPD No. 1 HR
Tablette** zugeben.



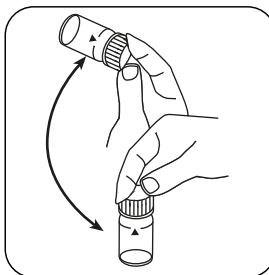
Tablette(n) unter leichter
Drehung zerdrücken.



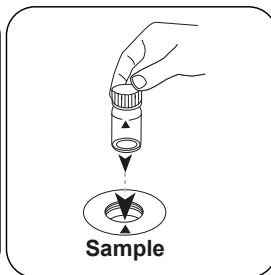
Küvette bis zur **10-mL-
Marke** mit der **Probe**
auffüllen.



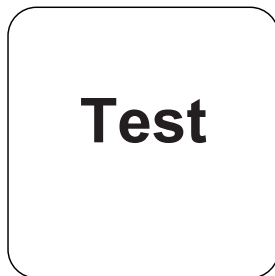
Küvette(n) verschließen.



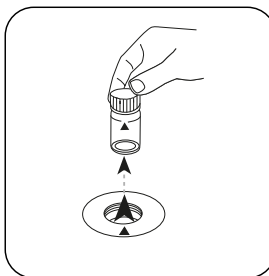
Tablette(n) durch
Umschwenken lösen.



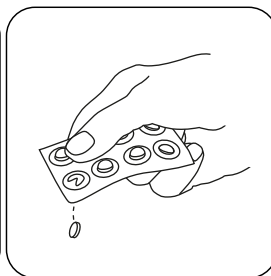
Die **Probeküvette** in
den Messschacht stellen.
Positionierung beachten.



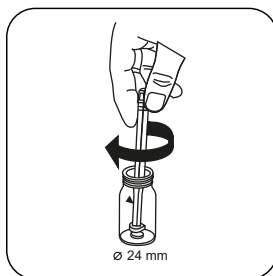
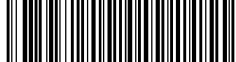
Test durchführen.



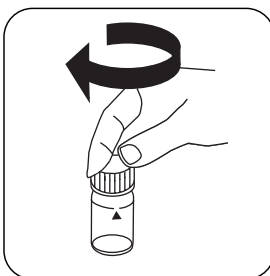
Küvette aus dem
Messschacht nehmen.



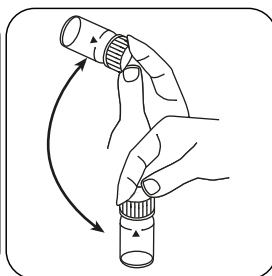
Eine **DPD No. 3 HR
Tablette** zugeben.



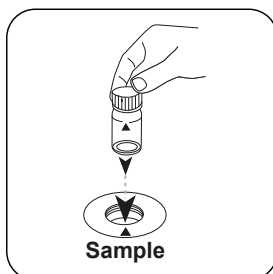
Tablette(n) unter leichter Drehung zerdrücken.



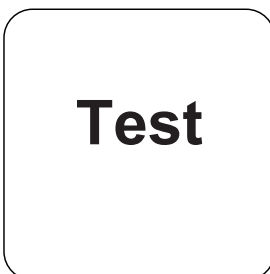
Küvette(n) verschließen.



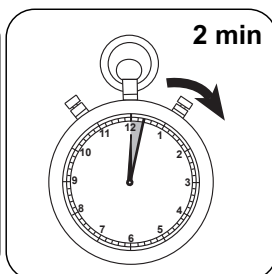
Tablette(n) durch Umschwenken lösen.



Die **Probeküvette** in den Messschacht stellen. Positionierung beachten.



Test durchführen.



2 Minute(n) Reaktionszeit abwarten.

Nach Ablauf der Reaktionszeit erfolgt automatisch die Messung.

In der Anzeige erscheint das Ergebnis in mg/L freies Chlor, mg/l gebundenes Chlor, mg/l Gesamtchlor.



Chemische Methode

DPD

Appendix

DE

Störungen

Permanente Störungen

- Alle in den Proben vorhandenen Oxidationsmittel reagieren wie Chlor, was zu Mehrbefunden führt.

Ausschließbare Störungen

- Störungen durch Kupfer und Eisen(III) sind durch EDTA zu beseitigen.
- Bei Proben mit hohem Calciumgehalt* und/oder hoher Leitfähigkeit* kann es bei der Verwendung der Reagenztabletten zu einer Eintrübung der Probe und damit verbundener Fehlmessung kommen. In diesem Fall sind alternativ die Reagenztablette DPD No. 1 High Calcium und die Reagenztablette DPD No. 3 High Calcium zu verwenden.

*exakte Werte können nicht angegeben werden, da die Entstehung einer Trübung von Art und Zusammensetzung des Probenwassers abhängt.

Konform

EN ISO 7393-2

^{a)} Bestimmung von frei, gebunden, gesamt möglich | ^{a)} Hilfsreagenz, alternativ zur DPD No. 1 / No. 3 bei Eintrübungen der Probe durch hohen Calciumionengehalt und/oder hohe Leitfähigkeit | * inklusive Rührstab

**Chlor PP****M110****0,02 - 2 mg/L Cl₂ ^{a)}****CL2****DPD**

DE

Material

Benötigtes Material (zum Teil optional):

Reagenzien	Form/Menge	Bestell-Nr.
Chlorine Free DPD F10	Pulver / 100 St.	530100
Chlorine Free DPD F10	Pulver / 1000 St.	530103
Chlorine Total DPD F10	Pulver / 100 St.	530120
Chlorine Total DPD F10	Pulver / 1000 St.	530123

Verfügbare Standards

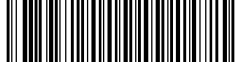
Titel	Verpackungseinheit	Bestell-Nr.
ValidCheck Chlor 1,5 mg/L	1 St.	48105510

Probenahme

1. Bei der Probenvorbereitung muss das Ausgasen von Chlor, z.B. durch Pipettieren und Schütteln, vermieden werden.
2. Die Analyse muss unmittelbar nach der Probenahme erfolgen.

Vorbereitung

1. Reinigung der Küvetten:
Da viele Haushaltsreiniger (z.B. Geschirrspülmittel) reduzierende Stoffe enthalten, kann es bei der Bestimmung von Chlor zu Minderbefunden kommen. Um diesen Messfehler auszuschließen, sollten die Glasgeräte chlorzehrungsfrei sein. Dazu werden die Glasgeräte für eine Stunde unter Natriumhypochloritlösung (0,1 g/L) aufbewahrt und danach gründlich mit VE-Wasser (Vollentsalztes Wasser) gespült.
2. Für die Einzelbestimmung von freiem Chlor und Gesamtchlor ist es sinnvoll, jeweils einen eigenen Satz Küvetten zu verwenden (siehe EN ISO 7393-2, Abs. 5.3).
3. Die DPD-Farbentwicklung erfolgt bei einem pH-Wert von 6,2 bis 6,5. Die Reagenzien enthalten daher einen Puffer zur pH-Wert Einstellung. Stark alkalische oder saure Wässer müssen jedoch vor der Analyse in einen pH-Bereich zwischen 6 und 7 gebracht werden (mit 0,5 mol/l Schwefelsäure bzw. 1 mol/l Natronlauge).



Durchführung der Bestimmung freies Chlor mit Pulverpäckchen

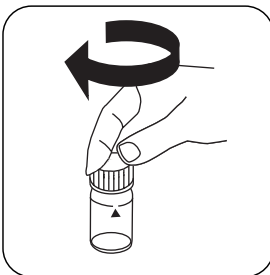
Die Methode im Gerät auswählen.

Wählen Sie zudem die Bestimmung: frei

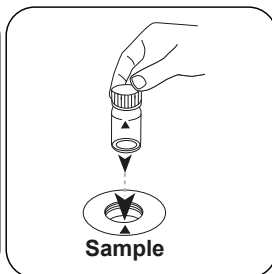
Für diese Methode muss bei folgenden Geräten nicht jedes mal eine ZERO-Messung durchgeführt werden: XD 7000, XD 7500



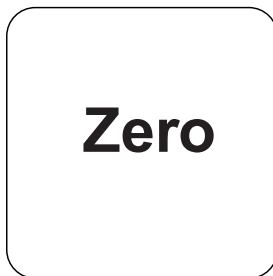
24-mm-Küvette mit **10 mL**
Probe füllen.



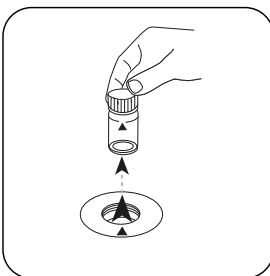
Küvette(n) verschließen.



Die **Probenküvette** in
den Messschacht stellen.
Positionierung beachten.

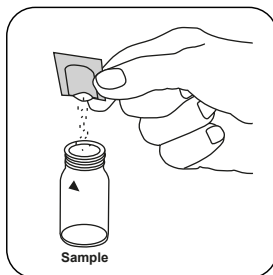


Zero durchführen.

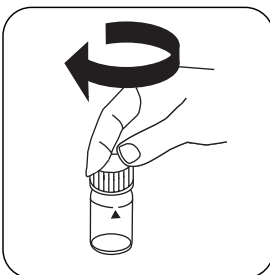


Küvette aus dem
Messschacht nehmen.

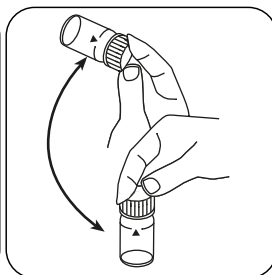
Bei Geräten, die **keine ZERO-Messung** erfordern, **hier beginnen**.



Ein **Chlorine FREE-DPD/
F10 Pulverpäckchen**
zugeben.



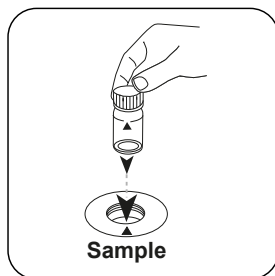
Küvette(n) verschließen.



Inhalt durch Umschwenken
mischen (20 Sek.).



DE



Test

Die **Probenküvette** in den Messschacht stellen.
Positionierung beachten.

Test durchführen.

In der Anzeige erscheint das Ergebnis in mg/L freies Chlor.

Durchführung der Bestimmung gesamtes Chlor mit Pulverpackchen

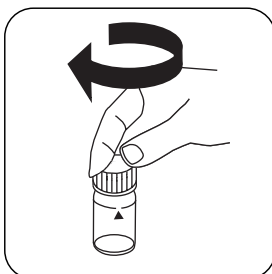
Die Methode im Gerät auswählen.

Wählen Sie zudem die Bestimmung: gesamt

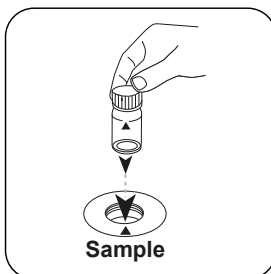
Für diese Methode muss bei folgenden Geräten nicht jedes mal eine ZERO-Messung durchgeführt werden: XD 7000, XD 7500



24-mm-Küvette mit **10 mL Probe** füllen.



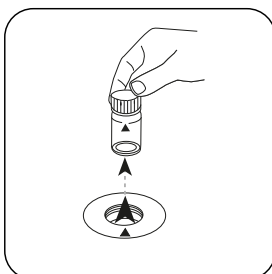
Küvette(n) verschließen.



Die **Probenküvette** in den Messschacht stellen.
Positionierung beachten.

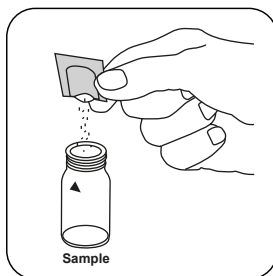
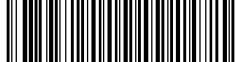
Zero

Zero durchführen.

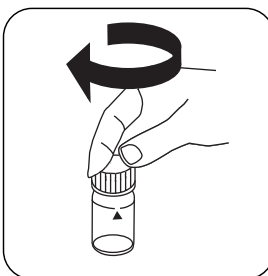


Küvette aus dem Messschacht nehmen.

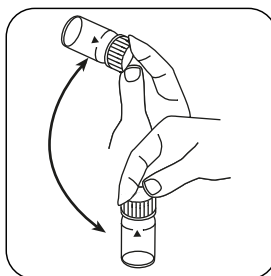
Bei Geräten, die **keine ZERO-Messung** erfordern, **hier beginnen**.



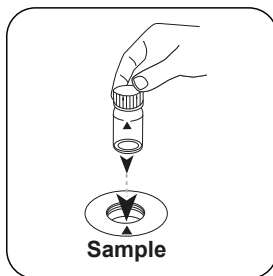
Ein **Chlorine TOTAL-DPD/ F10 Pulverpäckchen** zugeben.



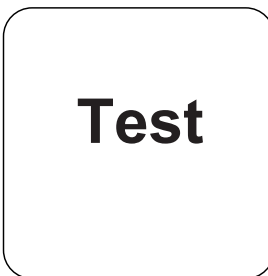
Küvette(n) verschließen.



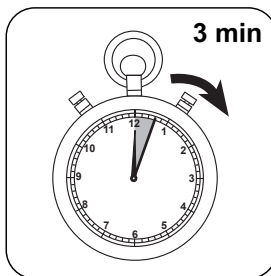
Inhalt durch Umschwenken mischen (20 Sek.).



Die **Probenküvette** in den Messschacht stellen. Positionierung beachten.



Test durchführen.



3 Minute(n) Reaktionszeit abwarten.

Nach Ablauf der Reaktionszeit erfolgt automatisch die Messung.

In der Anzeige erscheint das Ergebnis in mg/L Gesamtchlor.

Durchführung der Bestimmung differenziertes Chlor mit Pulverpäckchen

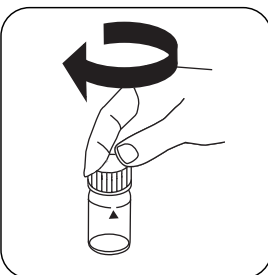
Die Methode im Gerät auswählen.

Wählen Sie zudem die Bestimmung: differenziert

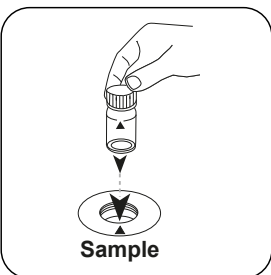
Für diese Methode muss bei folgenden Geräten nicht jedes mal eine ZERO-Messung durchgeführt werden: XD 7000, XD 7500



24-mm-Küvette mit **10 mL Probe** füllen.



Küvette(n) verschließen.

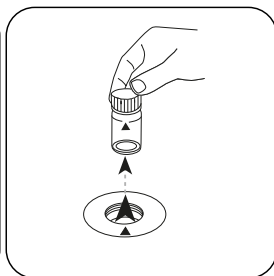


Die **Probenküvette** in den Messschacht stellen. Positionierung beachten.



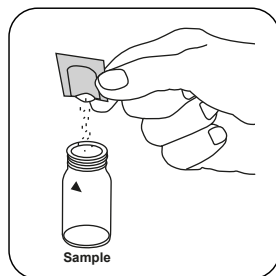
Zero

Zero durchführen.

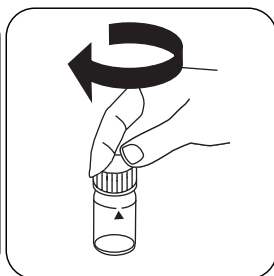


Küvette aus dem Messschacht nehmen.

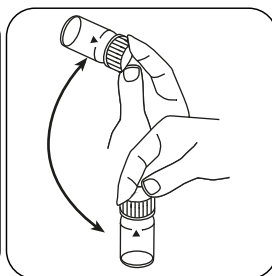
Bei Geräten, die **keine ZERO-Messung** erfordern, **hier beginnen**.



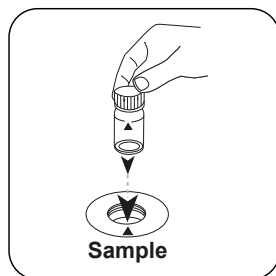
Ein **Chlorine FREE-DPD/ F10 Pulverpäckchen** zugeben.



Küvette(n) verschließen.



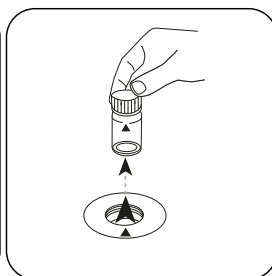
Inhalt durch Umschwenken mischen (20 Sek.).



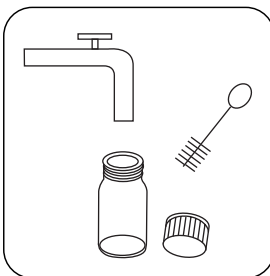
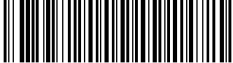
Die **Probenküvette** in den Messschacht stellen. Positionierung beachten.

Test

Test durchführen.



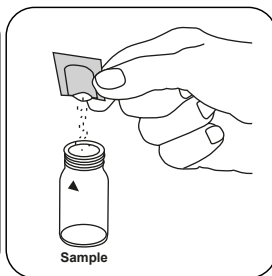
Küvette aus dem Messschacht nehmen.



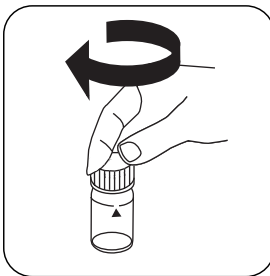
Die Küvette und den
Küvettedeckel gründlich
reinigen.



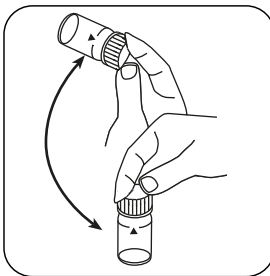
24-mm-Küvette mit **10 mL**
Probe füllen.



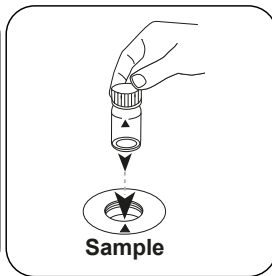
Ein **TOTAL-DPD/
F10 Pulverpäckchen**
zugeben.



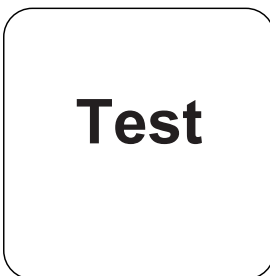
Küvette(n) verschließen.



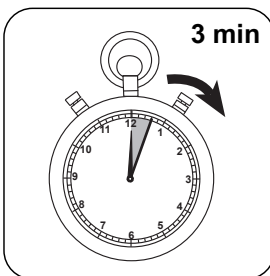
Inhalt durch Umschwenken
mischen (20 Sek.).



Die **Probenküvette** in
den Messschacht stellen.
Positionierung beachten.



Test durchführen.



3 Minute(n) Reaktionszeit
abwarten.

Nach Ablauf der Reaktionszeit erfolgt automatisch die Messung.

In der Anzeige erscheint das Ergebnis in mg/L freies Chlor, mg/l gebundenes Chlor,
mg/l Gesamtchlor.



Chemische Methode

DPD

Appendix

DE

Störungen

Permanente Störungen

- Alle in den Proben vorhandenen Oxidationsmittel reagieren wie Chlor, was zu Mehrbefunden führt.

Ausschließbare Störungen

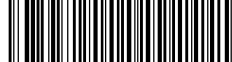
- Störungen durch Kupfer und Eisen(III) sind durch EDTA zu beseitigen.
- Konzentrationen über 2 mg/L Chlor, bei Verwendung von Powder Packs, können zu Ergebnissen innerhalb des Messbereichs bis hin zu 0 mg/L führen. In diesem Fall muss die Probe mit chlorfreiem Wasser verdünnt werden. 10 ml der verdünnten Probe werden mit Reagenz versetzt und die Messung wiederholt (Plausibilitätstest).

Störung	Stört ab / [mg/L]
CrO_4^{2-}	0,01
MnO_2	0,01

Konform

EN ISO 7393-2

^{a)} Bestimmung von frei, gebunden, gesamt möglich

**Chlor HR 2 PP****M112-2****0,1 - 10 mg/L Cl₂****DPD**

DE

Material

Benötigtes Material (zum Teil optional):

Reagenzien	Form/Menge	Bestell-Nr.
VARIO Chlorine Free DPD F25-100	Pulver / 100 St.	530110
VARIO Chlorine Total DPD F25-100	Pulver / 100 St.	530130
Chlorine Free DPD F10	Pulver / 100 St.	530100
Chlorine Total DPD F10	Pulver / 100 St.	530120

Probenahme

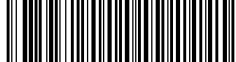
1. Bei der Probenvorbereitung muss das Ausgasen von Chlor, z.B. durch Pipettieren und Schütteln, vermieden werden.
2. Die Analyse muss unmittelbar nach der Probenahme erfolgen.

Vorbereitung

1. Reinigung der Küvetten:
Da viele Haushaltsreiniger (z.B. Geschirrspülmittel) reduzierende Stoffe enthalten, kann es bei der Bestimmung von Chlor zu Minderbefunden kommen. Um diesen Messfehler auszuschließen, sollten die Glasgeräte chlorzehrungsfrei sein. Dazu werden die Glasgeräte für eine Stunde unter Natriumhypochloritlösung (0,1 g/L) aufbewahrt und danach gründlich mit VE-Wasser (Vollentsalztes Wasser) gespült.
2. Für die Einzelbestimmung von freiem Chlor und Gesamtchlor ist es sinnvoll, jeweils einen eigenen Satz Küvetten zu verwenden (siehe EN ISO 7393-2, Abs. 5.3).
3. Die DPD-Farbentwicklung erfolgt bei einem pH-Wert von 6,2 bis 6,5. Die Reagenzien enthalten daher einen Puffer zur pH-Wert Einstellung. Stark alkalische oder saure Wässer müssen jedoch vor der Analyse in einen pH-Bereich zwischen 6 und 7 gebracht werden (mit 0,5 mol/l Schwefelsäure bzw. 1 mol/l Natronlauge).

Anmerkungen

1. Für die Durchführung des Tests im MD50/150 wird, statt der Multiküvette, eine 24 mm Ø Küvette verwendet.

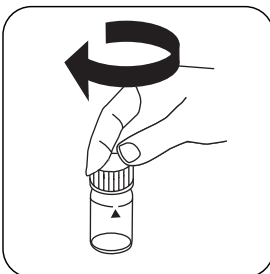


Durchführung der Bestimmung freies Chlor HR 2, mit Pulverpackchen (MD50/MD150)

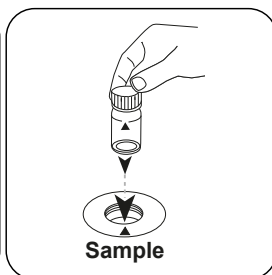
Die Methode im Gerät auswählen.



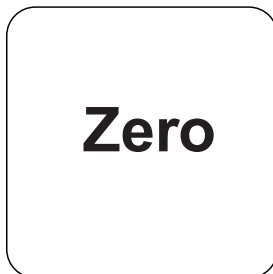
24-mm-Küvette mit **10 mL Probe** füllen.



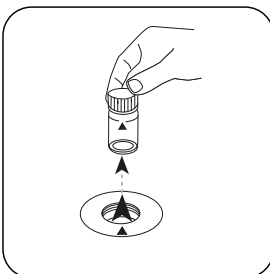
Küvette(n) verschließen.



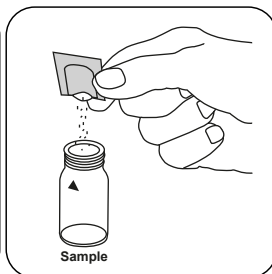
Die **Probenküvette** in den Messschacht stellen. Positionierung beachten.



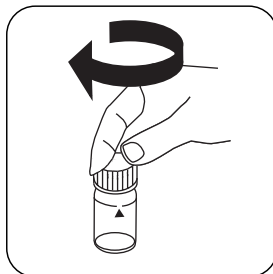
Zero durchführen.



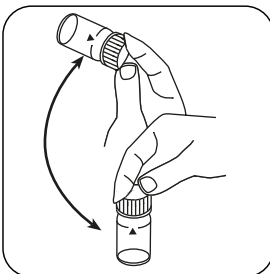
Küvette aus dem Messschacht nehmen.



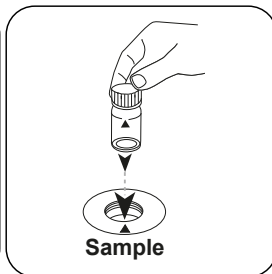
Ein **1 Vario Chlorine Free / F25** oder **2 Chlorine Total / F10** Pulverpackchen zugeben.



Küvette(n) verschließen.



Inhalt durch Umschwenken mischen (20 Sek.).



Die **Probenküvette** in den Messschacht stellen. Positionierung beachten.

DE



Test

DE

Test durchführen.

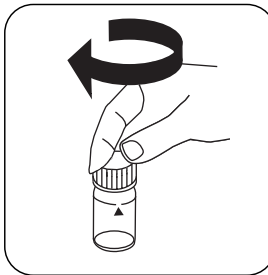
In der Anzeige erscheint das Ergebnis in mg/L Chlor.

Durchführung der Bestimmung gesamtes Chlor HR 2, mit Pulverpackchen (MD50/MD150)

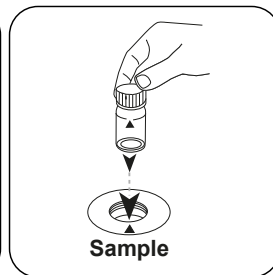
Die Methode im Gerät auswählen.



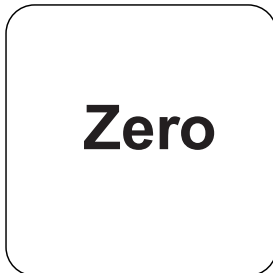
24-mm-Küvette mit **10 mL Probe** füllen.



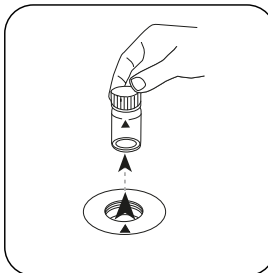
Küvette(n) verschließen.



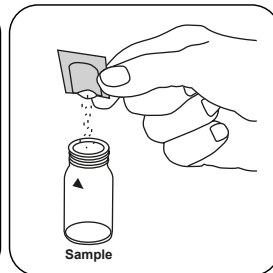
Die **Probeküvette** in den Messschacht stellen. Positionierung beachten.



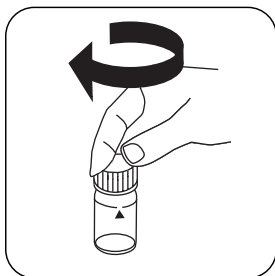
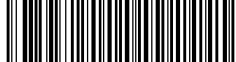
Zero durchführen.



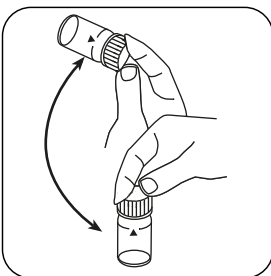
Küvette aus dem Messschacht nehmen.



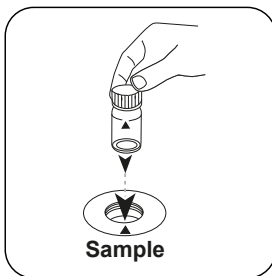
Ein **1 Vario Chlorine Free / F25** oder **2 Chlorine Total / F10 Pulverpackchen** zugeben.



Küvette(n) verschließen.

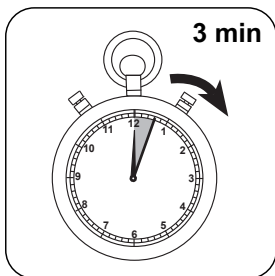


Inhalt durch Umschwenken
mischen (20 Sek.).

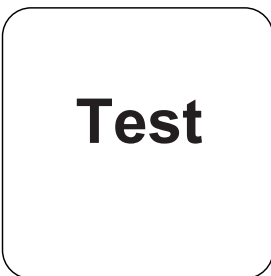


Die **Probenküvette** in
den Messschacht stellen.
Positionierung beachten.

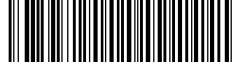
DE



3 Minute(n) Reaktionszeit Test durchführen.
abwarten.



In der Anzeige erscheint das Ergebnis in mg/L Chlor.



Chemische Methode

DPD

Appendix

DE

Störungen

Permanente Störungen

- Alle in den Proben vorhandenen Oxidationsmittel reagieren wie Chlor, was zu Mehrbefunden führt.

Ausschließbare Störungen

- Störungen durch Kupfer und Eisen(III) sind durch EDTA zu beseitigen.
- Konzentrationen über 10 mg/L Chlor, bei Verwendung von Powder Packs, können zu Ergebnissen innerhalb des Messbereichs bis hin zu 0 mg/L führen. In diesem Fall muss die Probe mit chlorfreiem Wasser verdünnt werden. 5 ml der verdünnten Probe werden mit Reagenz versetzt und die Messung wiederholt (Plausibilitätstest).

Konform

EN ISO 7393-2

**CyA HR T****M161****10 - 200 mg/L CyA****CyAH****Melamin**

DE

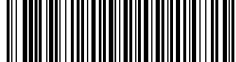
Material

Benötigtes Material (zum Teil optional):

Reagenzien	Form/Menge	Bestell-Nr.
CyA HR-Test	Tablette / 100	511430BT
CyA HR-Test	Tablette / 250	511431BT

Anmerkungen

1. Cyanursäure verursacht eine sehr fein verteilte Trübung mit milchigem Aussehen. Einzelne Partikel sind nicht auf das Vorhandensein von Cyanursäure zurückzuführen.
2. Nach Zugabe der CyA-HR-Test Tablette löst diese sich innerhalb von zwei Minuten selbstständig auf.



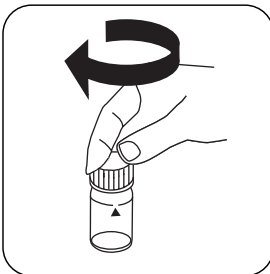
Durchführung der Bestimmung Cyanursäure-Test mit Tablette

Die Methode im Gerät auswählen.

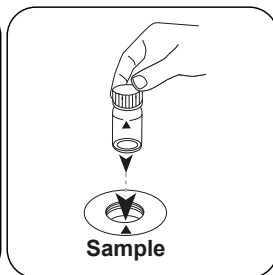
Für diese Methode muss bei folgenden Geräten nicht jedes mal eine ZERO-Messung durchgeführt werden: XD 7000, XD 7500



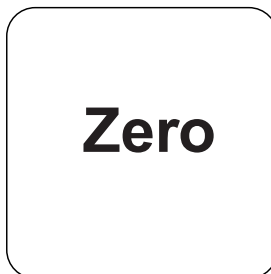
24-mm-Küvette mit **10 mL** Probe füllen.



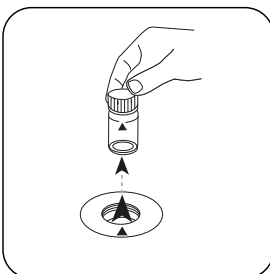
Küvette(n) verschließen.



Die **Probenküvette** in den Messschacht stellen. Positionierung beachten.

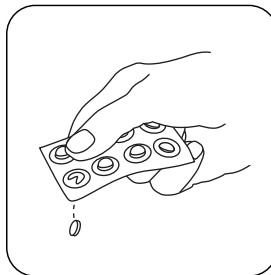


Zero durchführen.

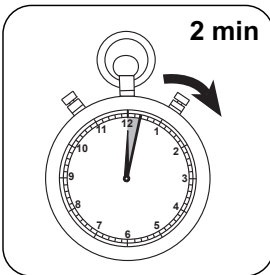


Küvette aus dem Messschacht nehmen.

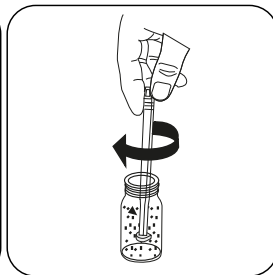
Bei Geräten, die **keine ZERO-Messung** erfordern, **hier beginnen**.



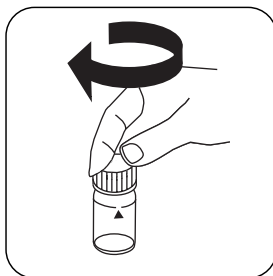
Eine **CyA HR Test Tablette** zugeben.



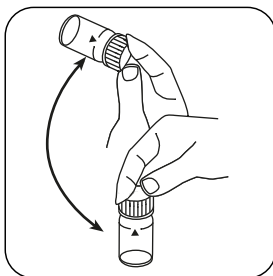
2 Minute(n) Reaktionszeit abwarten.



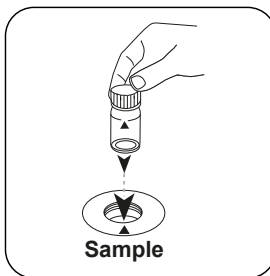
Gegebenenfalls Tablettenreste unter leichter Drehung zerdrücken.



Küvette(n) verschließen.



Inhalt durch Umschwenken
mischen (nicht schütteln).



Die **Probenküvette** in
den Messschacht stellen.
Positionierung beachten.

Test

Test durchführen.

In der Anzeige erscheint das Ergebnis in mg/L Cyanursäure.



Chemische Methode

Melamin

Störungen

Permanente Störungen

1. Nicht aufgelöste Partikel können zu Mehrbefunden führen.

DE

Methodenvalidierung

Nachweisgrenze	2.07 mg/L
Bestimmungsgrenze	6.2 mg/L
Messbereichsende	200 mg/L
Empfindlichkeit	77.47 mg/L / Abs
Vertrauensbereich	4.6 mg/L
Verfahrensstandardabweichung	4.78 mg/L
Verfahrensvariationskoeffizient	4.55 %



pH-Wert T

M330

6,5 - 8,4 pH

PH

Phenolrot

Material

DE

Benötigtes Material (zum Teil optional):

Reagenzien	Form/Menge	Bestell-Nr.
Phenol Red Photometer	Tablette / 100	511770BT
Phenol Red Photometer	Tablette / 250	511771BT
Phenol Red Photometer	Tablette / 500	511772BT

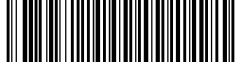
Probenahme

Salzgehalt der Probe in g/L	30 (Meerwasser) 60	120	180
Korrektur	-0,15 ¹⁾	-0,21 ²⁾	-0,26 ²⁾

¹⁾ nach Kolthoff (1922)²⁾ nach Parson und Douglas (1926)

Anmerkungen

1. Für die photometrische pH-Wert Bestimmung sind nur PHENOL RED-Tabletten mit schwarzem Folienaufdruck zu verwenden, die mit dem Begriff PHOTOMETER gekennzeichnet sind.



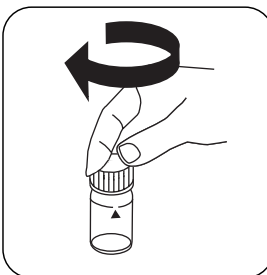
Durchführung der Bestimmung pH-Wert mit Tablette

Die Methode im Gerät auswählen.

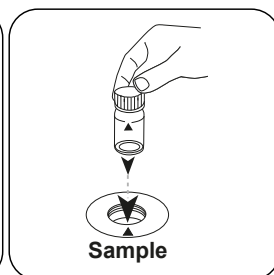
Für diese Methode muss bei folgenden Geräten nicht jedes mal eine ZERO-Messung durchgeführt werden: XD 7000, XD 7500



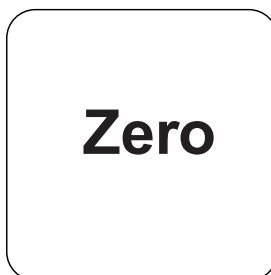
24-mm-Küvette mit **10 mL Probe** füllen.



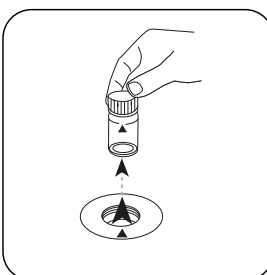
Küvette(n) verschließen.



Die **Probenküvette** in den Messschacht stellen. Positionierung beachten.

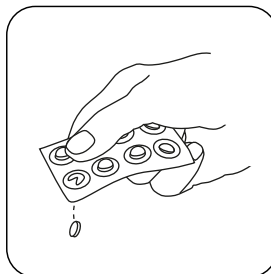


Zero durchführen.

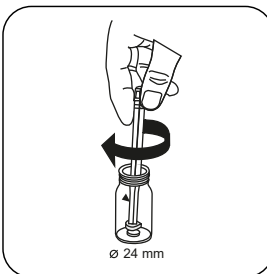


Küvette aus dem Messschacht nehmen.

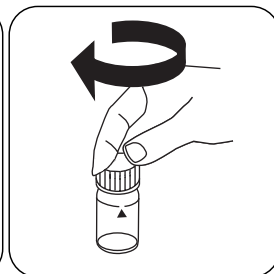
Bei Geräten, die **keine ZERO-Messung** erfordern, **hier beginnen**.



Eine **PHENOL RED PHOTOMETER Tablette** zugeben.

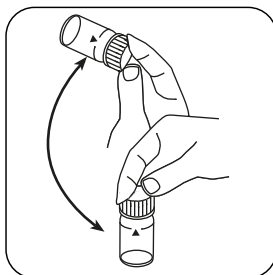


Tablette(n) unter leichter Drehung zerdrücken.

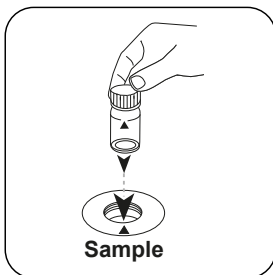


Küvette(n) verschließen.

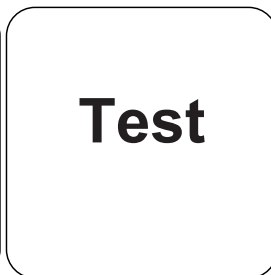
DE



Tablette(n) durch Umschwenken lösen.



Die **Probenküvette** in den Messschacht stellen.
Positionierung beachten.

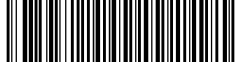


Test

Test durchführen.

In der Anzeige erscheint das Ergebnis als pH-Wert.

DE



Chemische Methode

Phenolrot

Appendix

Störungen

DE

Permanente Störungen

1. Wasserproben mit geringer Carbonathärte* können falsche pH-Werte ergeben.
* $K_{S4,3} < 0,7 \text{ mmol/l} \triangleq \text{Gesamthärte} < 35 \text{ mg/L CaCO}_3$.

Ausschließbare Störungen

1. pH-Werte unter 6,5 und über 8,4 können zu Ergebnissen innerhalb des Messbereiches führen. Es wird ein Plausibilitätstest (pH-Meter) empfohlen.
2. Salzfehler:
Bei Salzgehalten bis 2 g/L ist kein nennenswerter Salzfehler aufgrund des Salzgehaltes der Reagenztablette zu erwarten. Bei höheren Salzgehalten sind die Messwerte wie folgt zu korrigieren:

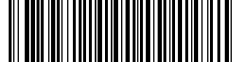
Salzgehalt der Probe in g/L	30 (Meerwasser)	60	120	180
Korrektur	-0,15 ¹⁾	-0,21 ²⁾	-0,26 ²⁾	-0,29 ²⁾

¹⁾ nach Kolthoff (1922)

²⁾ nach Parson und Douglas (1926)

Literaturverweise

Colorimetric Chemical Analytical Methods, 9th Edition, London



pH-Wert L

M331

6,5 - 8,4 pH

PH

Phenolrot

DE

Material

Benötigtes Material (zum Teil optional):

Reagenzien	Form/Menge	Bestell-Nr.
Phenolrot Lösung	15 mL	471040
Phenolrot Lösung	100 mL	471041
Phenolrot Lösung im -6er Pack	1 St.	471046

Probenahme

Salzgehalt der Probe	Korrektur
30 g/L (Meerwasser)	-0,15 ¹⁾
60 g/L	-0,21 ²⁾
120 g/L	-0,26 ²⁾
180 g/L	-0,29 ²⁾

¹⁾ nach Kolthoff (1922)

²⁾ nach Parson und Douglas (1926)

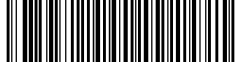
Bei der Untersuchung von gechlortem Wasser kann der vorhandene Restchlorgehalt die Farbreaktion des Flüssigreagenzes beeinflussen. Dies wird verhindert, indem ein kleiner Kristall Natriumthiosulfat ($\text{Na}_2\text{S}_2\text{O}_3 \cdot 5 \text{H}_2\text{O}$) in die Probelösung gegeben wird, bevor die PHENOL RED-Lösung zugesetzt wird.

Vorbereitung

1. Auf Grund unterschiedlicher Tropfengröße kann das Messergebnis größere Abweichungen als bei Verwendung von Tabletten aufweisen.
Bei Verwendung einer Pipette (0,18 ml entsprechen 6 Tropfen) kann diese Abweichung minimiert werden.

Anmerkungen

1. Nach Gebrauch ist die Trofflasche mit der gleichfarbigen Schraubkappe sofort wieder zu verschließen.
2. Das Reagenz bei +6 °C bis +10 °C kühl lagern.



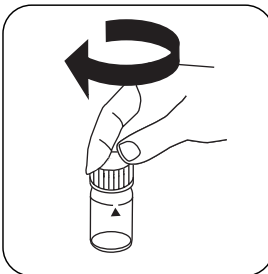
Durchführung der Bestimmung pH-Wert mit Flüssigreagenz

Die Methode im Gerät auswählen.

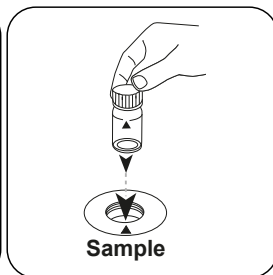
Für diese Methode muss bei folgenden Geräten nicht jedes mal eine ZERO-Messung durchgeführt werden: XD 7000, XD 7500



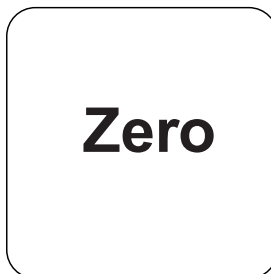
24-mm-Küvette mit **10 mL Probe** füllen.



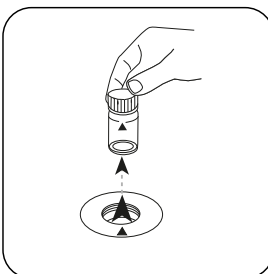
Küvette(n) verschließen.



Die **Probenküvette** in den Messschacht stellen. Positionierung beachten.

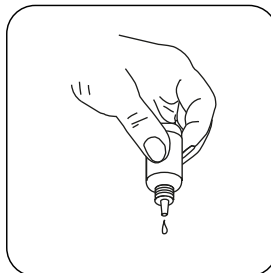


Zero durchführen.

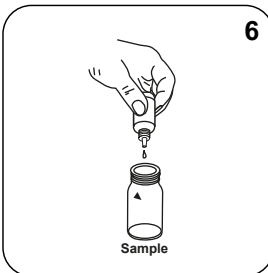


Küvette aus dem Messschacht nehmen.

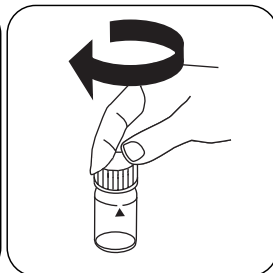
Bei Geräten, die **keine ZERO-Messung** erfordern, **hier beginnen**.



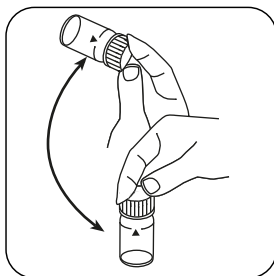
Die Tropfflaschen senkrecht halten und durch langsames Drücken gleich große Tropfen zugeben.



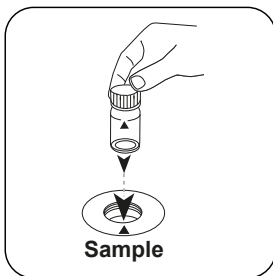
6 Tropfen PHENOL Red-Lösung in die **Probenküvette** geben.



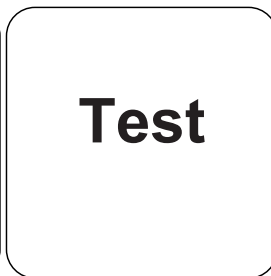
Küvette(n) verschließen.



Inhalt durch Umschwenken
mischen.



Die **Probenküvette** in
den Messschacht stellen.
Positionierung beachten.



Test durchführen.

In der Anzeige erscheint das Ergebnis als pH-Wert.

DE



Chemische Methode

Phenolrot

Appendix

Störungen

DE

Ausschließbare Störungen

1. Salzfehler: Korrektur des Messwertes (durchschnittliche Werte) für Proben mit einem Salzgehalt von:

2. Salzgehalt der Probe	Korrektur
30 g/L (Meerwasser)	-0,15 ¹⁾
60 g/L	-0,21 ²⁾
120 g/L	-0,26 ²⁾
180 g/L	-0,29 ²⁾
¹⁾ nach Kolthoff (1922)	²⁾ nach Parson und Douglas (1926)

3. Bei der Untersuchung von gechlortem Wasser kann der vorhandene Restchlorgehalt die Farbreaktion des Flüssigreagenzes beeinflussen. Dies wird verhindert, indem ein kleiner Kristall Natriumthiosulfat ($\text{Na}_2\text{S}_2\text{O}_3 \cdot 5 \text{H}_2\text{O}$) in die Probelösung gegeben wird, bevor die PHENOL RED-Lösung zugesetzt wird.

Literaturverweise

Colorimetric Chemical Analytical Methods, 9th Edition, London

120

Realización de la determinación

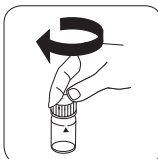
Ejecución de la determinación Capacidad ácida $K_{s4.3}$ con tableta

Seleccionar el método en el aparato.

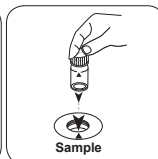
Para este método no es necesario realizar medición CERO en los aparatos siguientes: XD 7000, XD 7500



Llenar la cubeta de 24 mm con 10 ml de muestra.

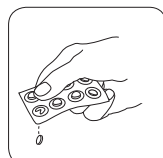


Cerrar la(s) cubeta(s).

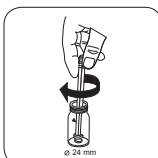


Poner la cubeta de muestra en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!

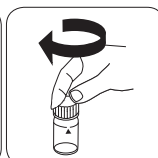
• • •



Añadir tableta ALKA-M-PHOTOMETER.



Triturar la(s) tableta(s) girando ligeramente.



Cerrar la(s) cubeta(s).

**Cloro T****M100****0.01 - 6.0 mg/L Cl₂ ^{a)}****CL6****DPD**

ES

Material

Material requerido (parcialmente opcional):

Reactivos	Unidad de embalaje	No. de referencia
DPD n°1	Tabletas / 100	511050BT
DPD n° 1	Tabletas / 250	511051BT
DPD n° 1	Tabletas / 500	511052BT
DPD n° 3	Tabletas / 100	511080BT
DPD n° 3	Tabletas / 250	511081BT
DPD n° 3	Tabletas / 500	511082BT
DPD n° 1 High Calcium ^{e)}	Tabletas / 100	515740BT
DPD n° 1 High Calcium ^{e)}	Tabletas / 250	515741BT
DPD n° 1 High Calcium ^{e)}	Tabletas / 500	515742BT
DPD n° 3 High Calcium ^{e)}	Tabletas / 100	515730BT
DPD n° 3 High Calcium ^{e)}	Tabletas / 250	515731BT
DPD n° 3 High Calcium ^{e)}	Tabletas / 500	515732BT
DPD n° 4	Tabletas / 100	511220BT
DPD n° 4	Tabletas / 250	511221BT
DPD n° 4	Tabletas / 500	511222BT
DPD n° 3 Evo	Tabletas / 100	511420BT
DPD n° 3 Evo	Tabletas / 250	511421BT
DPD n° 3 Evo	Tabletas / 500	511422BT
DPD n°4 Evo	Tabletas / 100	511970BT
DPD n° 4 Evo	Tabletas / 250	511971BT
DPD n° 4 Evo	Tabletas / 500	511972BT

Standards disponibles

Título	Unidad de embalaje	No. de referencia
ValidCheck cloro 1,5 mg/l	1 Cantidad	48105510

Muestreo

1. Evitar durante la preparación de la muestra la desgasificación de cloro, p. ej., al pipetar o agitar.
2. La determinación se ha de realizar inmediatamente después de la toma de la muestra.

Preparación

1. Limpieza de las cubetas:
Muchos productos de limpieza (p. ej., detergentes de lavavajillas) poseen componentes reductores, que pueden reducir los resultados en la determinación del cloro. Para evitar estas alteraciones, los aparatos de vidrio deben estar exentos de componentes corrosivos al cloro. Para ello, deberá sumergir los aparatos de vidrio durante una hora en una solución de hipoclorito sódico (0,1 g/L), enjuagándolos minuciosamente a continuación con agua desionizada.
2. Para la determinación individual de cloro libre y cloro total se recomienda utilizar siempre los mismos sets de cubetas respectivamente (véase EN ISO 7393-2, párrafo 5.3).
3. El desarrollo coloreo por DPD se efectúa entre un valor de pH de 6,2 - 6,5. Por ello poseen las tabletas un tampón para la graduación del valor de pH. Sin embargo, las muestras acuosas muy ácidas o muy básicas se deberán neutralizar a un valor de pH entre 6 y 7 antes de realizar el análisis (con 0,5 mol/l de ácido sulfúrico o 1 mol/l de hidróxido sódico).

Notas

1. Las tabletas EVO pueden utilizarse como alternativa a la tableta estándar correspondiente (por ejemplo, DPD nº 3 EVO en lugar de DPD nº 3).



Ejecución de la determinación Cloro libre con tableta

Seleccionar el método en el aparato.

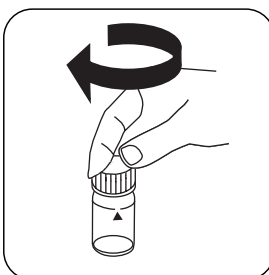
Seleccione además la determinación: libre

Para este método, no es necesario realizar una medición CERO cada vez en los siguientes dispositivos: XD 7000, XD 7500

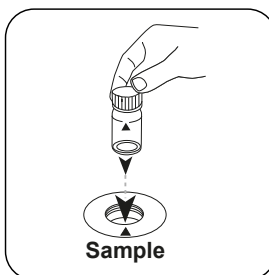
ES



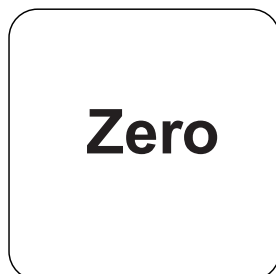
Llenar la cubeta de 24 mm con **10 mL de muestra**.



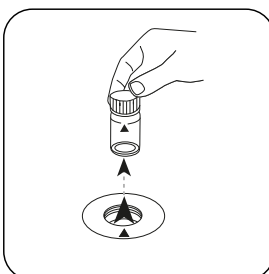
Cerrar la(s) cubeta(s).



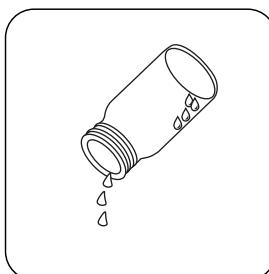
Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!



Realizar Cero.

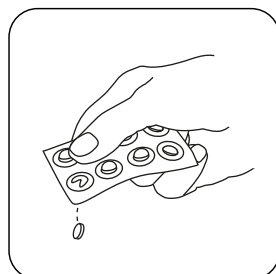


Extraer la cubeta del compartimiento de medición.

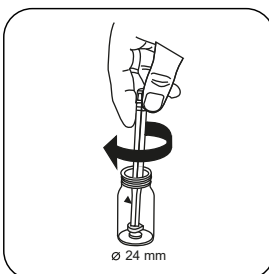


Vaciar la cubeta excepto algunas gotas.

Para los aparatos que **no requieran medición CERO**, empezar aquí.



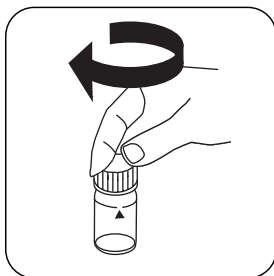
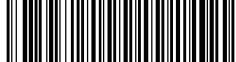
Añadir **tableta DPD No. 1**.



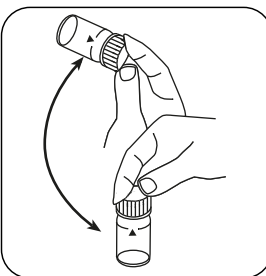
Triturar la(s) tableta(s) girando ligeramente.



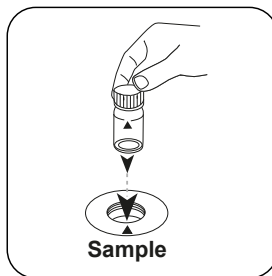
Llenar la cubeta con la **muestra** hasta la **marca de 10 mL**.



Cerrar la(s) cubeta(s).



Disolver la(s) tableta(s) girando.



Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!

ES

Test

Realizar prueba.

A continuación se visualizará el resultado en mg/L Cloro libre.

Ejecución de la determinación Cloro total con tableta

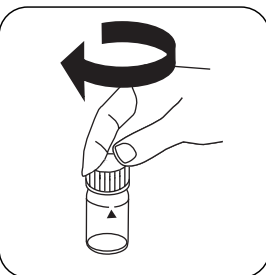
Seleccionar el método en el aparato.

Selecione además la determinación: total

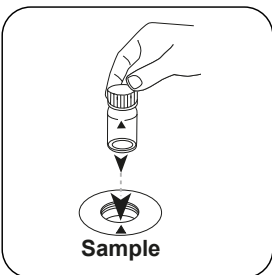
Para este método, no es necesario realizar una medición CERO cada vez en los siguientes dispositivos: XD 7000, XD 7500



Llenar la cubeta de 24 mm con **10 mL de muestra**.



Cerrar la(s) cubeta(s).

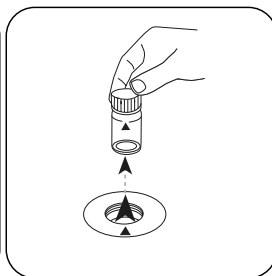


Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!

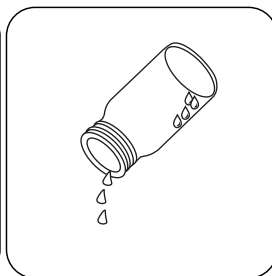


Zero

Realizar Cero.

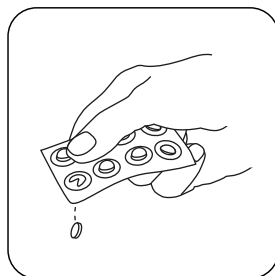


Extraer la cubeta del compartimiento de medición.

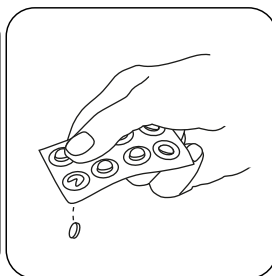


Vaciar la cubeta excepto algunas gotas.

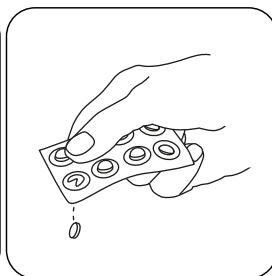
Para los aparatos que **no requieran medición CERO** , **empezar aquí.**



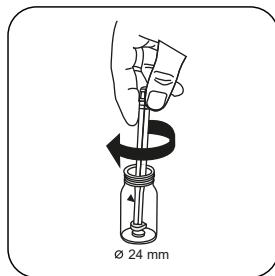
Añadir **tableta DPD No. 1.**



Añadir **tableta DPD No. 3.**



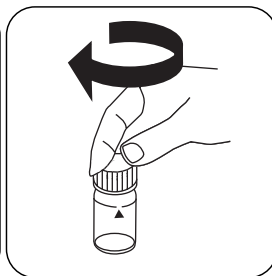
Alternativa a la tableta DPD No 1 y No 3, se puede agregar una tableta DPD No. 4.



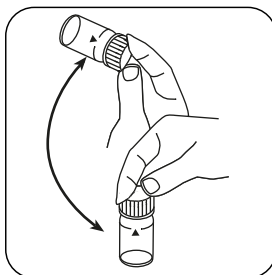
Triturar la(s) tableta(s) girando ligeramente.



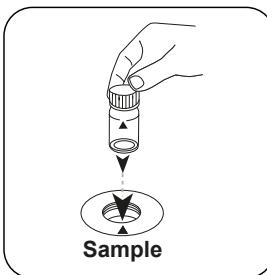
Llenar la cubeta con la **muestra** hasta la **marca de 10 mL** .



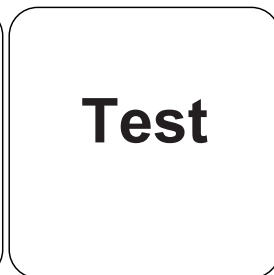
Cerrar la(s) cubeta(s).



Disolver la(s) tableta(s) girando.

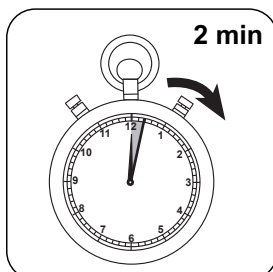


Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!



Realizar prueba.

ES



Esperar **2 minutos como período de reacción**.

Finalizado el periodo de reacción se realizará la determinación automáticamente.

A continuación se visualizará el resultado en mg/L Cloro total.

Ejecución de la determinación Cloro, determinación diferenciada con tableta

Seleccionar el método en el aparato.

Seleccione además la determinación: diferenciada

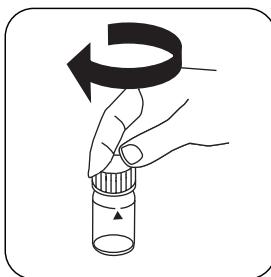
Para este método, no es necesario realizar una medición CERO cada vez en los siguientes dispositivos: XD 7000, XD 7500



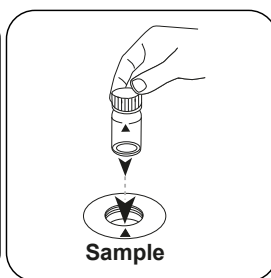
ES



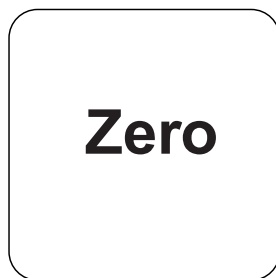
Llenar la cubeta de 24 mm con **10 mL de muestra** .



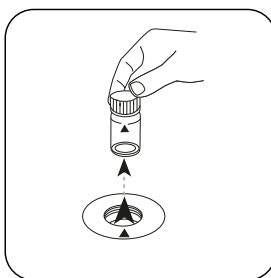
Cerrar la(s) cubeta(s).



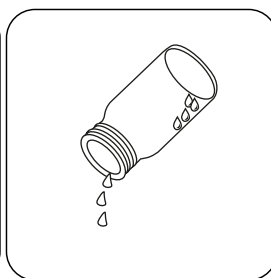
Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!



Realizar Cero.

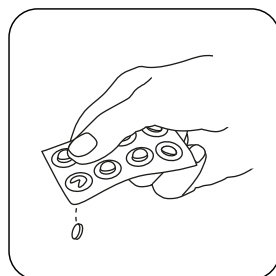


Extraer la cubeta del compartimiento de medición.

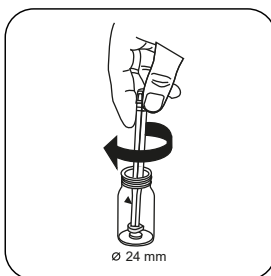


Vaciar la cubeta excepto algunas gotas.

Para los aparatos que **no requieran medición CERO** , empezar aquí.



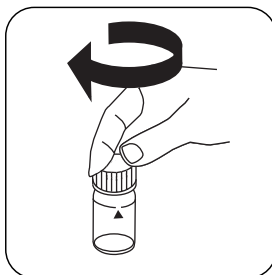
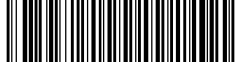
Añadir **tableta DPD No. 1**.



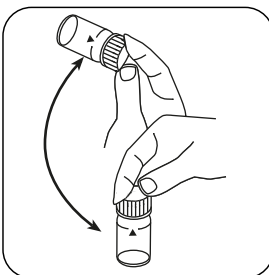
Triturar la(s) tableta(s) girando ligeramente.



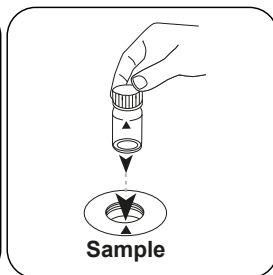
Llenar la cubeta con la **muestra hasta la marca de 10 mL** .



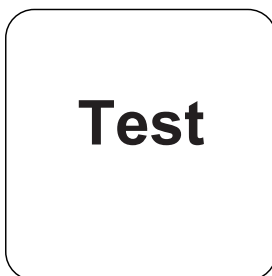
Cerrar la(s) cubeta(s).



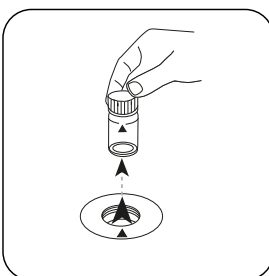
Disolver la(s) tableta(s) girando.



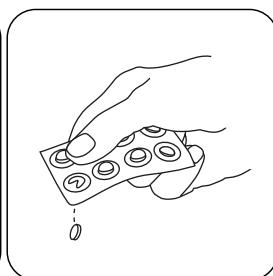
Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!



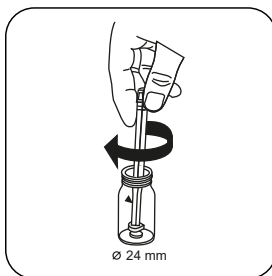
Realizar prueba.



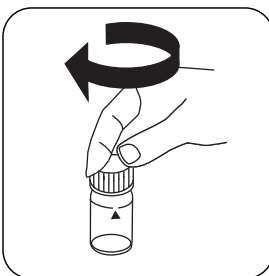
Extraer la cubeta del compartimiento de medición.



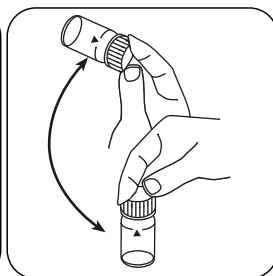
Añadir **tableta DPD No. 3**.



Triturar la(s) tableta(s) girando ligeramente.



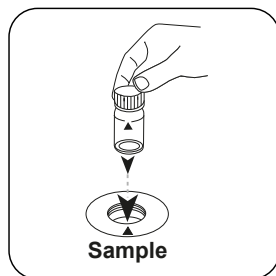
Cerrar la(s) cubeta(s).



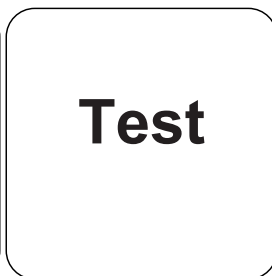
Disolver la(s) tableta(s) girando.



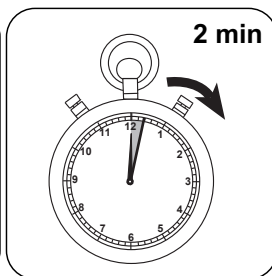
ES



Poner la **cupeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!



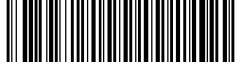
Realizar prueba.



Esperar **2 minutos como periodo de reacción**.

Finalizado el periodo de reacción se realizará la determinación automáticamente.

A continuación se visualizará el resultado en mg/L cloro libre, mg/l cloro ligado, mg/l cloro total.



Método químico

DPD

Apéndice

Interferencia

ES

Interferencias persistentes

- Todos los elementos oxidantes existentes en la muestra reaccionan como el cloro, lo que produce un resultado más elevado.

Interferencias extraíbles

- Las perturbaciones debido a cobre y hierro (III) deben suprimirse mediante EDTA.
- En las muestras con una elevada concentración de iones de calcio* y/o alta conductividad*, se puede producir un enturbiamiento de la muestra con el uso de las tabletas de reactivo, alterando el resultado. En este caso, utilizar alternativamente la tableta reactiva DPD nº 1 High Calcium y la tableta reactiva DPD nº 3 High Calcium. *no se pueden dar valores exactos, ya que la aparición de enturbiamiento dependerá del tipo y composición de la muestra.
- Las concentraciones de cloro mayores a 10 mg/L, cuando se usan tabletas pueden conducir a resultados de dentro del campo de medición hasta 0 mg/L. Con una concentración de cloro alta, se deberá diluir la muestra con agua sin cloro. Se mezclan 10 ml de muestra diluida con reactivo y se repite la medición (prueba de plausibilidad).

Interferencia	de / [mg/L]
CrO_4^{2-}	0.01
MnO_2	0.01

Conforme a

EN ISO 7393-2

^{a)} Posible determinación de libre, combinado, total | ^{a)} Reactivo auxiliar, alternativo a DPD No.1/3 en enturbiamientos de la prueba debido a concentraciones elevadas de calcio y/o elevada conductividad

**Cloro L****M101****0.02 - 4.0 mg/L Cl₂ ^{a)}****CL6****DPD**

ES

Material

Material requerido (parcialmente opcional):

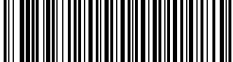
Reactivos	Unidad de embalaje	No. de referencia
Solución de tampón DPD 1, frasco azul	15 mL	471010
Solución de tampón DPD 1	100 mL	471011
Solución de tampón DPD 1 en pack de 6	1 Cantidad	471016
Solución reactiva DPD 1, frasco verde	15 mL	471020
Solución de reactivo DPD 1	100 mL	471021
Solución reactiva DPD 1 en pack de 6	1 Cantidad	471026
Solución DPD 3, frasco rojo	15 mL	471030
Solución DPD 3	100 mL	471031
Solución DPD 3 en pack de 6	1 Cantidad	471036
Juego de reactivos para DPD	1 Cantidad	471056

Standards disponibles

Título	Unidad de embalaje	No. de referencia
ValidCheck cloro 1,5 mg/l	1 Cantidad	48105510

Muestreo

1. Evitar durante la preparación de la muestra la desgasificación de cloro, p. ej., al pipetar o agitar.
2. La determinación se ha de realizar inmediatamente después de la toma de la muestra.



Preparación

1. Limpieza de las cubetas:
Muchos productos de limpieza (p. ej., detergentes de lavavajillas) poseen componentes reductores, que pueden reducir los resultados en la determinación del cloro. Para evitar estas alteraciones, los aparatos de vidrio deben estar exentos de componentes corrosivos al cloro. Para ello, deberá sumergir los aparatos de vidrio durante una hora en una solución de hipoclorito sódico (0,1 g/L), enjuagándolos minuciosamente a continuación con agua desionizada.
2. Para la determinación individual de cloro libre y cloro total se recomienda utilizar siempre los mismos sets de cubetas respectivamente (véase EN ISO 7393-2, párrafo 5.3).
3. El desarrollo coloreo por DPD se efectúa entre un valor de pH de 6,2 - 6,5. Por ello poseen las tabletas un tampón para la graduación del valor de pH. Sin embargo, las muestras acuosas muy ácidas o muy básicas se deberán neutralizar a un valor de pH entre 6 y 7 antes de realizar el análisis (con 0,5 mol/l de ácido sulfúrico o 1 mol/l de hidróxido sódico).

Notas

1. Después de usarlas, las botellas cuentagotas deben cerrarse de nuevo inmediatamente con la tapa roscada del mismo color, respectivamente.
2. Guardar el set reactivo a una temperatura entre +6 °C y +10 °C.



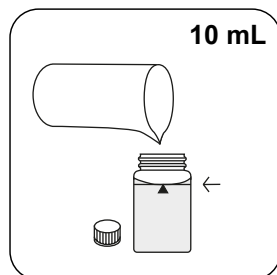
Ejecución de la determinación Cloro libre con reactivos líquidos

Seleccionar el método en el aparato.

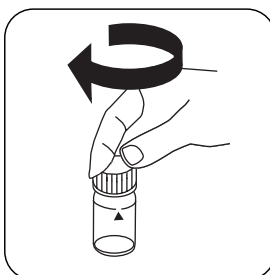
Seleccione además la determinación: libre

Para este método, no es necesario realizar una medición CERO cada vez en los siguientes dispositivos: XD 7000, XD 7500

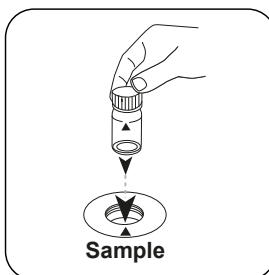
ES



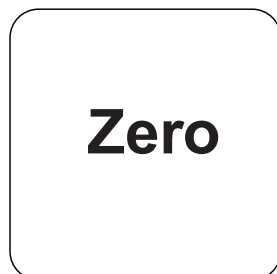
Llenar la cubeta de 24 mm con **10 mL de muestra**.



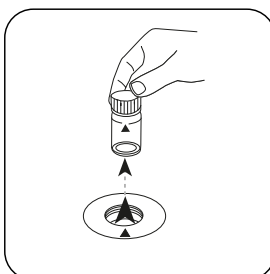
Cerrar la(s) cubeta(s).



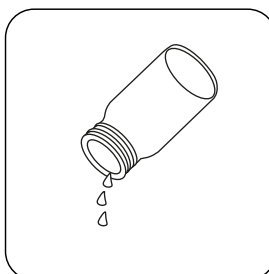
Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!



Realizar Cero.

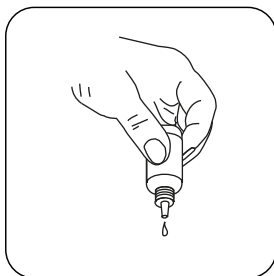
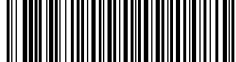


Extraer la cubeta del compartimiento de medición.

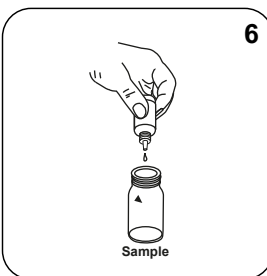


Vaciar la cubeta.

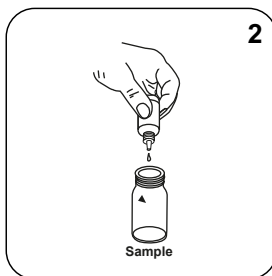
Para los aparatos que **no requieran medición CERO**, empezar aquí.



Mantener la botella cuentagotas vertical y añadir gotas del mismo tamaño presionando lentamente.



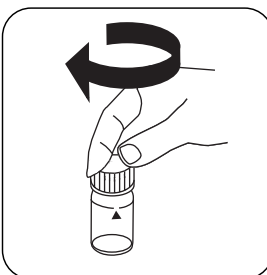
Añadir **6 gotas de DPD 1 Buffer Solution** en la cubeta con la muestra.



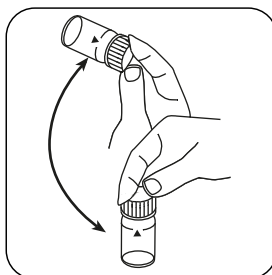
Añadir **2 gotas de DPD 1 Reagent Solution** en la cubeta con la muestra.



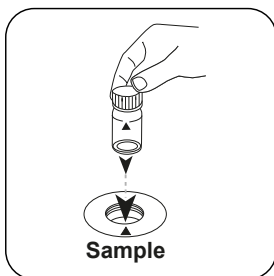
Llenar la cubeta con la **muestra** hasta la **marca de 10 mL**.



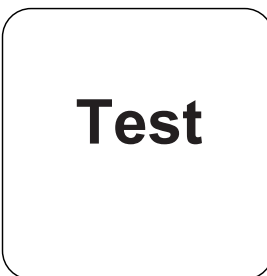
Cerrar la(s) cubeta(s).



Mezclar el contenido girando.



Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!



Realizar prueba.

A continuación se visualizará el resultado en mg/L Cloro libre.

Ejecución de la determinación Cloro total con reactivos líquidos

Seleccionar el método en el aparato.

Seleccione además la determinación: total

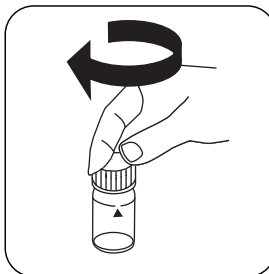


Para este método, no es necesario realizar una medición CERO cada vez en los siguientes dispositivos: XD 7000, XD 7500

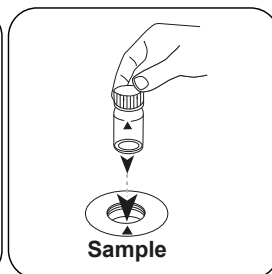
ES



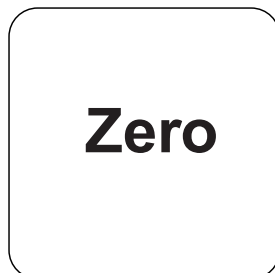
Llenar la cubeta de 24 mm con **10 mL de muestra**.



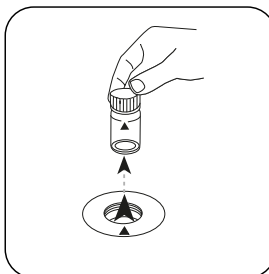
Cerrar la(s) cubeta(s).



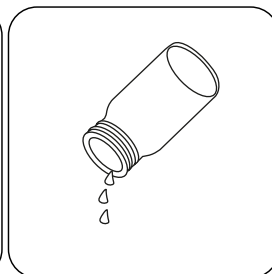
Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!



Realizar Cero.

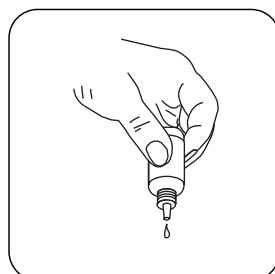


Extraer la cubeta del compartimiento de medición.

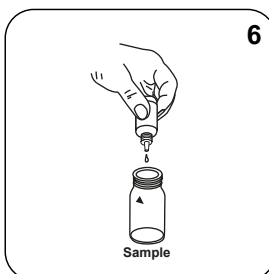


Vaciar la cubeta.

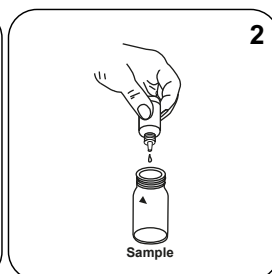
Para los aparatos que **no requieran medición CERO**, empezar aquí.



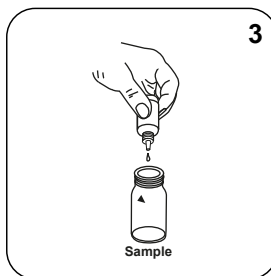
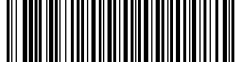
Mantener la botella cuentagotas vertical y añadir gotas del mismo tamaño presionando lentamente.



Añadir **6 gotas de DPD 1 Buffer Solution** en la cubeta con la muestra.



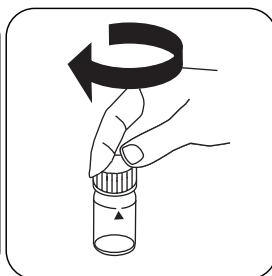
Añadir **2 gotas de DPD 1 Reagent Solution** en la cubeta con la muestra.



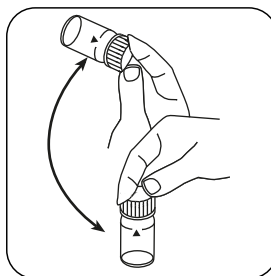
Añadir **3 gotas de DPD 3 Solution** en la cubeta con la muestra.



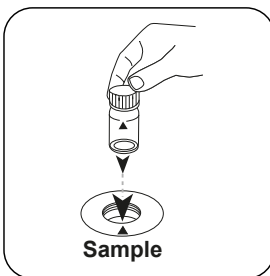
Llenar la cubeta con la **muestra** hasta la **marca de 10 mL**.



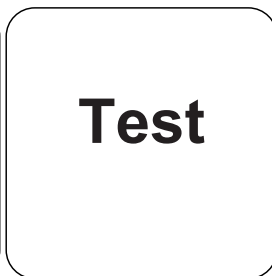
Cerrar la(s) cubeta(s).



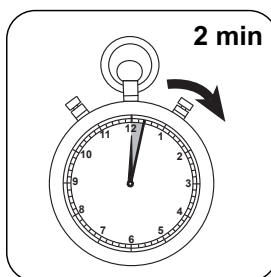
Mezclar el contenido girando.



Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!



Realizar prueba.



Esperar **2 minutos como periodo de reacción**.

Finalizado el periodo de reacción se realizará la determinación automáticamente.

A continuación se visualizará el resultado en mg/L Cloro total.

Ejecución de la determinación Cloro, determinación diferenciada con reactivos líquidos

Seleccionar el método en el aparato.

Seleccione además la determinación: diferenciada

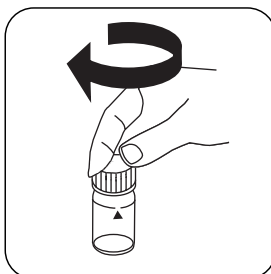


Para este método, no es necesario realizar una medición CERO cada vez en los siguientes dispositivos: XD 7000, XD 7500

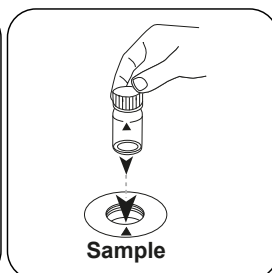
ES



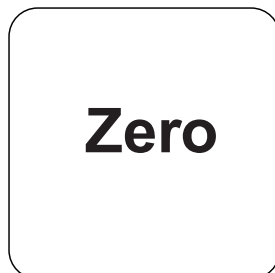
Llenar la cubeta de 24 mm con **10 mL de muestra**.



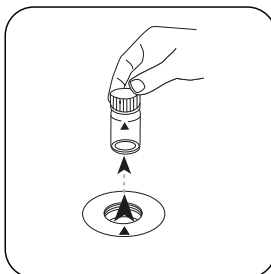
Cerrar la(s) cubeta(s).



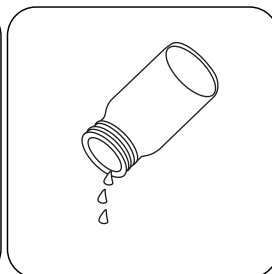
Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!



Realizar Cero.

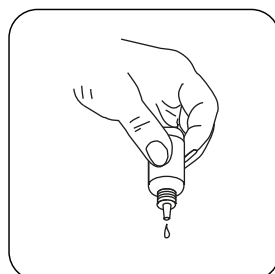


Extraer la cubeta del compartimiento de medición.

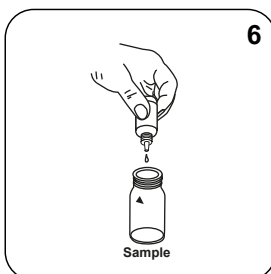


Vaciar la cubeta.

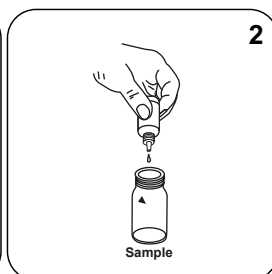
Para los aparatos que **no requieran medición CERO**, empezar aquí.



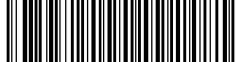
Mantener la botella cuentagotas vertical y añadir gotas del mismo tamaño presionando lentamente.



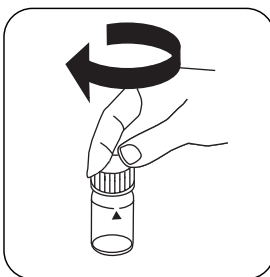
Añadir **6 gotas de DPD 1 Buffer Solution** en la cubeta con la muestra.



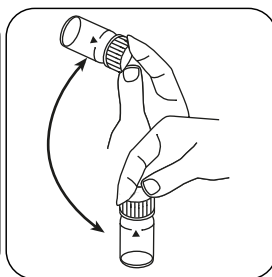
Añadir **2 gotas de DPD 1 Reagent Solution** en la cubeta con la muestra.



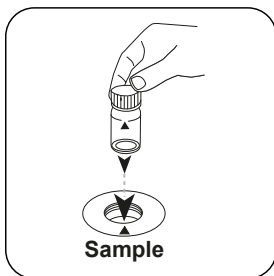
Llenar la cubeta con la **muestra** hasta la **marca de 10 mL**.



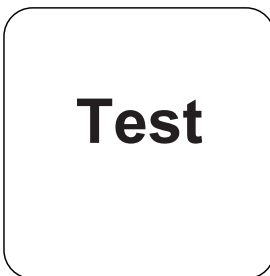
Cerrar la(s) cubeta(s).



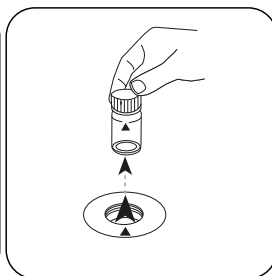
Mezclar el contenido girando.



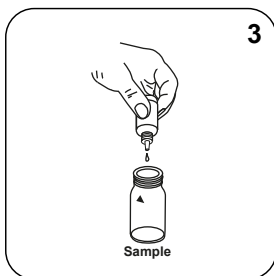
Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!



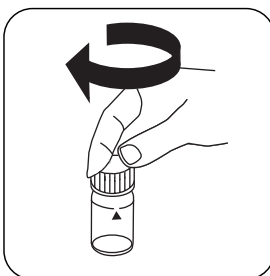
Realizar prueba.



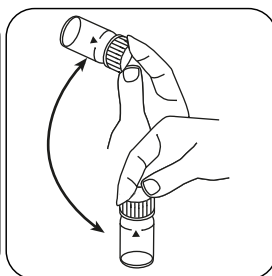
Extraer la cubeta del compartimiento de medición.



Añadir **3 gotas de DPD 3 Solution** en la cubeta con la muestra.



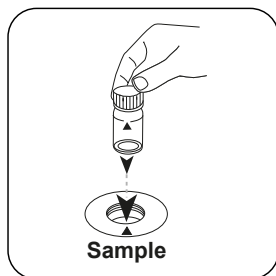
Cerrar la(s) cubeta(s).



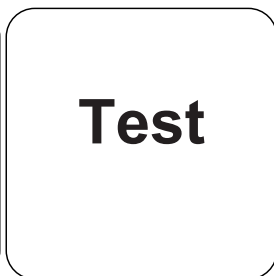
Mezclar el contenido girando.



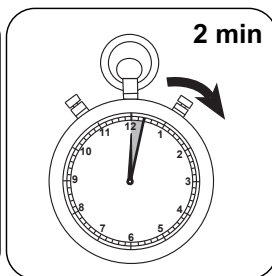
ES



Poner la **cupeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!



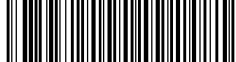
Realizar prueba.



Esperar **2 minutos como periodo de reacción.**

Finalizado el periodo de reacción se realizará la determinación automáticamente.

A continuación se visualizará el resultado en mg/L cloro libre, mg/l cloro ligado, mg/l cloro total.



Método químico

DPD

Apéndice

Interferencia

ES

Interferencias persistentes

- Todos los elementos oxidantes existentes en la muestra reaccionan como el cloro, lo que produce un resultado más elevado.

Interferencias extraíbles

- Las perturbaciones debido a cobre y hierro (III) deben suprimirse mediante EDTA.
- Las concentraciones de cloro mayores a 4 mg/L, cuando se usan reactivos líquidos pueden conducir a resultados de dentro del campo de medición hasta 0 mg/L. En este caso, se deberá diluir la muestra con agua sin cloro. Se mezclan 10 ml de muestra diluida con reactivo y se repite la medición (prueba de plausibilidad).

Interferencia	de / [mg/L]
CrO ₄ ²⁻	0,01
MnO ₂	0,01

Conforme a

EN ISO 7393-2

^{a)} Posible determinación de libre, combinado, total

**Cloro HR T****M103****0.1 - 10 mg/L Cl₂ ^{a)}****CL10****DPD**

ES

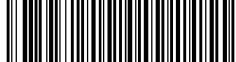
Material

Material requerido (parcialmente opcional):

Reactivos	Unidad de embalaje	No. de referencia
DPD n° 1 HR	Tabletas / 100	511500BT
DPD n° 1 HR	Tabletas / 250	511501BT
DPD n° 1 HR	Tabletas / 500	511502BT
DPD n° 3 HR	Tabletas / 100	511590BT
DPD n° 3 HR	Tabletas / 250	511591BT
DPD n° 3 HR	Tabletas / 500	511592BT
Juego DPD n° 1 HR/n° 3 HR #	100 cada	517791BT
Juego DPD n° 1 HR/n° 3 HR #	250 cada	517792BT
DPD n° 1 High Calcium ^{e)}	Tabletas / 100	515740BT
DPD n° 1 High Calcium ^{e)}	Tabletas / 250	515741BT
DPD n° 1 High Calcium ^{e)}	Tabletas / 500	515742BT
DPD n° 3 High Calcium ^{e)}	Tabletas / 100	515730BT
DPD n° 3 High Calcium ^{e)}	Tabletas / 250	515731BT
DPD n° 3 High Calcium ^{e)}	Tabletas / 500	515732BT
DPD n°3 HR Evo	Tabletas / 100	511920BT
DPD n° 3 HR Evo	Tabletas / 250	511921BT
DPD n° 3 HR Evo	Tabletas / 500	511922BT

Muestreo

1. Evitar durante la preparación de la muestra la desgasificación de cloro, p. ej., al pipetar o agitar.
2. La determinación se ha de realizar inmediatamente después de la toma de la muestra.



Preparación

1. Limpieza de las cubetas:
Muchos productos de limpieza (p. ej., detergentes de lavavajillas) poseen componentes reductores, que pueden reducir los resultados en la determinación del cloro. Para evitar estas alteraciones, los aparatos de vidrio deben estar exentos de componentes corrosivos al cloro. Para ello, deberá sumergir los aparatos de vidrio durante una hora en una solución de hipoclorito sódico (0,1 g/L), enjuagándolos minuciosamente a continuación con agua desionizada.
2. Para la determinación individual de cloro libre y cloro total se recomienda utilizar siempre los mismos sets de cubetas respectivamente (véase EN ISO 7393-2, párrafo 5.3).
3. El desarrollo coloreo por DPD se efectúa entre un valor de pH de 6,2 - 6,5. Por ello poseen las tabletas un tampón para la graduación del valor de pH. Sin embargo, las muestras acuosas muy ácidas o muy básicas se deberán neutralizar a un valor de pH entre 6 y 7 antes de realizar el análisis (con 0,5 mol/L de ácido sulfúrico o 1 mol/L de hidróxido sódico).

Notas

1. Las tabletas Evo pueden utilizarse como alternativa a la tableta estándar correspondiente (por ejemplo, DPD nº 3 Evo en lugar de DPD nº 3).



Ejecución de la determinación Cloro HR libre con tableta

Seleccionar el método en el aparato.

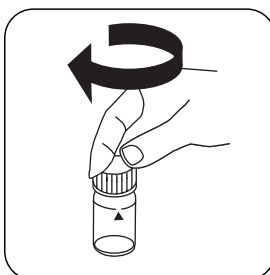
Seleccione además la determinación: libre

Para este método, no es necesario realizar una medición CERO cada vez en los siguientes dispositivos: XD 7000, XD 7500

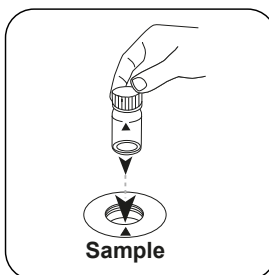
ES



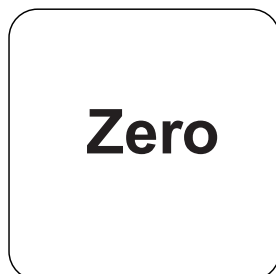
Llenar la cubeta de 24 mm con **10 mL de muestra**.



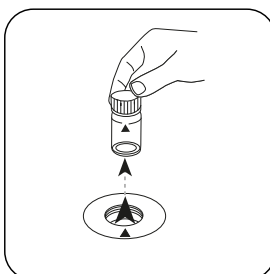
Cerrar la(s) cubeta(s).



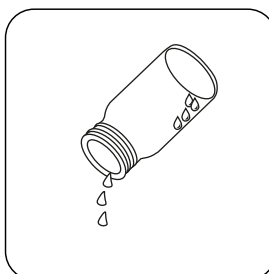
Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!



Realizar Cero.

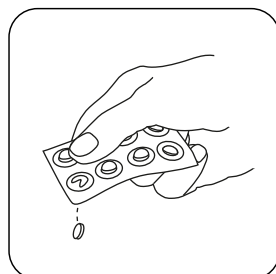


Extraer la cubeta del compartimiento de medición.

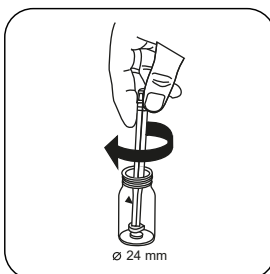


Vaciar la cubeta excepto algunas gotas.

Para los aparatos que **no requieran medición CERO**, empezar aquí.



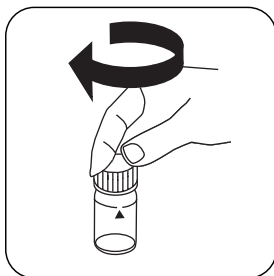
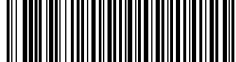
Añadir **tableta DPD No. 1 HR**.



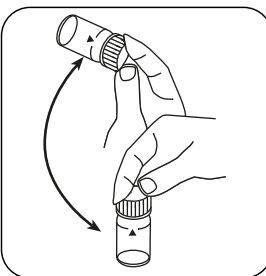
Triturar la(s) tableta(s) girando ligeramente.



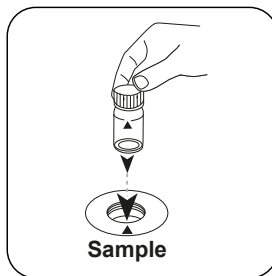
Llenar la cubeta con la **muestra hasta la marca de 10 mL**.



Cerrar la(s) cubeta(s).



Disolver la(s) tableta(s) girando.



Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!

ES

Test

Realizar prueba.

A continuación se visualizará el resultado en mg/L Cloro libre.

Ejecución de la determinación Cloro HR total con tableta

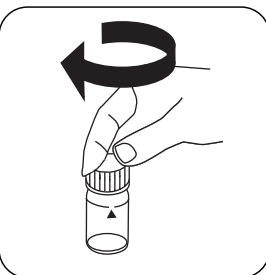
Seleccionar el método en el aparato.

Selecione además la determinación: total

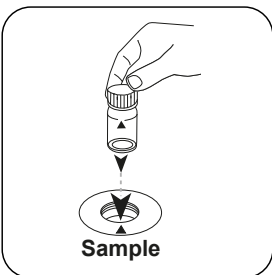
Para este método, no es necesario realizar una medición CERO cada vez en los siguientes dispositivos: XD 7000, XD 7500



Llenar la cubeta de 24 mm con **10 mL de muestra**.



Cerrar la(s) cubeta(s).

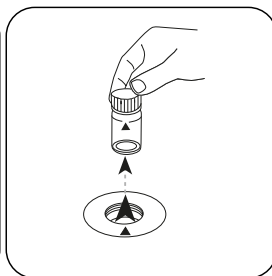


Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!

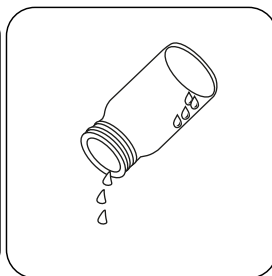


Zero

Realizar Cero.

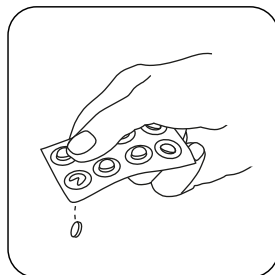


Extraer la cubeta del compartimiento de medición.

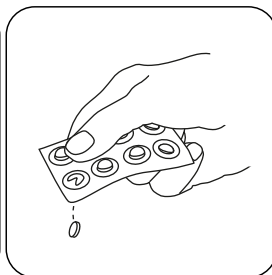


Vaciar la cubeta excepto algunas gotas.

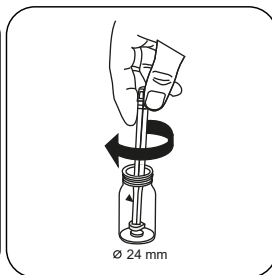
Para los aparatos que **no requieran medición CERO** , **empezar aquí.**



Añadir **tableta DPD No. 1 HR** .



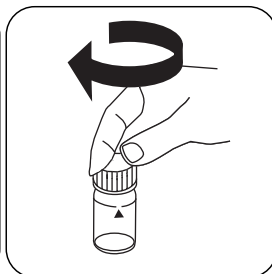
Añadir **tableta DPD No. 3 HR** .



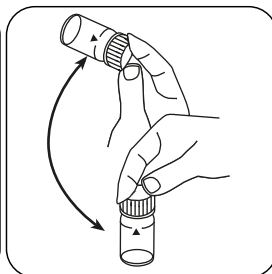
Triturar la(s) tableta(s) girando ligeramente.



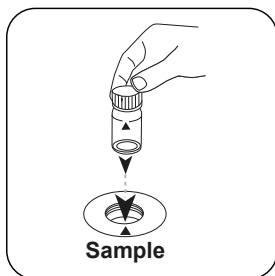
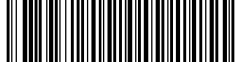
Llenar la cubeta con la **muestra** hasta la **marca de 10 mL** .



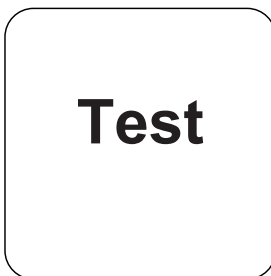
Cerrar la(s) cubeta(s).



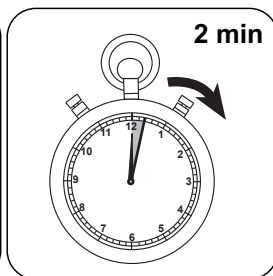
Disolver la(s) tableta(s) girando.



Poner la **cupeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!



Realizar prueba.



Esperar **2 minutos como periodo de reacción**.

ES

Finalizado el periodo de reacción se realizará la determinación automáticamente.

A continuación se visualizará el resultado en mg/L Cloro total.

Ejecución de la determinación Cloro HR, determinación diferenciada con tableta

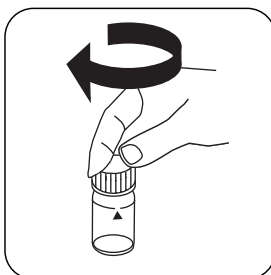
Seleccionar el método en el aparato.

Seleccione además la determinación: diferenciada

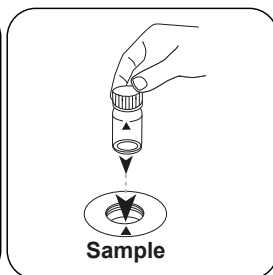
Para este método, no es necesario realizar una medición CERO cada vez en los siguientes dispositivos: XD 7000, XD 7500



Llenar la cupeta de 24 mm con **10 mL de muestra**.



Cerrar la(s) cupeta(s).

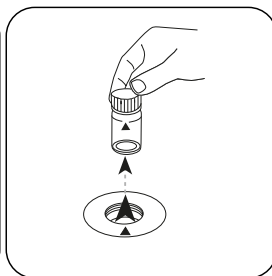


Poner la **cupeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!

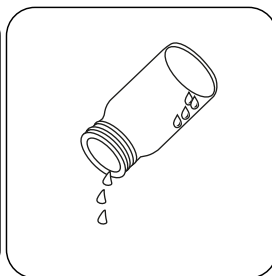


Zero

Realizar Cero.

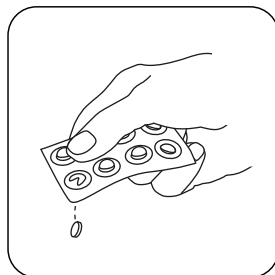


Extraer la cubeta del compartimiento de medición.

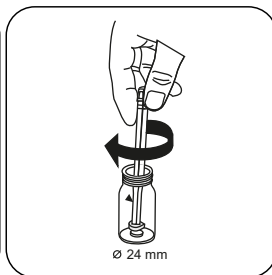


Vaciar la cubeta excepto algunas gotas.

Para los aparatos que **no requieran medición CERO** , **empezar aquí.**



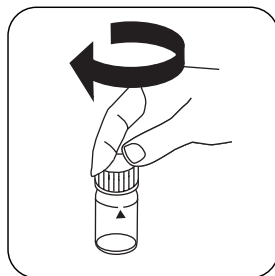
Añadir **tableta DPD No. 1 HR** .



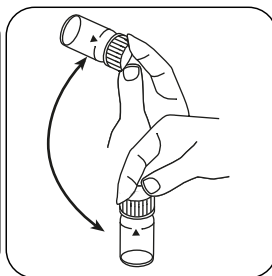
Triturar la(s) tableta(s) girando ligeramente.



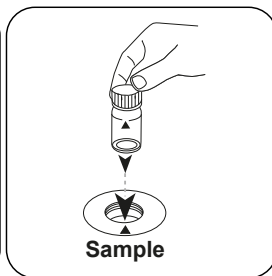
Llenar la cubeta con la **muestra hasta la marca de 10 mL** .



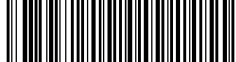
Cerrar la(s) cubeta(s).



Disolver la(s) tableta(s) girando.

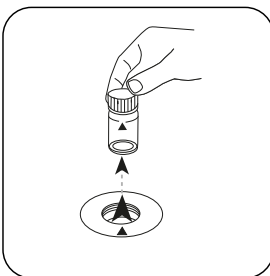


Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!

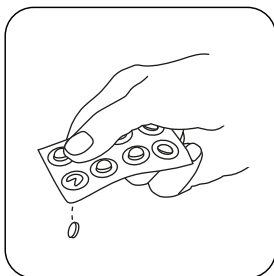


Test

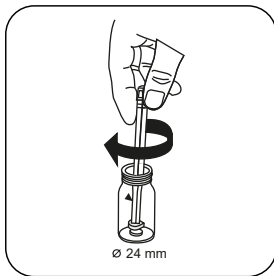
Realizar prueba.



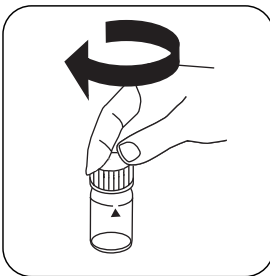
Extraer la cubeta del compartimiento de medición.



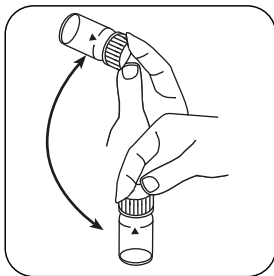
Añadir **tableta DPD No. 3 HR**.



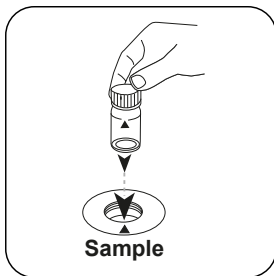
Triturar la(s) tableta(s) girando ligeramente.



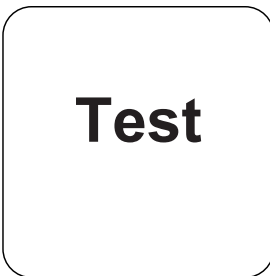
Cerrar la(s) cubeta(s).



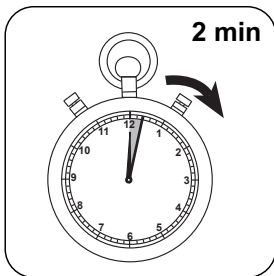
Disolver la(s) tableta(s) girando.



Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!



Realizar prueba.



Esperar **2 minutos como periodo de reacción**.

Finalizado el periodo de reacción se realizará la determinación automáticamente.

A continuación se visualizará el resultado en mg/L cloro libre, mg/l cloro ligado, mg/l cloro total.



Método químico

DPD

Apéndice

ES

Interferencia

Interferencias persistentes

- Todos los elementos oxidantes existentes en la muestra reaccionan como el cloro, lo que produce un resultado más elevado.

Interferencias extraíbles

- Las perturbaciones debido a cobre y hierro (III) deben suprimirse mediante EDTA.
- En las muestras con una elevada concentración de iones de calcio* y/o alta conductividad*, se puede producir un enturbiamiento de la muestra con el uso de las tabletas de reactivo, alterando el resultado. En este caso, utilizar alternativamente la tableta reactiva DPD nº 1 High Calcium y la tableta reactiva DPD nº 3 High Calcium. *no se pueden dar valores exactos, ya que la aparición de enturbiamiento dependerá del tipo y composición de la muestra.

Conforme a

EN ISO 7393-2

^{a)} Posible determinación de libre, combinado, total | ^{a)} Reactivo auxiliar, alternativo a DPD No.1/3 en enturbiamientos de la prueba debido a concentraciones elevadas de calcio y/o elevada conductividad

**Cloro PP****M110****0.02 - 2 mg/L Cl₂ ^{a)}****CL2****DPD**

ES

Material

Material requerido (parcialmente opcional):

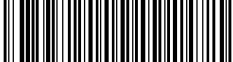
Reactivos	Unidad de embalaje	No. de referencia
Cloro libre DPD F10	Polvos / 100 Cantidad	530100
Cloro libre DPD F10	Polvos / 1000 Cantidad	530103
Cloro total DPD F10	Polvos / 100 Cantidad	530120
Cloro total DPD F10	Polvos / 1000 Cantidad	530123

Standards disponibles

Título	Unidad de embalaje	No. de referencia
ValidCheck cloro 1,5 mg/l	1 Cantidad	48105510

Muestreo

1. Evitar durante la preparación de la muestra la degasificación de cloro, p. ej., al pipetar o agitar.
2. La determinación se ha de realizar inmediatamente después de la toma de la muestra.



Preparación

1. Limpieza de las cubetas:
Muchos productos de limpieza (p. ej., detergentes de lavavajillas) poseen componentes reductores, que pueden reducir los resultados en la determinación del cloro. Para evitar estas alteraciones, los aparatos de vidrio deben estar exentos de componentes corrosivos al cloro. Para ello, deberá sumergir los aparatos de vidrio durante una hora en una solución de hipoclorito sódico (0,1 g/L), enjuagándolos minuciosamente a continuación con agua desionizada.
2. Para la determinación individual de cloro libre y cloro total se recomienda utilizar siempre los mismos sets de cubetas respectivamente (véase EN ISO 7393-2, párrafo 5.3).
3. El desarrollo coloreo por DPD se efectúa entre un valor de pH de 6,2 - 6,5. Por ello poseen las tabletas un tampón para la graduación del valor de pH. Sin embargo, las muestras acuosas muy ácidas o muy básicas se deberán neutralizar a un valor de pH entre 6 y 7 antes de realizar el análisis (con 0,5 mol/l de ácido sulfúrico o 1 mol/l de hidróxido sódico).

ES



Ejecución de la determinación cloro libre con reactivo Powder Pack

Seleccionar el método en el aparato.

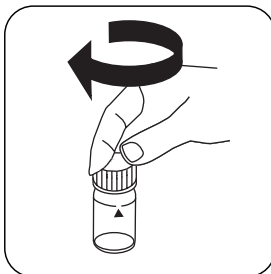
Seleccione además la determinación: libre

Para este método, no es necesario realizar una medición CERO cada vez en los siguientes dispositivos: XD 7000, XD 7500

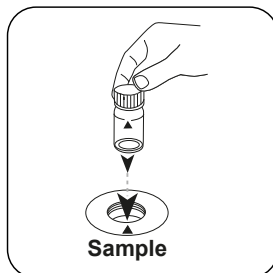
ES



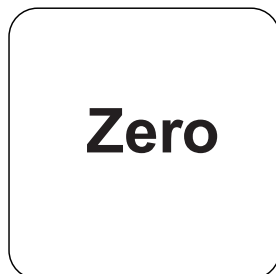
Llenar la cubeta de 24 mm con **10 mL de muestra**.



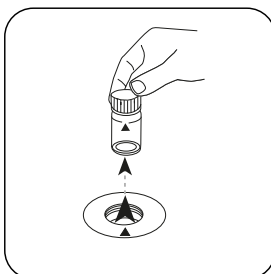
Cerrar la(s) cubeta(s).



Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!

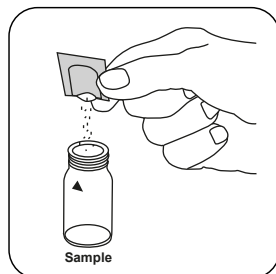


Realizar Cero.

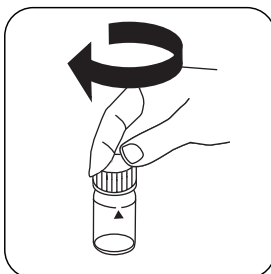


Extraer la cubeta del compartimiento de medición.

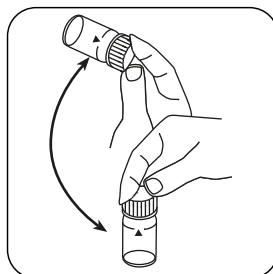
Para los aparatos que **no requieran medición CERO**, empezar aquí.



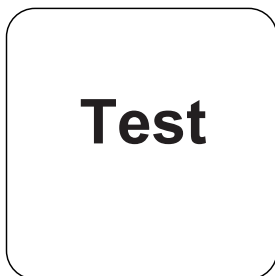
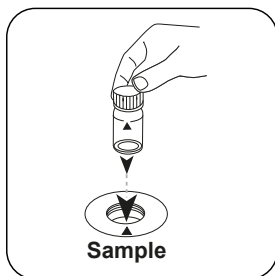
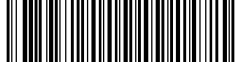
Añadir un **sobre de polvos Chlorine FREE-DPD/ F10**.



Cerrar la(s) cubeta(s).



Mezclar el contenido girando (20 sec.).



Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!

Realizar prueba.

ES

A continuación se visualizará el resultado en mg/L cloro libre.

Ejecución de la determinación cloro total con reactivo Powder Pack

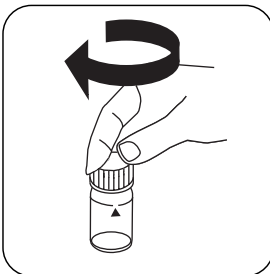
Seleccionar el método en el aparato.

Seleccione además la determinación: total

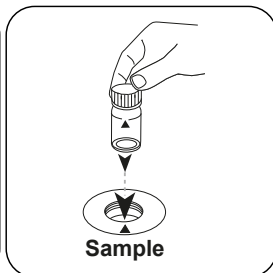
Para este método, no es necesario realizar una medición CERO cada vez en los siguientes dispositivos: XD 7000, XD 7500



Llenar la cubeta de 24 mm con **10 mL de muestra**.



Cerrar la(s) cubeta(s).

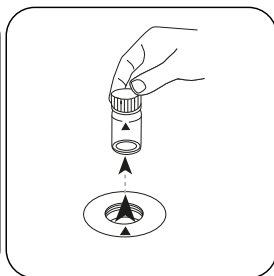


Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!



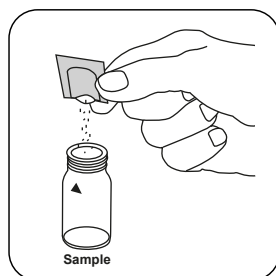
Zero

Realizar Cero.

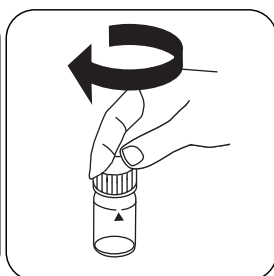


Extraer la cubeta del compartimiento de medición.

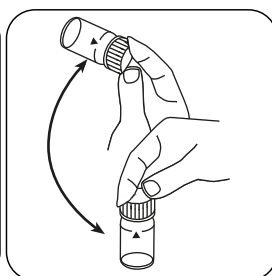
Para los aparatos que **no requieran medición CERO** , **empezar aquí.**



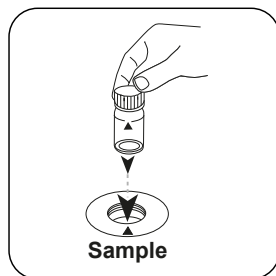
Añadir un **sobre de polvos Chlorine TOTAL-DPD/ F10** .



Cerrar la(s) cubeta(s).



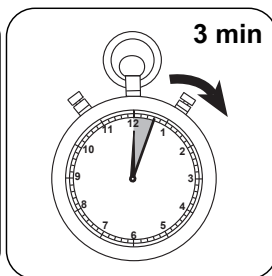
Mezclar el contenido girando (20 sec.).



Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!

Test

Realizar prueba.



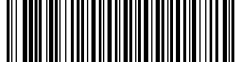
Esperar **3 minutos como periodo de reacción.**

Finalizado el periodo de reacción se realizará la determinación automáticamente.

A continuación se visualizará el resultado en mg/L cloro total.

Ejecución de la determinación cloro diferenciado con reactivo Powder Pack

Seleccionar el método en el aparato.

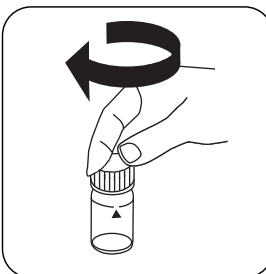


Seleccione además la determinación: diferenciado

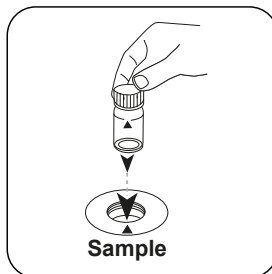
Para este método, no es necesario realizar una medición CERO cada vez en los siguientes dispositivos: XD 7000, XD 7500



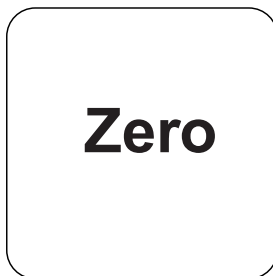
Llenar la cubeta de 24 mm con **10 mL de muestra** .



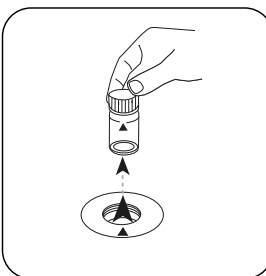
Cerrar la(s) cubeta(s).



Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!

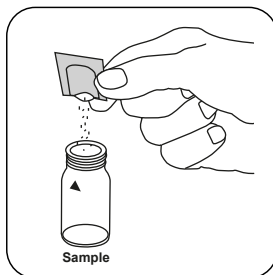


Realizar Cero.

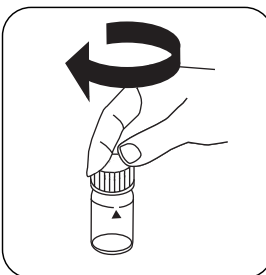


Extraer la cubeta del compartimiento de medición.

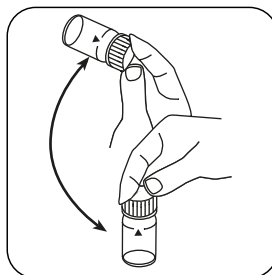
Para los aparatos que **no requieran medición CERO** , empezar aquí.



Añadir un **sobre de polvos Chlorine FREE-DPD/ F10** .



Cerrar la(s) cubeta(s).

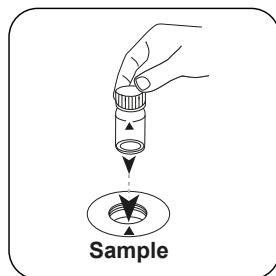


Mezclar el contenido girando (20 sec.).

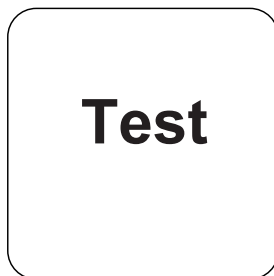
ES



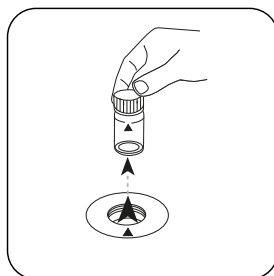
ES



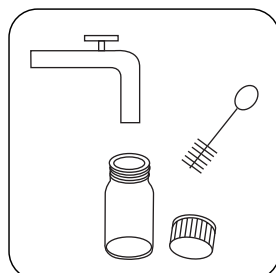
Poner la **cupeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!



Realizar prueba.



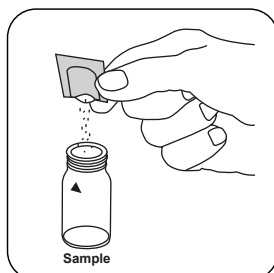
Extraer la cupeta del compartimiento de medición.



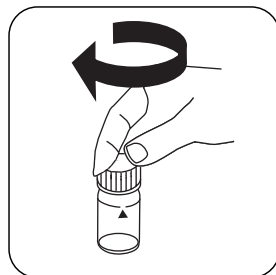
Limpiar a fondo la cupeta y la tapa.



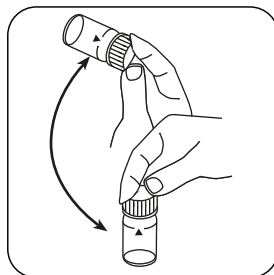
Llenar la cupeta de 24 mm con **10 mL de muestra**.



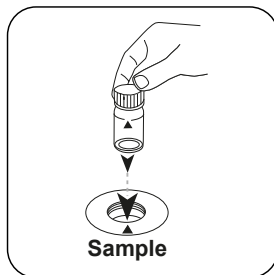
Añadir un **sobre de polvos TOTAL-DPD/ F10**.



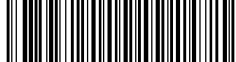
Cerrar la(s) cupeta(s).



Mezclar el contenido girando (20 sec.).

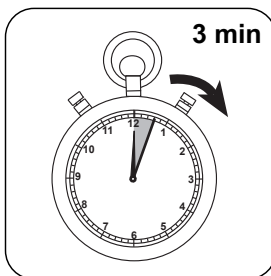


Poner la **cupeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!



Test

Realizar prueba.



Esperar **3 minutos como periodo de reacción.**

Finalizado el periodo de reacción se realizará la determinación automáticamente.

A continuación se visualizará el resultado en mg/L cloro libre, mg/l cloro ligado, mg/l cloro total.

ES



Método químico

DPD

Apéndice

ES

Interferencia

Interferencias persistentes

- Todos los elementos oxidantes existentes en la muestra reaccionan como el cloro, lo que produce un resultado más elevado.

Interferencias extraíbles

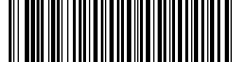
- Las perturbaciones debido a cobre y hierro (III) deben suprimirse mediante EDTA.
- Las concentraciones de cloro mayores a 2 mg/L, cuando se usan sobres de polvos pueden conducir a resultados de dentro del campo de medición hasta 0 mg/L. En este caso, se deberá diluir la muestra con agua sin cloro. Se mezclan 10 ml de muestra diluida con reactivo y se repite la medición (prueba de plausibilidad).

Interferencia	de / [mg/L]
CrO_4^{2-}	0,01
MnO_2	0,01

Conforme a

EN ISO 7393-2

^{a)} Posible determinación de libre, combinado, total

**Cloro HR 2 PP****M112-2****0.1 - 10 mg/L Cl₂****DPD**

ES

Material

Material requerido (parcialmente opcional):

Reactivos	Unidad de embalaje	No. de referencia
Cloro libre DPD F25-100 VARIO	Polvos / 100 Cantidad	530110
Cloro total DPD F25-100 VARIO	Polvos / 100 Cantidad	530130
Cloro libre DPD F10	Polvos / 100 Cantidad	530100
Cloro total DPD F10	Polvos / 100 Cantidad	530120

Muestreo

1. Evitar durante la preparación de la muestra la desgasificación de cloro, p. ej., al pipetar o agitar.
2. La determinación se ha de realizar inmediatamente después de la toma de la muestra.

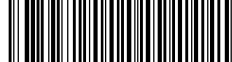
Preparación

1. Limpieza de las cubetas:
Muchos productos de limpieza (p. ej., detergentes de lavavajillas) poseen componentes reductores, que pueden reducir los resultados en la determinación del cloro. Para evitar estas alteraciones, los aparatos de vidrio deben estar exentos de componentes corrosivos al cloro. Para ello, deberá sumergir los aparatos de vidrio durante una hora en una solución de hipoclorito sódico (0,1 g/L), enjuagándolos minuciosamente a continuación con agua desionizada.
2. Para la determinación individual de cloro libre y cloro total se recomienda utilizar siempre los mismos sets de cubetas respectivamente (véase EN ISO 7393-2, párrafo 5.3).
3. El desarrollo coloreo por DPD se efectúa entre un valor de pH de 6,2 - 6,5. Por ello poseen las tabletas un tampón para la graduación del valor de pH. Sin embargo, las muestras acuosas muy ácidas o muy básicas se deberán neutralizar a un valor de pH entre 6 y 7 antes de realizar el análisis (con 0,5 mol/l de ácido sulfúrico o 1 mol/l de hidróxido sódico).



Notas

1. Para realizar la prueba en el MD50/150, se utiliza una cubeta de 24 mm Ø en lugar de la multicubeta.



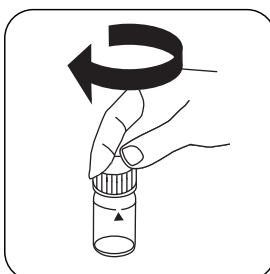
Ejecución de la determinación cloro libre HR 2 con reactivo Powder Pack (MD50/MD150)

Seleccionar el método en el aparato.

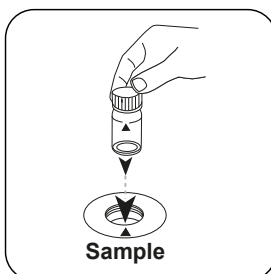
ES



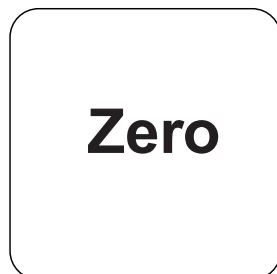
Llenar la cubeta de 24 mm con **10 mL de muestra**.



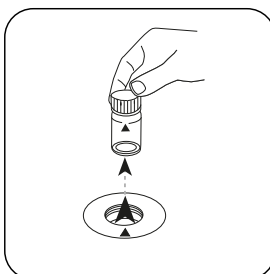
Cerrar la(s) cubeta(s).



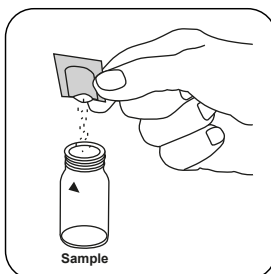
Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!



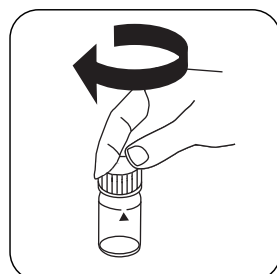
Realizar Cero.



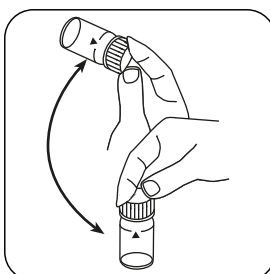
Extraer la cubeta del compartimiento de medición.



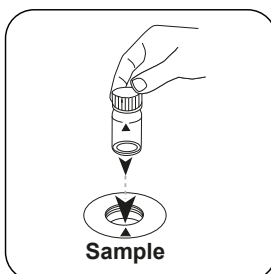
Añadir un **sobre de polvos 1 Vario Chlorine Free / F25 o 2 Chlorine Total / F10**



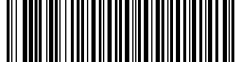
Cerrar la(s) cubeta(s).



Mezclar el contenido girando (20 sec.).



Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!



Test

Realizar prueba.

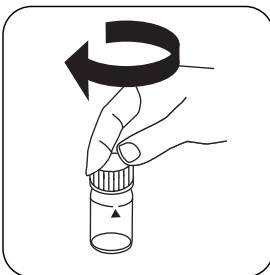
A continuación se visualizará el resultado en mg/L cloro.

Ejecución de la determinación cloro total HR 2 con reactivo Powder Pack (MD50/MD150)

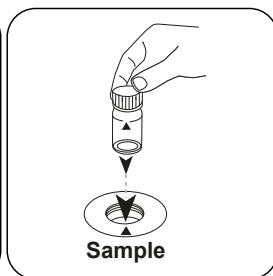
Seleccionar el método en el aparato.



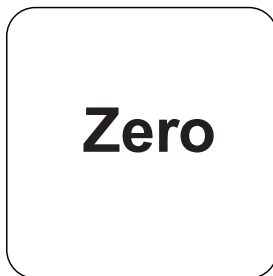
Llenar la cubeta de 24 mm con **10 mL de muestra**.



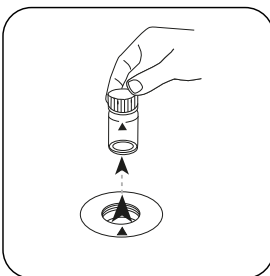
Cerrar la(s) cubeta(s).



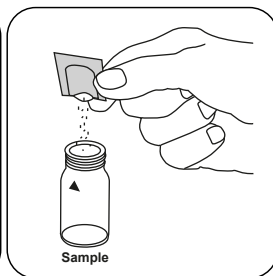
Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!



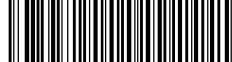
Realizar Cero.



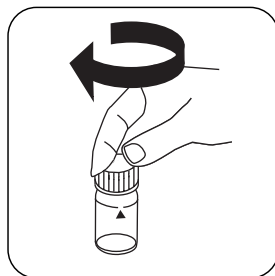
Extraer la cubeta del compartimiento de medición.



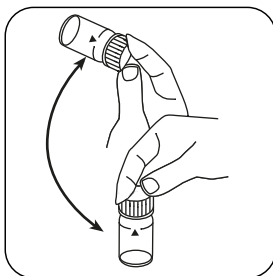
Añadir un **sobre de polvos 1 Vario Chlorine Free / F25 o 2 Chlorine Total / F10**



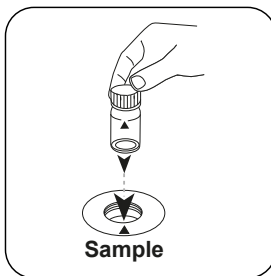
ES



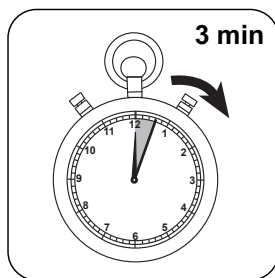
Cerrar la(s) cubeta(s).



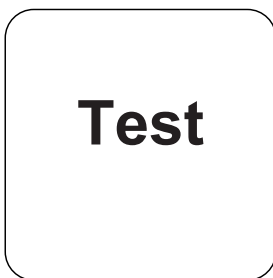
Mezclar el contenido
girando (20 sec.).



Poner la **cubeta de muestra**
en el compartimiento de
medición. ¡Debe tenerse en
cuenta el posicionamiento!

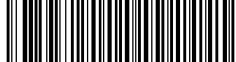


Esperar **3 minutos como
periodo de reacción.**



Realizar prueba.

A continuación se visualizará el resultado en mg/L cloro.



Método químico

DPD

Apéndice

Interferencia

ES

Interferencias persistentes

- Todos los elementos oxidantes existentes en la muestra reaccionan como el cloro, lo que produce un resultado más elevado.

Interferencias extraíbles

- Las perturbaciones debido a cobre y hierro (III) deben suprimirse mediante EDTA.
- Las concentraciones de cloro mayores a 10 mg/L, cuando se usan sobres de polvos pueden conducir a resultados de dentro del campo de medición hasta 0 mg/L. En este caso, se deberá diluir la muestra con agua sin cloro. Se mezclan 5 ml de muestra diluida con reactivo y se repite la medición (prueba de plausibilidad).

Conforme a

EN ISO 7393-2

**CyA HR T****M161****10 - 200 mg/L CyA****CyAH****Melamina**

ES

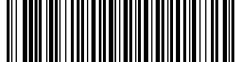
Material

Material requerido (parcialmente opcional):

Reactivos	Unidad de embalaje	No. de referencia
CyA HR-Test	Tabletas / 100	511430BT
CyA HR-Test	Tabletas / 250	511431BT

Notas

1. El ácido cianúrico provoca un enturbiamiento muy fino de la solución, produciendo un aspecto lechoso. Si hay partículas individuales en la muestra no se deberán a la presencia de ácido cianúrico.
2. Después de añadir la tableta CyA-HR-Test, se disuelve automáticamente en dos minutos.



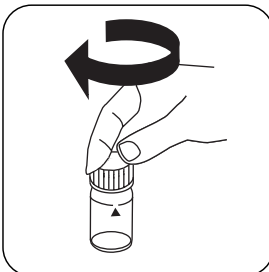
Ejecución de la determinación Prueba de ácido cianúrico con tableta

Seleccionar el método en el aparato.

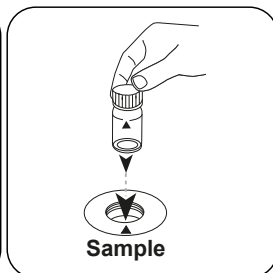
Para este método, no es necesario realizar una medición CERO cada vez en los siguientes dispositivos: XD 7000, XD 7500



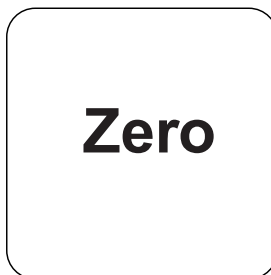
Llenar la cubeta de 24 mm con **10 mL de muestra**.



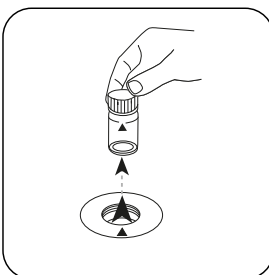
Cerrar la(s) cubeta(s).



Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!

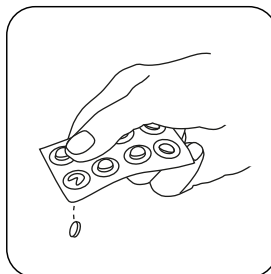


Realizar Cero.

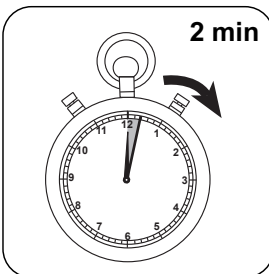


Extraer la cubeta del compartimiento de medición.

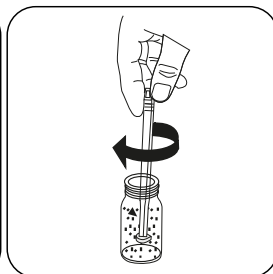
Para los aparatos que **no requieran medición CERO**, empezar aquí.



Añadir **tableta CyA HR Test**.



Esperar **2 minutos como periodo de reacción**.

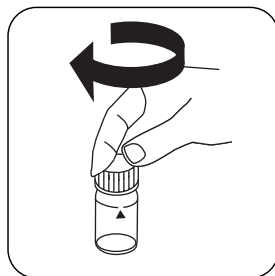


Disolver la(s) tableta(s) agitando con una varilla limpia.

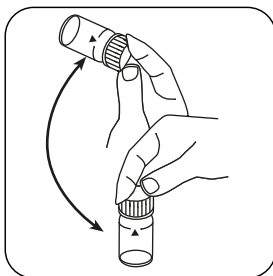
ES



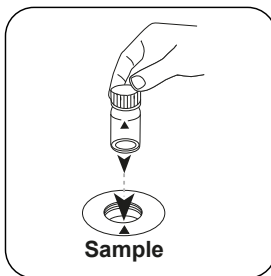
ES



Cerrar la(s) cubeta(s).



Mezclar el contenido girando (no agitar).



Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!

Test

Realizar prueba.

A continuación se visualizará el resultado en mg/L ácido cianúrico.



Método químico

Melamina

Interferencia

Interferencias persistentes

1. Las partículas no disueltas pueden producir resultados mayores.

ES

Validación del método

Límite de detección	2.07 mg/L
Límite de determinación	6.2 mg/L
Límite del rango de medición	200 mg/L
Sensibilidad	77.47 mg/L / Abs
Intervalo de confianza	4.6 mg/L
Desviación estándar	4.78 mg/L
Coefficiente de variación	4.55 %

**Valor de pH T****M330****6.5 - 8.4 pH****PH****Rojo de fenol**

ES

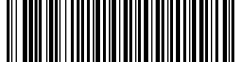
Material

Material requerido (parcialmente opcional):

Reactivos	Unidad de embalaje	No. de referencia
Rojo de fenol fotómetro	Tabletas / 100	511770BT
Rojo de fenol fotómetro	Tabletas / 250	511771BT
Rojo de fenol fotómetro	Tabletas / 500	511772BT

Notas

1. Para la determinación fotométrica del valor de pH solo deben usarse tabletas PHENOL RED selladas en una lámina negra con la palabra adicional PHOTOMETER.



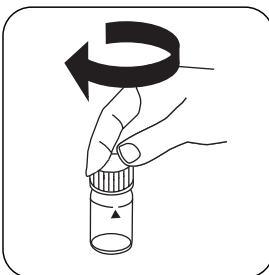
Ejecución de la determinación Valor de pH con tableta

Seleccionar el método en el aparato.

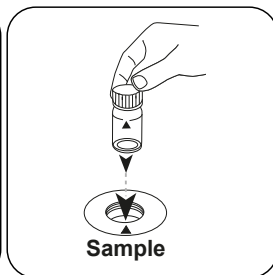
Para este método, no es necesario realizar una medición CERO cada vez en los siguientes dispositivos: XD 7000, XD 7500



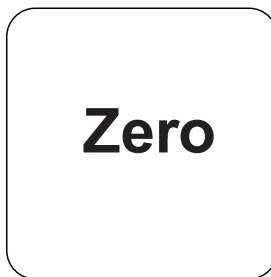
Llenar la cubeta de 24 mm con **10 mL de muestra**.



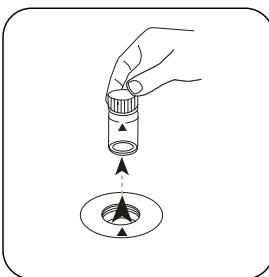
Cerrar la(s) cubeta(s).



Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!

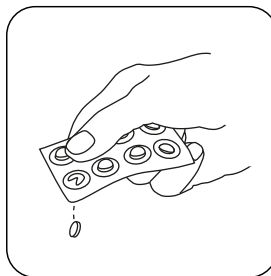


Realizar Cero.

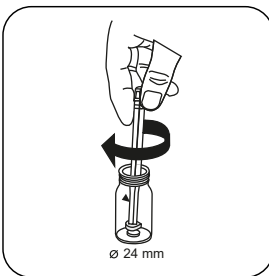


Extraer la cubeta del compartimiento de medición.

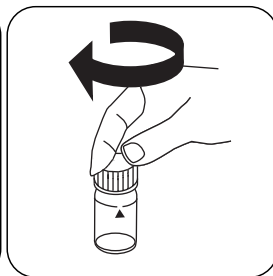
Para los aparatos que **no requieran medición CERO**, empezar aquí.



Añadir **tableta PHENOL RED** PHOTOMETER.

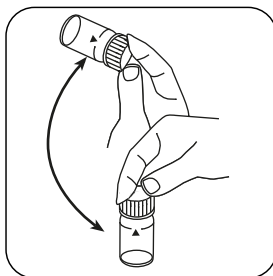


Triturar la(s) tableta(s) girando ligeramente.

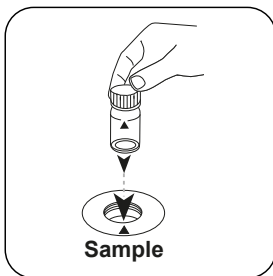


Cerrar la(s) cubeta(s).

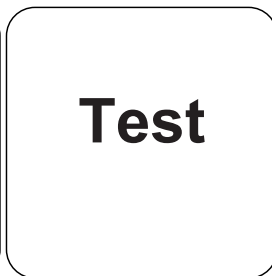
ES



Disolver la(s) tableta(s) girando.



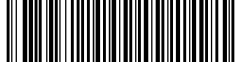
Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!



Realizar prueba.

A continuación se visualizará el resultado como valor de pH.

ES



Método químico

Rojo de fenol

Apéndice

Interferencia

ES

Interferencias persistentes

1. Las muestras de agua con baja dureza de carbonato* pueden entregar valores de pH falsos.

* $K_{S4,3} < 0,7 \text{ mmol/l} \triangleq \text{Alcalinidad total} < 35 \text{ mg/L CaCO}_3$.

Interferencias extraíbles

1. Los valores de pH inferiores a 6,5 y superiores a 8,4 pueden conducir a resultados dentro del campo de medición. Se recomienda realizar una prueba de plausibilidad (medidor de pH).
2. Error de sal:
Con concentraciones de sal de hasta 2 g/L no cabe esperar un error de sal destacable, debido a la concentración de sal de la tableta de reactivo. Cuando las concentraciones de sal son mayores, los valores de medición deben corregirse del modo siguiente:

Concentración salina de la muestra en g/L	30 (agua de mar)	60	120	180
Corrección	-0,15 ¹⁾	-0,21 ²⁾	-0,26 ²⁾	-0,29 ²⁾

¹⁾según Kolthoff (1922)

²⁾según Parson y Douglas (1926)

Bibliografía

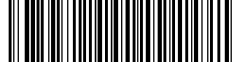
Colorimetric Chemical Analytical Methods, 9th Edition, London

Derivado de

Concentración salina de la muestra en g/L	30 (agua de mar)	60	120	180
Corrección	-0,15 ¹⁾	-0,21 ²⁾	-0,26 ²⁾	-0,29 ²⁾

¹⁾según Kolthoff (1922)

²⁾según Parson y Douglas (1926)

**Valor de pH L****M331****6.5 - 8.4 pH****PH****Rojo de fenol****Material**

ES

Material requerido (parcialmente opcional):

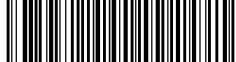
Reactivos	Unidad de embalaje	No. de referencia
Solución de rojo de fenol	15 mL	471040
Solución de rojo de fenol	100 mL	471041
Solución rojo de fenol en pack de 6	1 Cantidad	471046

Preparación

1. El tamaño de las gotas, al contrario de las tabletas, puede aumentar las desviaciones del resultado.
Mediante el uso de una pipeta (0,18 ml corresponden a 6 gotas) se pueden minimizar estas desviaciones.

Notas

1. Después de usarla, la botella cuentagotas debe cerrarse de nuevo inmediatamente con la tapa roscada del mismo color.
2. Guardar el reactivo a una temperatura entre +6 °C y +10 °C.



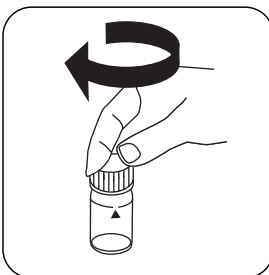
Ejecución de la determinación Valor de pH con reactivos líquidos

Seleccionar el método en el aparato.

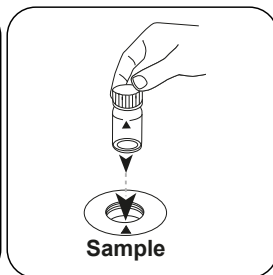
Para este método, no es necesario realizar una medición CERO cada vez en los siguientes dispositivos: XD 7000, XD 7500



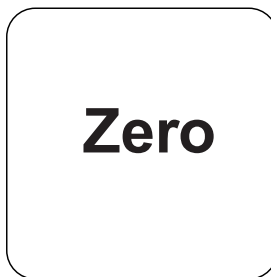
Llenar la cubeta de 24 mm con **10 mL de muestra**.



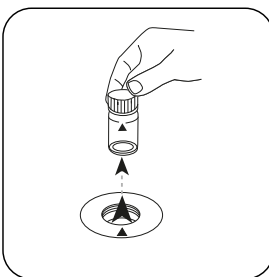
Cerrar la(s) cubeta(s).



Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!

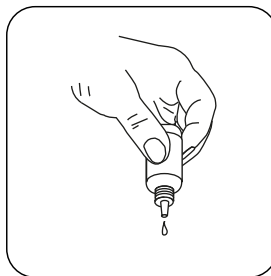


Realizar Cero.

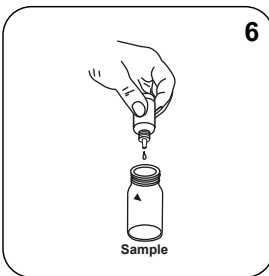


Extraer la cubeta del compartimiento de medición.

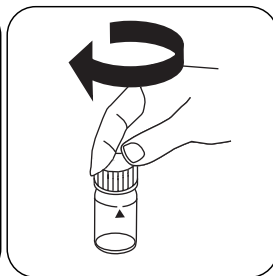
Para los aparatos que **no requieran medición CERO**, empezar aquí.



Mantener la botella cuentagotas vertical y añadir gotas del mismo tamaño presionando lentamente.

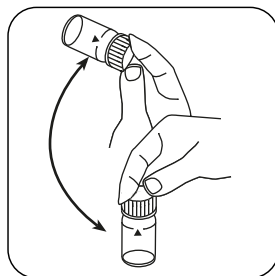
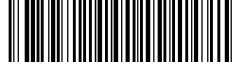


Añadir **6 gotas de PHENOL Red-Lösung** en la cubeta con la muestra.

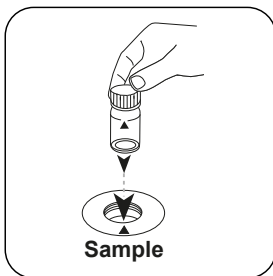


Cerrar la(s) cubeta(s).

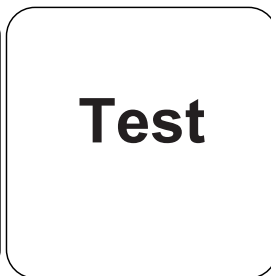
ES



Mezclar el contenido girando.



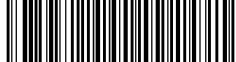
Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!



Realizar prueba.

A continuación se visualizará el resultado como valor de pH.

ES



Método químico

Rojo de fenol

Apéndice

Interferencia

ES

Interferencias extraíbles

1. Error de sal: Corrección de valor analizado (valores medios) para muestras con una concentración salina de:

2. Concentración salina de la muestra	Corrección
30 g/L (agua de mar)	-0,15 ¹⁾
60 g/L	-0,21 ²⁾
120 g/L	-0,26 ²⁾
180 g/L	-0,29 ²⁾
¹⁾ según Kolthoff (1922)	²⁾ según Parson y Douglas (1926)

3. En la determinación de muestras acuosas cloradas pueden influir los restos de cloro en la reacción coloreada del reactivo líquido. Esto puede evitarse añadiendo a la muestra un pequeño cristal de tiosulfato sódico ($\text{Na}_2\text{S}_2\text{O}_3 \cdot 5 \text{H}_2\text{O}$), antes de incorporar el reactivo PHENOL RED.

Bibliografía

Colorimetric Chemical Analytical Methods, 9th Edition, London

Derivado de

Concentración salina de la muestra	Corrección
30 g/L (agua de mar)	-0,15 ¹⁾
60 g/L	-0,21 ²⁾
120 g/L	-0,26 ²⁾
180 g/L	-0,29 ²⁾

¹⁾ según Kolthoff (1922) ²⁾ según Parson y Douglas (1926)

En la determinación de muestras acuosas cloradas pueden influir los restos de cloro en la reacción coloreada del reactivo líquido. Esto puede evitarse añadiendo a la muestra un pequeño cristal de tiosulfato sódico ($\text{Na}_2\text{S}_2\text{O}_3 \cdot 5 \text{H}_2\text{O}$), antes de incorporar el reactivo PHENOL RED.

KS4.3 T / 20



Nom de la méthode

Numéro de méthode

Code à barres pour reconnaître la méthode

Plage de mesure

Affichage dans le MD 100 / MD 110 / MD 200

Méthode chimique

Informations spécifiques à l'instrument

Le test peut être effectué sur les appareils suivants. De plus, la cuvette requise et la plage d'absorption du photomètre sont indiquées.

Appareils	Cuvette	λ	Gamme de mesure
MD 200, MD 600, MD 610, MD 640, MultiDirect, PM 620, PM 630	ø 24 mm	610 nm	0.1 - 4 mmol/l $K_{S4.3}$
SpectroDirect, XD 7000, XD 7500	ø 24 mm	615 nm	0.1 - 4 mmol/l $K_{S4.3}$

Matériel

Matériel requis (partiellement optionnel):

Titre	Pack contenant	Code
Alka-M-Photometer	Pastilles / 100	513210BT
Alka-M-Photometer	Pastilles / 250	513211BT

Liste d'applications

- Traitement des eaux usées
- Traitement de l'eau potable
- Traitement de l'eau brute

Indication

1. Les termes Alcalinité-m, Valeur m, Alcalinité totale et Capacité acide $K_{S4.3}$ sont identiques.
2. L'observation exacte du volume d'échantillon de 10 ml est décisive pour l'exactitude du résultat de l'analyse.

Codes de langue ISO 639-1

État de révision

FR Méthodes Manuel 01/20

Procédure du test

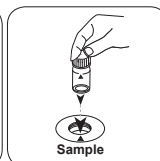
Réalisation de la quantification Capacité acide $K_{s4.3}$ avec pastille

Sélectionnez la méthode sur l'appareil.

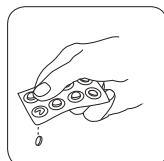
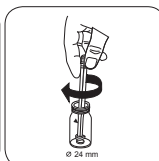
Cette méthode ne nécessite aucune mesure du zéro sur les appareils suivants : XD 7000, XD 7500

Remplissez une cuvette de 24 mm de **10 ml d'échantillon**.

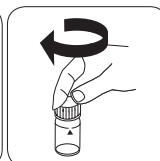
Fermez la(les) cuvette(s).

Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.

• • •

Ajoutez une **pastille de ALKA-M-PHOTOMETER**.

Écrasez la(les) pastille(s) en la(les) tournant un peu.



Fermez la(les) cuvette(s).

**Chlore T****M100****0.01 - 6.0 mg/L Cl₂ ^{a)}****CL6****DPD**

FR

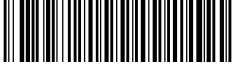
Matériel

Matériel requis (partiellement optionnel):

Réactifs	Pack contenant	Code
DPD N°1	Pastilles / 100	511050BT
DPD N° 1	Pastilles / 250	511051BT
DPD N° 1	Pastilles / 500	511052BT
DPD N° 3	Pastilles / 100	511080BT
DPD N° 3	Pastilles / 250	511081BT
DPD N° 3	Pastilles / 500	511082BT
DPD N° 1 High Calcium ^{e)}	Pastilles / 100	515740BT
DPD N° 1 High Calcium ^{e)}	Pastilles / 250	515741BT
DPD N° 1 High Calcium ^{e)}	Pastilles / 500	515742BT
DPD N° 3 High Calcium ^{e)}	Pastilles / 100	515730BT
DPD N° 3 High Calcium ^{e)}	Pastilles / 250	515731BT
DPD N° 3 High Calcium ^{e)}	Pastilles / 500	515732BT
DPD N° 4	Pastilles / 100	511220BT
DPD N° 4	Pastilles / 250	511221BT
DPD N° 4	Pastilles / 500	511222BT
DPD N° 3 Evo	Pastilles / 100	511420BT
DPD N° 3 Evo	Pastilles / 250	511421BT
DPD N° 3 Evo	Pastilles / 500	511422BT
DPD N°4 Evo	Pastilles / 100	511970BT
DPD N° 4 Evo	Pastilles / 250	511971BT
DPD N° 4 Evo	Pastilles / 500	511972BT

Standards disponibles

Titre	Pack contenant	Code
ValidCheck Chlore 1,5 mg/l	1 Pièces	48105510



Échantillonnage

1. Lors de la préparation de l'échantillon, il faudra éviter le dégazage du chrome, par ex. par pipetage ou agitation.
2. L'analyse devra avoir lieu immédiatement après le prélèvement de l'échantillon.

Préparation

1. Nettoyage des cuvettes :
Beaucoup de produits de nettoyage domestiques (par ex. liquide vaisselle) contenant des agents réducteurs, il est possible que lors de la quantification du chlore, les résultats soient plus bas. Pour exclure ces erreurs, les instruments en verre utilisés devraient être insensibles aux effets du chlore. Pour ce faire, il convient de laisser les instruments en verre pendant une heure dans une solution d'hypochlorite de sodium (0,1 g/L) et de bien les rincer ensuite à l'eau déminéralisée (eau entièrement dessalée).
2. Pour la quantification individuelle du chlore libre et du chlore total, il est recommandé d'utiliser à chaque fois un nouveau lot de cuvettes (voir EN ISO 7393-2, § 5.3).
3. La coloration due au DPD a lieu à un pH compris entre 6,2 et 6,5. C'est pourquoi, les réactifs contiennent un tampon pour l'ajustage du pH. Avant l'analyse, les eaux fortement alcalines ou acides devraient être cependant ajustées sur un pH compris entre 6 et 7 (avec 0,5 mol/l d'acide sulfurique ou 1 mol/l de soude caustique).

Indication

1. Les pastilles EVO peuvent être utilisées en remplacement de la pastille standard correspondante (par exemple, DPD n° 3 EVO au lieu de DPD n° 3).



Réalisation de la quantification Chlore libre avec pastilles

Sélectionnez la méthode sur l'appareil.

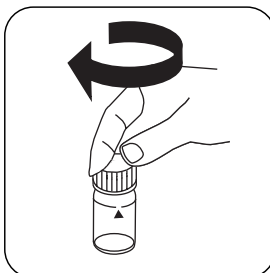
Sélectionnez également la quantification : libre

Pour cette méthode, il n'est pas nécessaire d'effectuer une mesure ZERO à chaque fois sur les appareils suivants : XD 7000, XD 7500

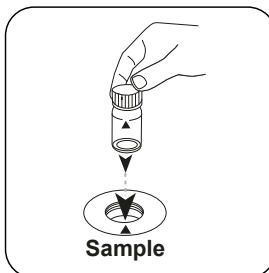
FR



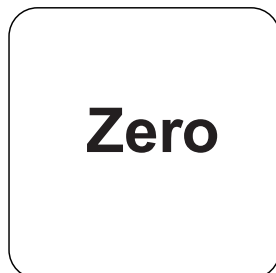
Remplissez une cuvette de 24 mm de **10 mL d'échantillon**.



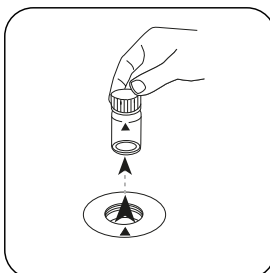
Fermez la(les) cuvette(s).



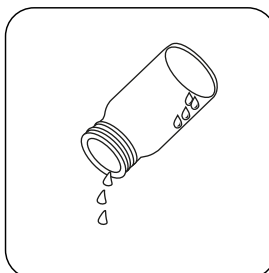
Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.



Effectuer le zéro.

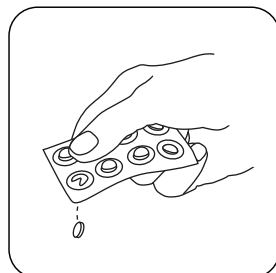


Retirez la cuvette de la chambre de mesure.

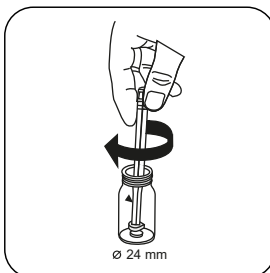


Videz pratiquement la cuvette en y laissant quelques gouttes.

Sur les appareils ne nécessitant **aucune mesure ZÉRO**, commencez ici.



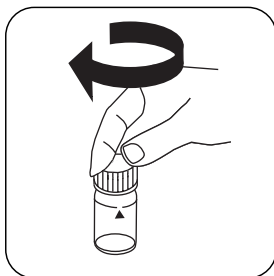
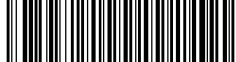
Ajoutez une **pastille de DPD No. 1**.



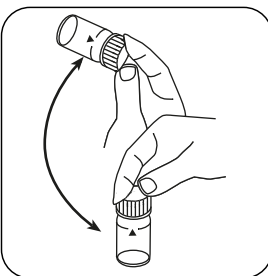
Écrasez la(les) pastille(s) en la(les) tournant un peu.



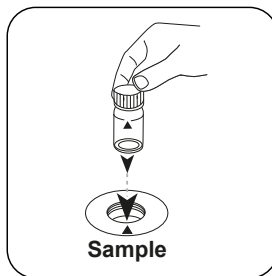
Remplissez la cuvette jusqu'au **repère de 10 mL** en y versant l'échantillon.



Fermez la(les) cuvette(s).



Dissolvez la(les) pastille(s) en mettant le tube plusieurs fois à l'envers.



Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.

Test

Effectuer un test.

Le résultat s'affiche à l'écran en mg/L chlore libre.

Réalisation de la quantification Chlore total avec pastilles

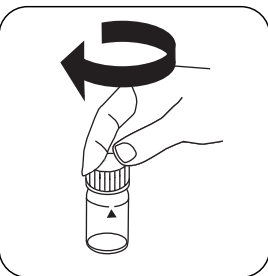
Sélectionnez la méthode sur l'appareil.

Sélectionnez également la quantification : total

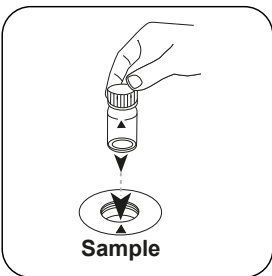
Pour cette méthode, il n'est pas nécessaire d'effectuer une mesure ZERO à chaque fois sur les appareils suivants : XD 7000, XD 7500



Remplissez une cuvette de 24 mm de **10 mL d'échantillon**.



Fermez la(les) cuvette(s).

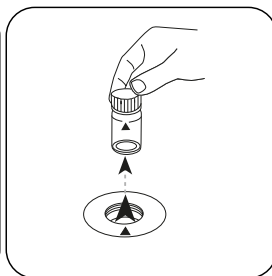


Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.

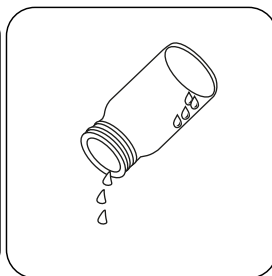


Zero

Effectuer le zéro.

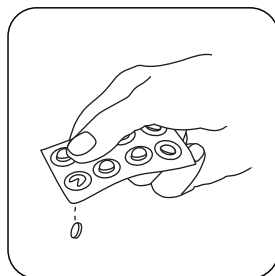


Retirez la cuvette de la chambre de mesure.

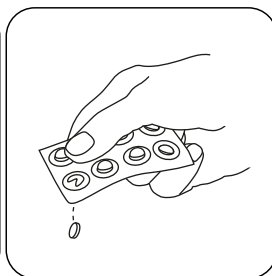


Videz pratiquement la cuvette en y laissant quelques gouttes.

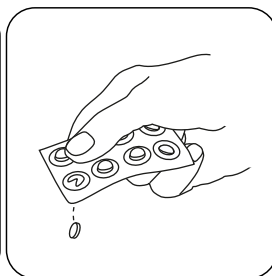
Sur les appareils ne nécessitant **aucune mesure ZÉRO**, commencez ici.



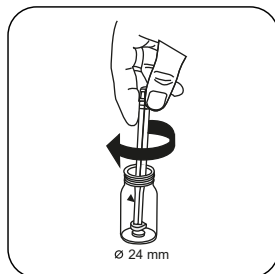
Ajoutez une **pastille de DPD No. 1**.



Ajoutez une **pastille de DPD No. 3**.



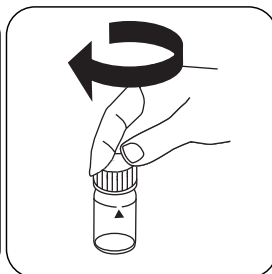
En alternative aux comprimés DPD n° 1 et n° 3, un comprimé DPD n° 4 peut être ajouté.



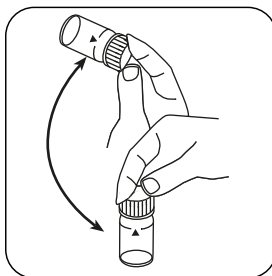
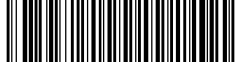
Écrasez la(les) pastille(s) en la(les) tournant un peu.



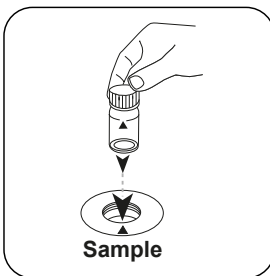
Remplissez la cuvette jusqu'au **repère de 10 mL** en y versant l'**échantillon**.



Fermez la(les) cuvette(s).



Dissolvez la(les) pastille(s) en mettant le tube plusieurs fois à l'envers.

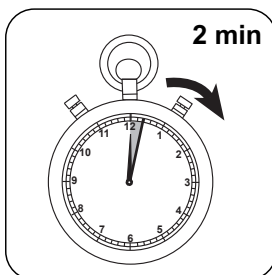


Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.

Test

Effectuer un test.

FR



Attendez la fin du **temps de réaction de 2 minute(s)**.

À l'issue du temps de réaction, la mesure est effectuée automatiquement.

Le résultat s'affiche à l'écran en mg/L chlore total.

Réalisation de la quantification Chlore détermination différenciée avec pastilles

Sélectionnez la méthode sur l'appareil.

Sélectionnez également la quantification : différenciée

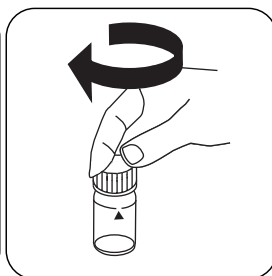
Pour cette méthode, il n'est pas nécessaire d'effectuer une mesure ZERO à chaque fois sur les appareils suivants : XD 7000, XD 7500



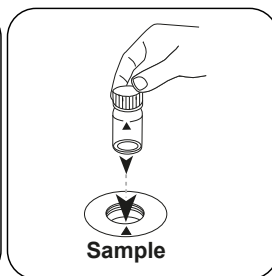
FR



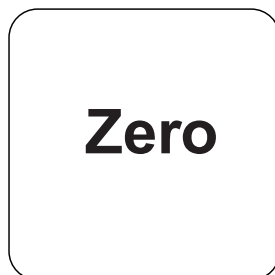
Remplissez une cuvette de 24 mm de **10 mL d'échantillon**.



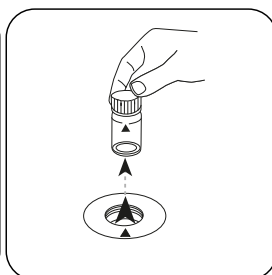
Fermez la(les) cuvette(s).



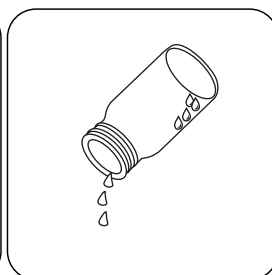
Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.



Effectuer le zéro.

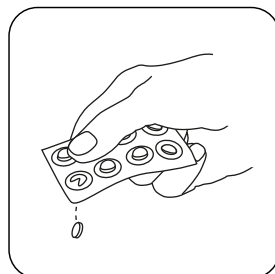


Retirez la cuvette de la chambre de mesure.

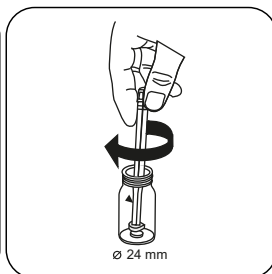


Videz pratiquement la cuvette en y laissant quelques gouttes.

Sur les appareils ne nécessitant **aucune mesure ZÉRO**, commencez ici.



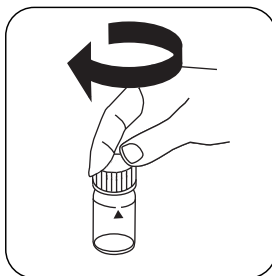
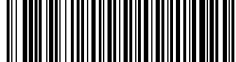
Ajoutez une **pastille de DPD No. 1**.



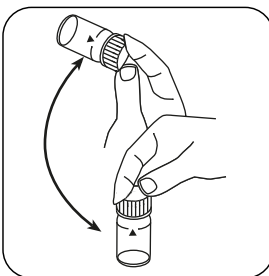
Écrasez la(les) pastille(s) en la(les) tournant un peu.



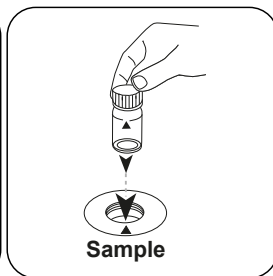
Remplissez la cuvette jusqu'au **repère de 10 mL** en y versant l'échantillon.



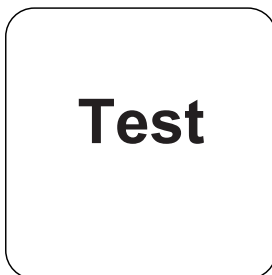
Fermez la(les) cuvette(s).



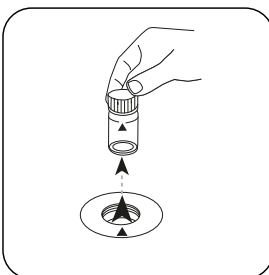
Dissolvez la(les) pastille(s) en mettant le tube plusieurs fois à l'envers.



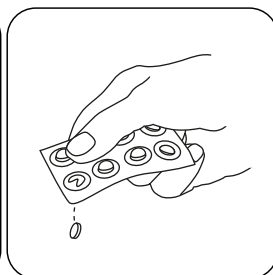
Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.



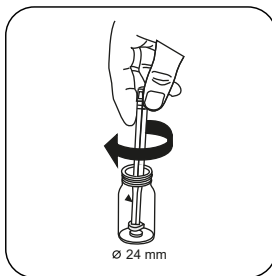
Effectuer un test.



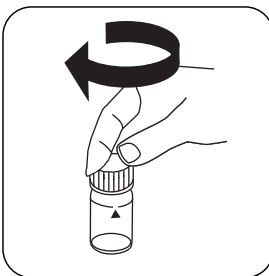
Retirez la cuvette de la chambre de mesure.



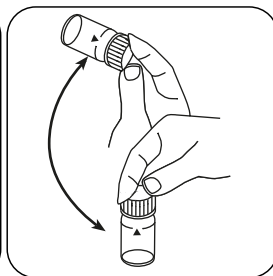
Ajoutez une **pastille de DPD No. 3**.



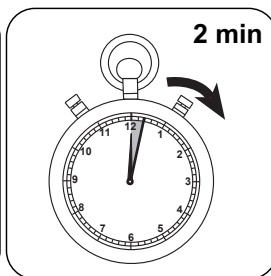
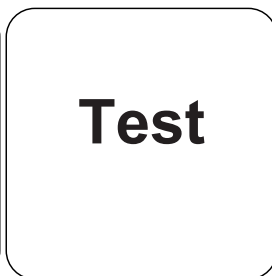
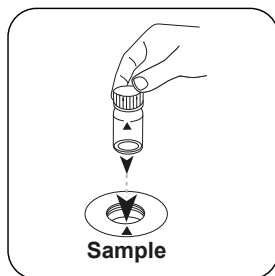
Écrasez la(les) pastille(s) en la(les) tournant un peu.



Fermez la(les) cuvette(s).



Dissolvez la(les) pastille(s) en mettant le tube plusieurs fois à l'envers.



FR

Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.

Effectuer un test.

Attendez la fin du **temps de réaction de 2 minute(s)**.

À l'issue du temps de réaction, la mesure est effectuée automatiquement.

Le résultat s'affiche à l'écran en mg/L chlore libre, mg/l chlore combiné, mg/l chlore total.

Méthode chimique

DPD

Appendice

Interférences

FR

Interférences persistantes

- Les agents oxydants contenus dans les échantillons réagissent tous comme le chlore, ce qui entraîne des résultats plus élevés.

Interférences exclues

- Les perturbations causées par le cuivre et le fer (III) seront éliminées par EDTA.
- Dans le cas des échantillons à haute concentration en calcium* et/ou conductibilité élevée*, l'utilisation des pastilles de réactif peut causer des turbidités et donc fausser les résultats. Utilisez alors la pastille de réactif DPD N° 1 High Calcium et la pastille de réactif DPD N° 3 High Calcium.
*Nous ne pouvons fournir de valeurs exactes, l'apparition d'une turbidité dépendant du type et de la composition de l'eau d'échantillonnage.
- Les concentrations de chlore supérieures à 10 mg/L peuvent donner des résultats dans la plage de mesure allant jusqu'à 0 mg/L en utilisant des pastilles. En cas de concentration trop élevée de chlore, diluez l'échantillon à l'eau déchlorée. Le réactif est ajouté à 10 ml d'échantillon dilué. Ensuite, la mesure est répétée (test de plausibilité).

Interférences	de / [mg/L]
CrO_4^{2-}	0.01
MnO_2	0.01

Conformité

EN ISO 7393-2

^aDétermination du libre, combiné et total | ^aautre réactif, utilisé à la place de DPD No.1/3 en cas de turbidité dans l'échantillon d'eau due à une concentration élevée de calcium et/ou une conductivité élevée

**Chlore L****M101****0.02 - 4.0 mg/L Cl₂ ^{a)}****CL6****DPD**

FR

Matériel

Matériel requis (partiellement optionnel):

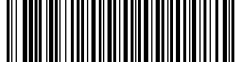
Réactifs	Pack contenant	Code
DPD 1 solution tampon, flacon bleu	15 mL	471010
DPD 1 solution tampon	100 mL	471011
Solution tampon DPD 1 dans un lot de 6	1 Pièces	471016
DPD 1 solution de réactif, flacon vert	15 mL	471020
DPD 1 solution de réactif	100 mL	471021
Solution de réactif DPD 1 dans un lot de 6	1 Pièces	471026
DPD 3 solution, flacon rouge	15 mL	471030
DPD 3 solution	100 mL	471031
Solution DPD 3 dans un lot de 6	1 Pièces	471036
Kit de réactifs DPD	1 Pièces	471056

Standards disponibles

Titre	Pack contenant	Code
ValidCheck Chlore 1,5 mg/l	1 Pièces	48105510

Échantillonnage

1. Lors de la préparation de l'échantillon, il faudra éviter le dégazage du chrome, par ex. par pipetage ou agitation.
2. L'analyse devra avoir lieu immédiatement après le prélèvement de l'échantillon.



Préparation

1. Nettoyage des cuvettes :
Beaucoup de produits de nettoyage domestiques (par ex. liquide vaisselle) contenant des agents réducteurs, il est possible que lors de la quantification du chlore, les résultats soient plus bas. Pour exclure ces erreurs, les instruments en verre utilisés devraient être insensibles aux effets du chlore. Pour ce faire, il convient de laisser les instruments en verre pendant une heure dans une solution d'hypochlorite de sodium (0,1 g/L) et de bien les rincer ensuite à l'eau déminéralisée (eau entièrement dessalée).
2. Pour la quantification individuelle du chlore libre et du chlore total, il est recommandé d'utiliser à chaque fois un nouveau lot de cuvettes (voir EN ISO 7393-2, § 5.3).
3. La coloration due au DPD a lieu à un pH compris entre 6,2 et 6,5. C'est pourquoi, les réactifs contiennent un tampon pour l'ajustage du pH. Avant l'analyse, les eaux fortement alcalines ou acides devraient être cependant ajustées sur un pH compris entre 6 et 7 (avec 0,5 mol/l d'acide sulfurique ou 1 mol/l de soude caustique).

Indication

1. Après emploi, refermez immédiatement les flacons compte-goutte en utilisant le capot de même couleur.
2. Conservez le lot de réactif à une température de +6 °C à +10 °C.



Réalisation de la quantification Chlore libre avec réactifs liquides

Sélectionnez la méthode sur l'appareil.

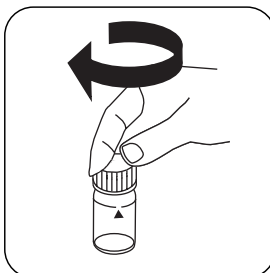
Sélectionnez également la quantification : libre

Pour cette méthode, il n'est pas nécessaire d'effectuer une mesure ZERO à chaque fois sur les appareils suivants : XD 7000, XD 7500

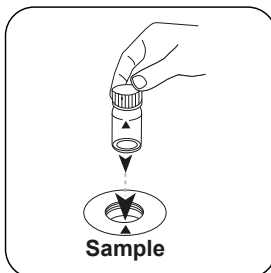
FR



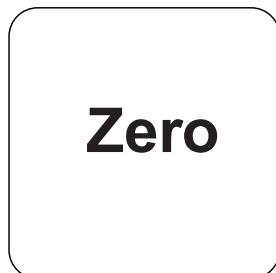
Remplissez une cuvette de 24 mm de **10 mL d'échantillon**.



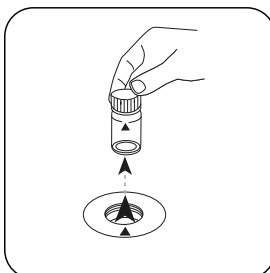
Fermez la(les) cuvette(s).



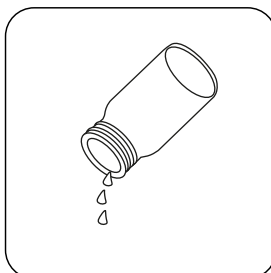
Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.



Effectuer le zéro.

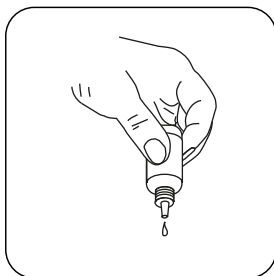
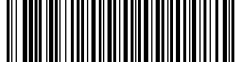


Retirez la cuvette de la chambre de mesure.

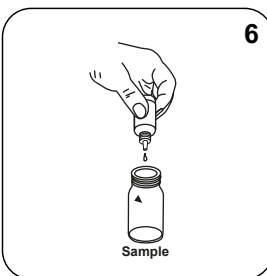


Videz la cuvette.

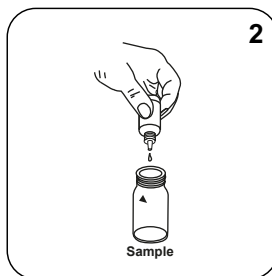
Sur les appareils ne nécessitant **aucune mesure ZÉRO**, commencez ici.



Tenez les flacons compte-goutte à la verticale et ajoutez des gouttes uniformes en appuyant lentement.



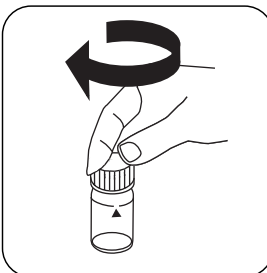
Ajoutez **6 gouttes de DPD 1 Buffer Solution** dans la cuvette réservée à l'échantillon.



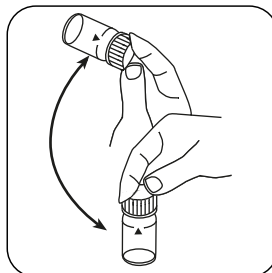
Ajoutez **2 gouttes de DPD 1 Reagent Solution** dans la cuvette réservée à l'échantillon.



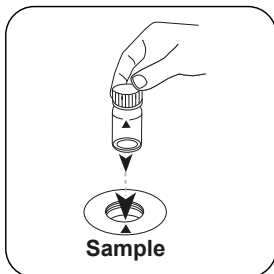
Remplissez la cuvette jusqu'au **repère de 10 mL** en y versant l'échantillon.



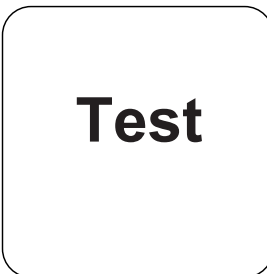
Fermez la(les) cuvette(s).



Mélangez le contenu en mettant le tube plusieurs fois à l'envers puis à l'endroit.



Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.



Effectuer un test.

Le résultat s'affiche à l'écran en mg/L chlore libre.

Réalisation de la quantification Chlore total avec réactifs liquides

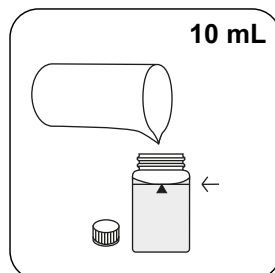
Sélectionnez la méthode sur l'appareil.

Sélectionnez également la quantification : total

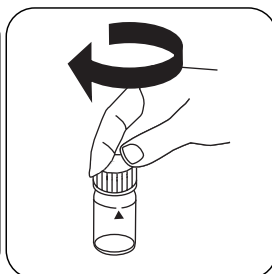


Pour cette méthode, il n'est pas nécessaire d'effectuer une mesure ZERO à chaque fois sur les appareils suivants : XD 7000, XD 7500

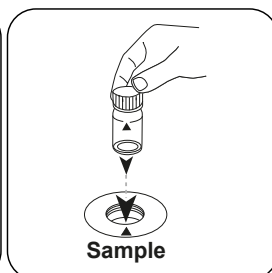
FR



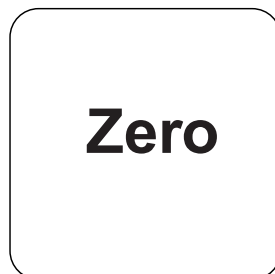
Remplissez une cuvette de 24 mm de **10 mL d'échantillon**.



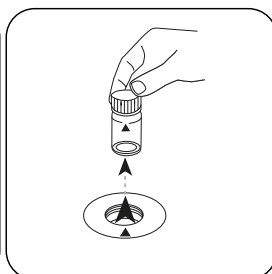
Fermez la(les) cuvette(s).



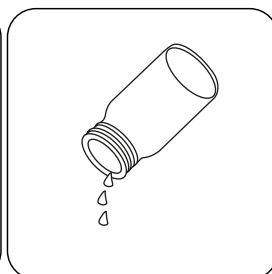
Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.



Effectuer le zéro.

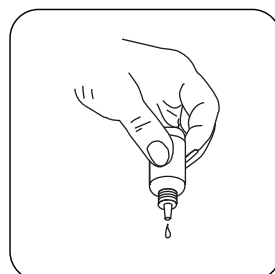


Retirez la cuvette de la chambre de mesure.

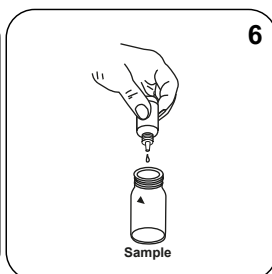


Videz la cuvette.

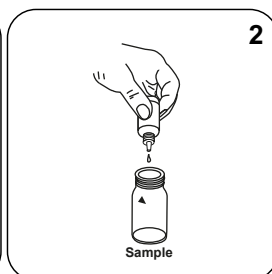
Sur les appareils ne nécessitant **aucune mesure ZÉRO**, commencez ici.



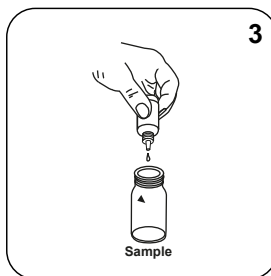
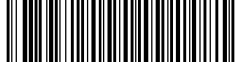
Tenez les flacons compte-goutte à la verticale et ajoutez des gouttes uniformes en appuyant lentement.



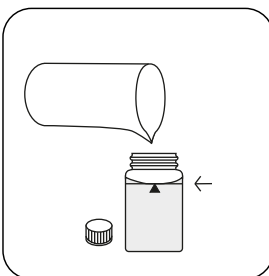
Ajoutez **6 gouttes de DPD 1 Buffer Solution** dans la cuvette réservée à l'échantillon.



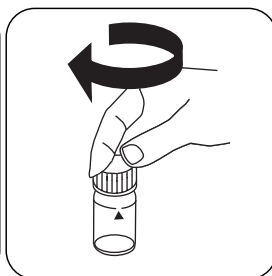
Ajoutez **2 gouttes de DPD 1 Reagent Solution** dans la cuvette réservée à l'échantillon.



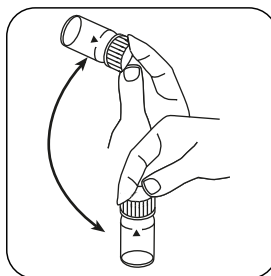
Ajoutez **3 gouttes de DPD 3 Solution** dans la cuvette réservée à l'échantillon.



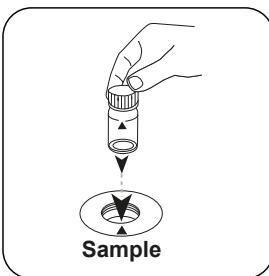
Remplissez la cuvette jusqu'au **repère de 10 mL** en y versant l'échantillon.



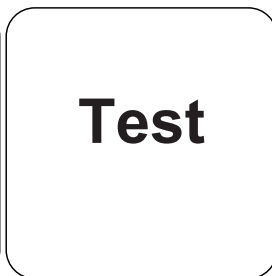
Fermez la(les) cuvette(s).



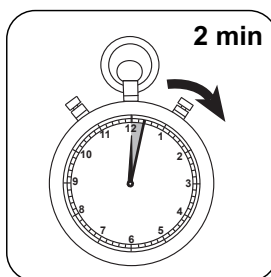
Mélangez le contenu en mettant le tube plusieurs fois à l'envers puis à l'endroit.



Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.



Effectuer un test.



Attendez la fin du **temps de réaction de 2 minute(s)**.

À l'issue du temps de réaction, la mesure est effectuée automatiquement.

Le résultat s'affiche à l'écran en mg/L chlore total.

Réalisation de la quantification Chlore détermination différenciée avec réactifs liquides

Sélectionnez la méthode sur l'appareil.

Sélectionnez également la quantification : différenciée

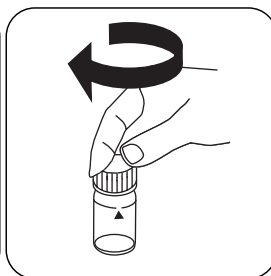


Pour cette méthode, il n'est pas nécessaire d'effectuer une mesure ZERO à chaque fois sur les appareils suivants : XD 7000, XD 7500

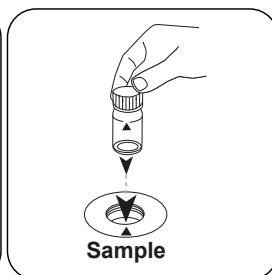
FR



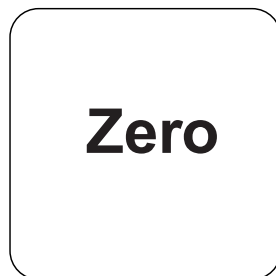
Remplissez une cuvette de 24 mm de **10 mL d'échantillon**.



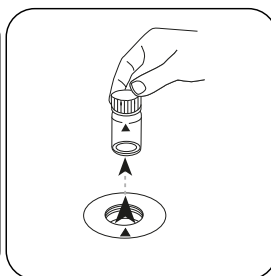
Fermez la(les) cuvette(s).



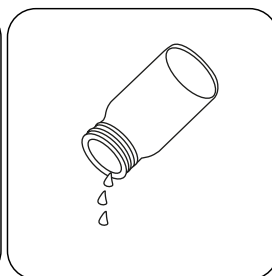
Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.



Effectuer le zéro.

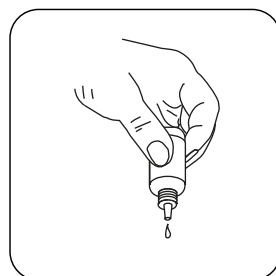


Retirez la cuvette de la chambre de mesure.

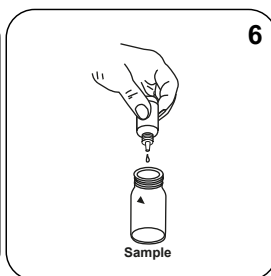


Videz la cuvette.

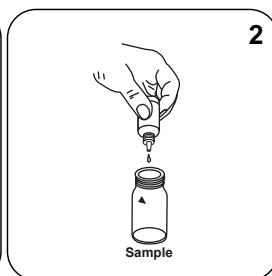
Sur les appareils ne nécessitant **aucune mesure ZÉRO**, commencez ici.



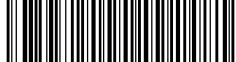
Tenez les flacons compte-goutte à la verticale et ajoutez des gouttes uniformes en appuyant lentement.



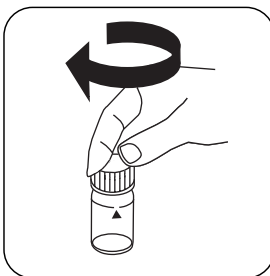
Ajoutez **6 gouttes de DPD 1 Buffer Solution** dans la cuvette réservée à l'échantillon.



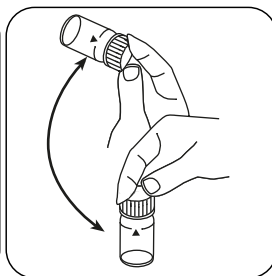
Ajoutez **2 gouttes de DPD 1 Reagent Solution** dans la cuvette réservée à l'échantillon.



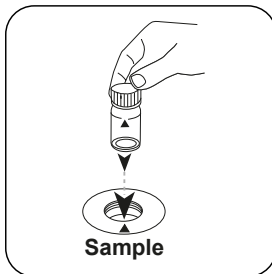
Remplissez la cuvette jusqu'au **repère de 10 mL** en y versant l'**échantillon**.



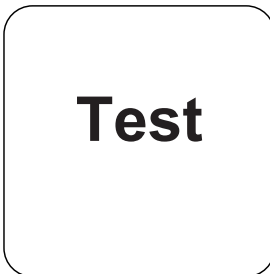
Fermez la(les) cuvette(s).



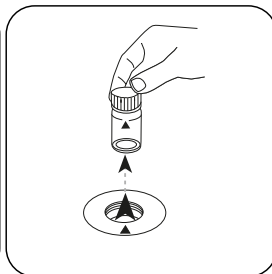
Mélangez le contenu en mettant le tube plusieurs fois à l'envers puis à l'endroit.



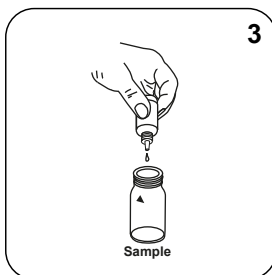
Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.



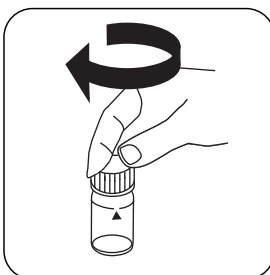
Effectuer un test.



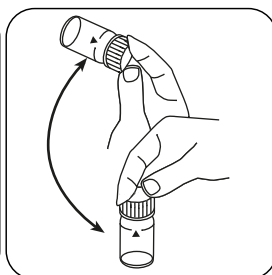
Retirez la cuvette de la chambre de mesure.



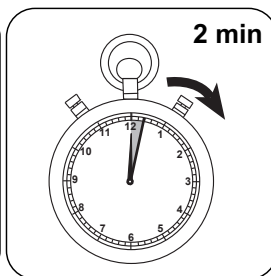
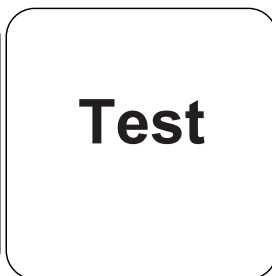
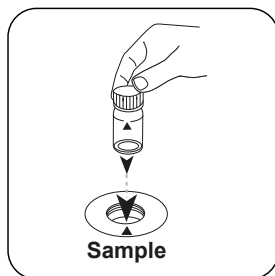
Ajoutez **3 gouttes de DPD 3 Solution** dans la cuvette réservée à l'échantillon.



Fermez la(les) cuvette(s).



Mélangez le contenu en mettant le tube plusieurs fois à l'envers puis à l'endroit.



FR

Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.

Effectuer un test.

Attendez la fin du **temps de réaction de 2 minute(s)**.

À l'issue du temps de réaction, la mesure est effectuée automatiquement.

Le résultat s'affiche à l'écran en mg/L chlore libre, mg/l chlore combiné, mg/l chlore total.

Méthode chimique

DPD

Appendice

Interférences

FR

Interférences persistantes

- Les agents oxydants contenus dans les échantillons réagissent tous comme le chlore, ce qui entraîne des résultats plus élevés.

Interférences exclues

- Les perturbations causées par le cuivre et le fer (III) seront éliminées par EDTA.
- Les concentrations de chlore supérieures à 4 mg/L peuvent donner des résultats dans la plage de mesure allant jusqu'à 0 mg/L en utilisant des réactifs liquides. Dans ce cas, diluez l'échantillon à l'eau déchlorée. Le réactif est ajouté à 10 ml d'échantillon dilué. Ensuite, la mesure est répétée (test de plausibilité).

Interférences	de / [mg/L]
CrO_4^{2-}	0,01
MnO_2	0,01

Conformité

EN ISO 7393-2

^aDétermination du libre, combiné et total

**Chlore HR T****M103****0.1 - 10 mg/L Cl₂^{a)}****CL10****DPD**

FR

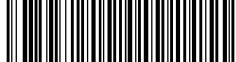
Matériel

Matériel requis (partiellement optionnel):

Réactifs	Pack contenant	Code
DPD N° 1 HR	Pastilles / 100	511500BT
DPD N° 1 HR	Pastilles / 250	511501BT
DPD N° 1 HR	Pastilles / 500	511502BT
DPD N° 3 HR	Pastilles / 100	511590BT
DPD N° 3 HR	Pastilles / 250	511591BT
DPD N° 3 HR	Pastilles / 500	511592BT
Kit DPD N° 1 HR/N° 3 HR [#]	100 chacun	517791BT
Kit DPD N° 1 HR/N° 3 HR [#]	250 chacun	517792BT
DPD N° 1 High Calcium ^{e)}	Pastilles / 100	515740BT
DPD N° 1 High Calcium ^{e)}	Pastilles / 250	515741BT
DPD N° 1 High Calcium ^{e)}	Pastilles / 500	515742BT
DPD N° 3 High Calcium ^{e)}	Pastilles / 100	515730BT
DPD N° 3 High Calcium ^{e)}	Pastilles / 250	515731BT
DPD N° 3 High Calcium ^{e)}	Pastilles / 500	515732BT
DPD N°3 HR Evo	Pastilles / 100	511920BT
DPD N° 3 HR Evo	Pastilles / 250	511921BT
DPD N° 3 HR Evo	Pastilles / 500	511922BT

Échantillonnage

1. Lors de la préparation de l'échantillon, il faudra éviter le dégazage du chrome, par ex. par pipetage ou agitation.
2. L'analyse devra avoir lieu immédiatement après le prélèvement de l'échantillon.



Préparation

1. Nettoyage des cuvettes :
Beaucoup de produits de nettoyage domestiques (par ex. liquide vaisselle) contenant des agents réducteurs, il est possible que lors de la quantification du chlore, les résultats soient plus bas. Pour exclure ces erreurs, les instruments en verre utilisés devraient être insensibles aux effets du chlore. Pour ce faire, il convient de laisser les instruments en verre pendant une heure dans une solution d'hypochlorite de sodium (0,1 g/L) et de bien les rincer ensuite à l'eau déminéralisée (eau entièrement dessalée).
2. Pour la quantification individuelle du chlore libre et du chlore total, il est recommandé d'utiliser à chaque fois un nouveau lot de cuvettes (voir EN ISO 7393-2, § 5.3).
3. La coloration due au DPD a lieu à un pH compris entre 6,2 et 6,5. C'est pourquoi, les réactifs contiennent un tampon pour l'ajustage du pH. Avant l'analyse, les eaux fortement alcalines ou acides devraient être cependant ajustées sur un pH compris entre 6 et 7 (avec 0,5 mol/L d'acide sulfurique ou 1 mol/L de soude caustique).

Indication

1. Les pastilles Evo peuvent être utilisées en remplacement de la pastille standard correspondante (par exemple, DPD n° 3 Evo au lieu de DPD n° 3).



Réalisation de la quantification Chlore HR libre avec pastilles

Sélectionnez la méthode sur l'appareil.

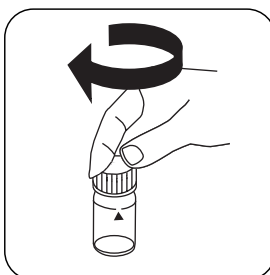
Sélectionnez également la quantification : libre

Pour cette méthode, il n'est pas nécessaire d'effectuer une mesure ZERO à chaque fois sur les appareils suivants : XD 7000, XD 7500

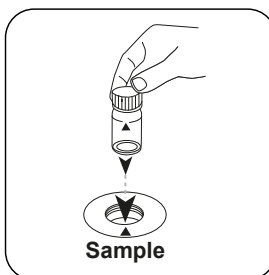
FR



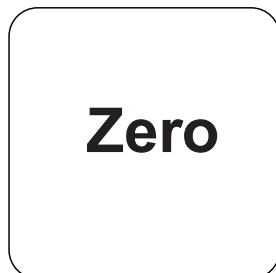
Remplissez une cuvette de 24 mm de **10 mL d'échantillon**.



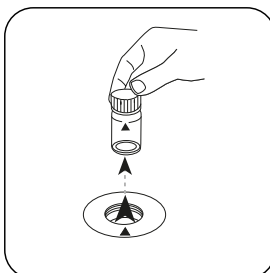
Fermez la(les) cuvette(s).



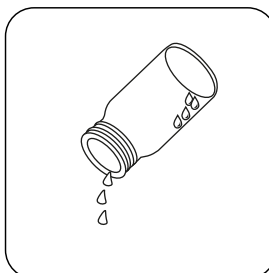
Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.



Effectuer le zéro.

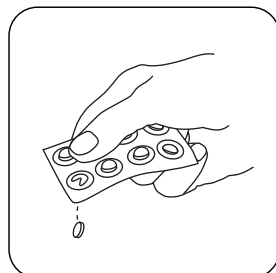


Retirez la cuvette de la chambre de mesure.

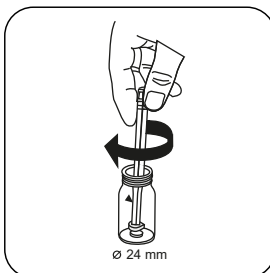


Videz pratiquement la cuvette en y laissant quelques gouttes.

Sur les appareils ne nécessitant **aucune mesure ZÉRO**, commencez ici.



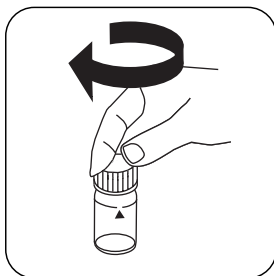
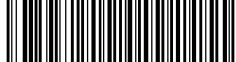
Ajoutez une **pastille de DPD No. 1 HR**.



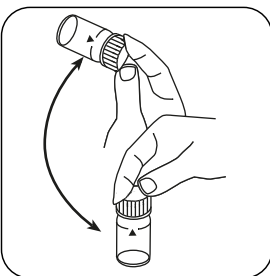
Écrasez la(les) pastille(s) en la(les) tournant un peu.



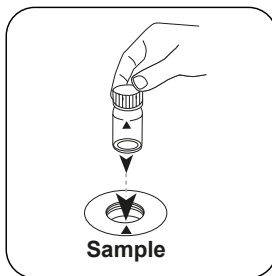
Remplissez la cuvette jusqu'au **repère de 10 mL** en y versant l'échantillon.



Fermez la(les) cuvette(s).



Dissolvez la(les) pastille(s) en mettant le tube plusieurs fois à l'envers.



Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.

Test

Effectuer un test.

Le résultat s'affiche à l'écran en mg/L chlore libre.

Réalisation de la quantification Chlore HR total avec pastilles

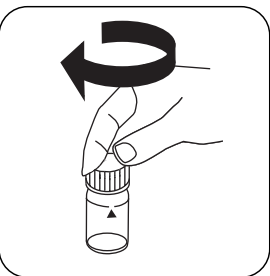
Sélectionnez la méthode sur l'appareil.

Sélectionnez également la quantification : total

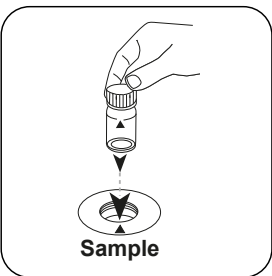
Pour cette méthode, il n'est pas nécessaire d'effectuer une mesure ZERO à chaque fois sur les appareils suivants : XD 7000, XD 7500



Remplissez une cuvette de 24 mm de **10 mL d'échantillon**.



Fermez la(les) cuvette(s).

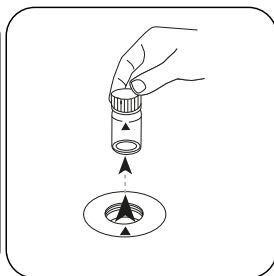


Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.

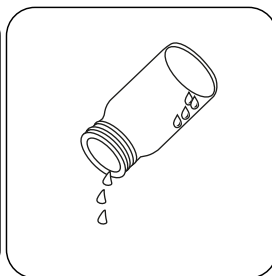


Zero

Effectuer le zéro.

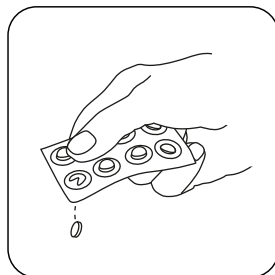


Retirez la cuvette de la chambre de mesure.

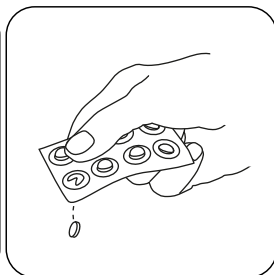


Videz pratiquement la cuvette en y laissant quelques gouttes.

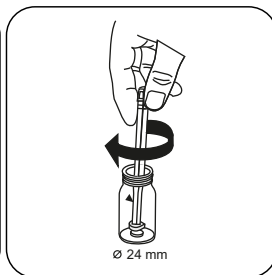
Sur les appareils ne nécessitant **aucune mesure ZÉRO**, commencez ici.



Ajoutez une **pastille de DPD No. 1 HR**.



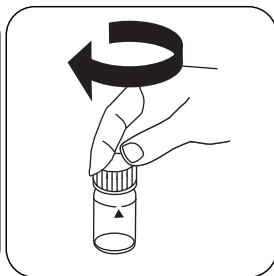
Ajoutez une **pastille de DPD No. 3 HR**.



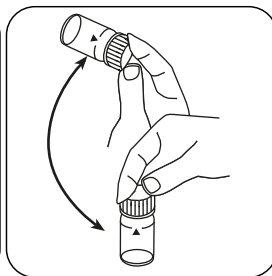
Écrasez la(les) pastille(s) en la(les) tournant un peu.



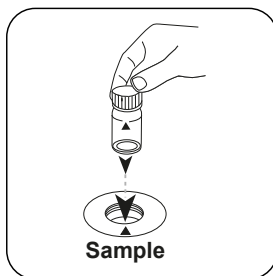
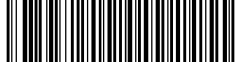
Remplissez la cuvette jusqu'au **repère de 10 mL** en y versant l'**échantillon**.



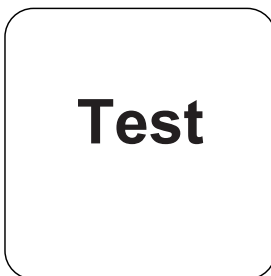
Fermez la(les) cuvette(s).



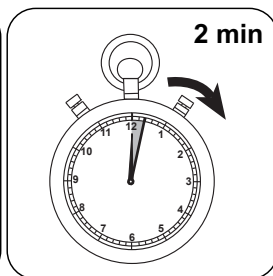
Dissolvez la(les) pastille(s) en mettant le tube plusieurs fois à l'envers.



Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.



Effectuer un test.



Attendez la fin du **temps de réaction de 2 minute(s)**.

FR

À l'issue du temps de réaction, la mesure est effectuée automatiquement.

Le résultat s'affiche à l'écran en mg/L chlore total.

Réalisation de la quantification Chlore HR détermination différenciée avec pastilles

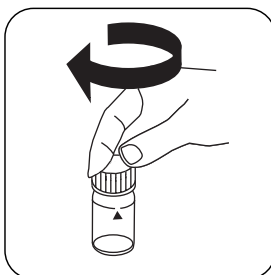
Sélectionnez la méthode sur l'appareil.

Sélectionnez également la quantification : différenciée

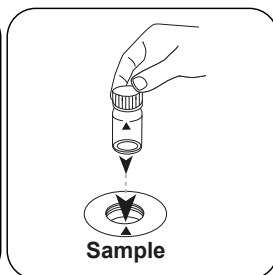
Pour cette méthode, il n'est pas nécessaire d'effectuer une mesure ZERO à chaque fois sur les appareils suivants : XD 7000, XD 7500



Remplissez une cuvette de 24 mm de **10 mL d'échantillon**.



Fermez la(les) cuvette(s).

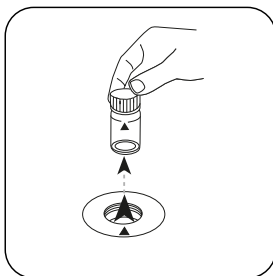


Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.

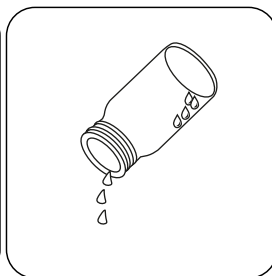


Zero

Effectuer le zéro.

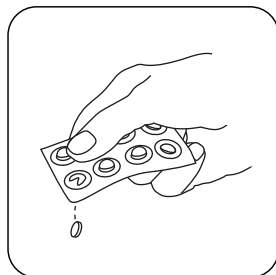


Retirez la cuvette de la chambre de mesure.

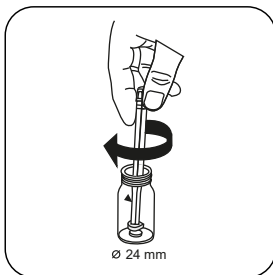


Videz pratiquement la cuvette en y laissant quelques gouttes.

Sur les appareils ne nécessitant **aucune mesure ZÉRO**, commencez ici.



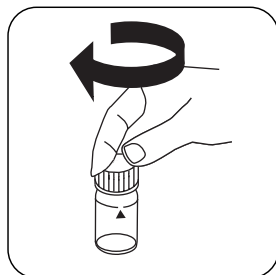
Ajoutez une **pastille de DPD No. 1 HR**.



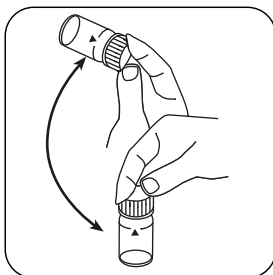
Écrasez la(les) pastille(s) en la(les) tournant un peu.



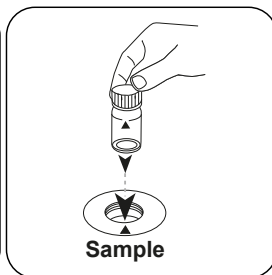
Remplissez la cuvette jusqu'au **repère de 10 mL** en y versant l'**échantillon**.



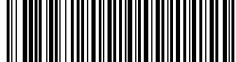
Fermez la(les) cuvette(s).



Dissolvez la(les) pastille(s) en mettant le tube plusieurs fois à l'envers.

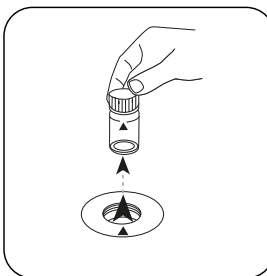


Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.

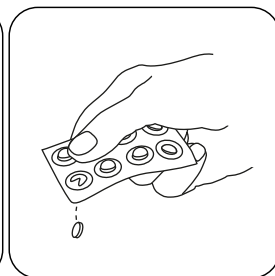


Test

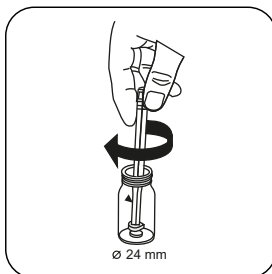
Effectuer un test.



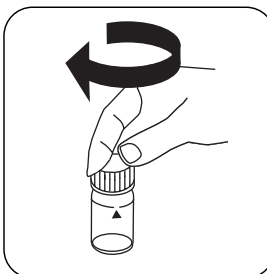
Retirez la cuvette de la chambre de mesure.



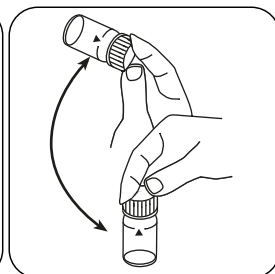
Ajoutez une **pastille de DPD No. 3 HR**.



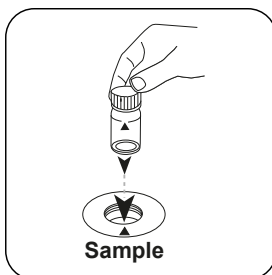
Écrasez la(les) pastille(s) en la(les) tournant un peu.



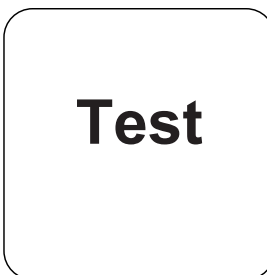
Fermez la(les) cuvette(s).



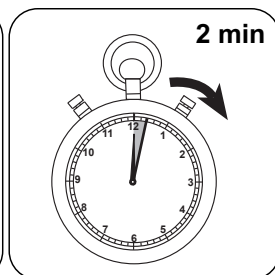
Dissolvez la(les) pastille(s) en mettant le tube plusieurs fois à l'envers.



Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.



Effectuer un test.



Attendez la fin du **temps de réaction de 2 minute(s)**.

À l'issue du temps de réaction, la mesure est effectuée automatiquement.

Le résultat s'affiche à l'écran en mg/L chlore libre, mg/l chlore combine, mg/l chlore total.



Méthode chimique

DPD

Appendice

FR

Interférences

Interférences persistantes

- Les agents oxydants contenus dans les échantillons réagissent tous comme le chlore, ce qui entraîne des résultats plus élevés.

Interférences exclues

- Les perturbations causées par le cuivre et le fer (III) seront éliminées par EDTA.
- Dans le cas des échantillons à haute concentration en calcium* et/ou conductibilité élevée*, l'utilisation des pastilles de réactif peut causer des turbidités et donc fausser les résultats. Utilisez alors la pastille de réactif DPD N° 1 High Calcium et la pastille de réactif DPD N° 3 High Calcium.

*Nous ne pouvons fournir de valeurs exactes, l'apparition d'une turbidité dépendant du type et de la composition de l'eau d'échantillonnage.

Conformité

EN ISO 7393-2

^{a)}Détermination du libre, combiné et total | ^{a)}autre réactif, utilisé à la place de DPD No.1/3 en cas de turbidité dans l'échantillon d'eau due à une concentration élevée de calcium et/ou une conductivité élevée | ^{b)} agitateur inclus

**Chlore PP****M110****0.02 - 2 mg/L Cl₂ ^{a)}****CL2****DPD**

FR

Matériel

Matériel requis (partiellement optionnel):

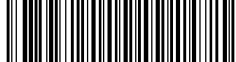
Réactifs	Pack contenant	Code
Chlore libre DPD F10	Poudre / 100 Pièces	530100
Chlore libre DPD F10	Poudre / 1000 Pièces	530103
Chlore total DPD F10	Poudre / 100 Pièces	530120
Chlore total DPD F10	Poudre / 1000 Pièces	530123

Standards disponibles

Titre	Pack contenant	Code
ValidCheck Chlore 1,5 mg/l	1 Pièces	48105510

Échantillonnage

1. Lors de la préparation de l'échantillon, il faudra éviter le dégazage du chrome, par ex. par pipetage ou agitation.
2. L'analyse devra avoir lieu immédiatement après le prélèvement de l'échantillon.



Préparation

1. Nettoyage des cuvettes :
Beaucoup de produits de nettoyage domestiques (par ex. liquide vaisselle) contenant des agents réducteurs, il est possible que lors de la quantification du chlore, les résultats soient plus bas. Pour exclure ces erreurs, les instruments en verre utilisés devraient être insensibles aux effets du chlore. Pour ce faire, il convient de laisser les instruments en verre pendant une heure dans une solution d'hypochlorite de sodium (0,1 g/L) et de bien les rincer ensuite à l'eau déminéralisée (eau entièrement dessalée).
2. Pour la quantification individuelle du chlore libre et du chlore total, il est recommandé d'utiliser à chaque fois un nouveau lot de cuvettes (voir EN ISO 7393-2, § 5.3).
3. La coloration due au DPD a lieu à un pH compris entre 6,2 et 6,5. C'est pourquoi, les réactifs contiennent un tampon pour l'ajustage du pH. Avant l'analyse, les eaux fortement alcalines ou acides devraient être cependant ajustées sur un pH compris entre 6 et 7 (avec 0,5 mol/l d'acide sulfurique ou 1 mol/l de soude caustique).

FR



Réalisation de la quantification Chlore libre avec réactifs en sachet de poudre (PP)

Sélectionnez la méthode sur l'appareil.

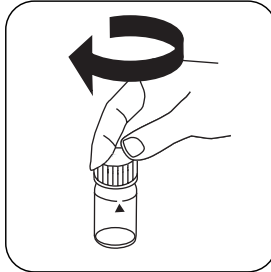
Sélectionnez également la quantification : libre

Pour cette méthode, il n'est pas nécessaire d'effectuer une mesure ZERO à chaque fois sur les appareils suivants : XD 7000, XD 7500

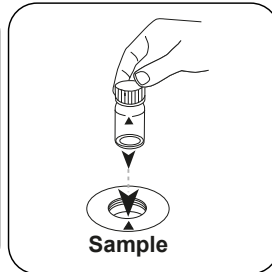
FR



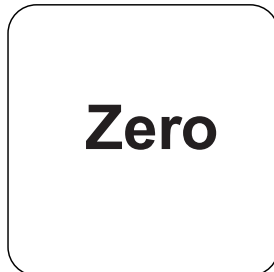
Remplissez une cuvette de 24 mm de **10 mL d'échantillon**.



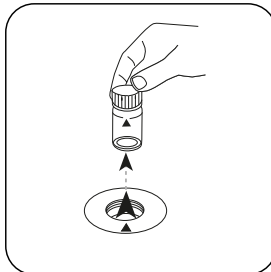
Fermez la(les) cuvette(s).



Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.

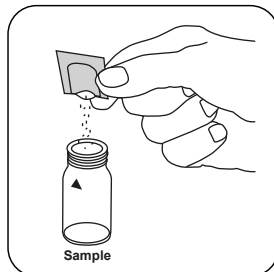


Effectuer le zéro.

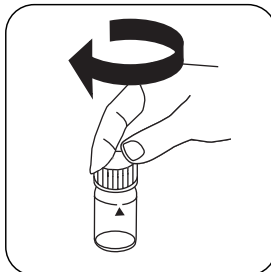


Retirez la cuvette de la chambre de mesure.

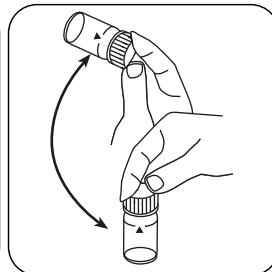
Sur les appareils ne nécessitant **aucune mesure ZÉRO**, commencez ici.



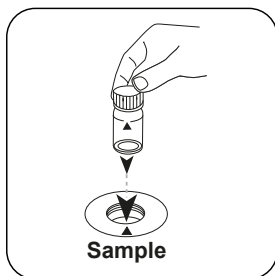
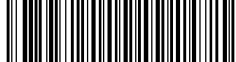
Ajoutez un **sachet de poudre Chlorine FREE-DPD/ F10**.



Fermez la(les) cuvette(s).



Retourner plusieurs fois pour mélanger le contenu (20 sec.) .



Test

Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.

Effectuer un test.

Le résultat s'affiche à l'écran en mg/L chlore libre.

Réalisation de la quantification Chlore total avec réactifs en sachet de poudre (PP)

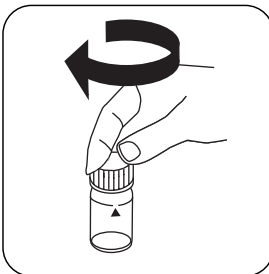
Sélectionnez la méthode sur l'appareil.

Sélectionnez également la quantification : total

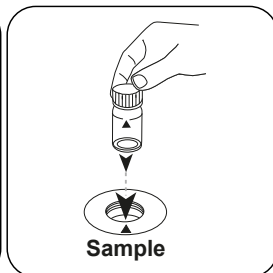
Pour cette méthode, il n'est pas nécessaire d'effectuer une mesure ZERO à chaque fois sur les appareils suivants : XD 7000, XD 7500



Remplissez une cuvette de 24 mm de **10 mL d'échantillon**.



Fermez la(les) cuvette(s).

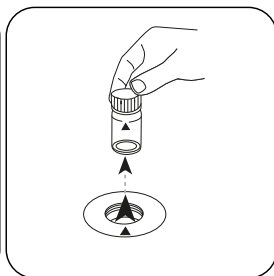


Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.



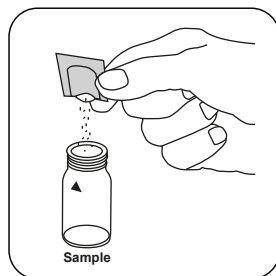
Zero

Effectuer le zéro.

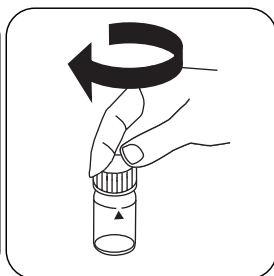


Retirez la cuvette de la chambre de mesure.

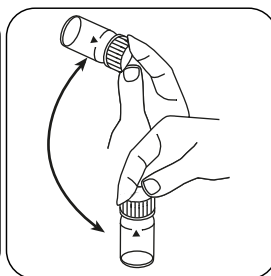
Sur les appareils ne nécessitant **aucune mesure ZÉRO**, commencez ici.



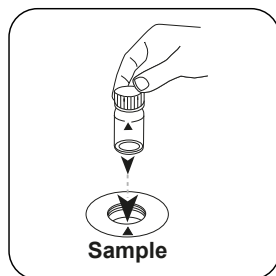
Ajoutez un **sachet de poudre Chlorine TOTAL-DPD/ F10**.



Fermez la(les) cuvette(s).



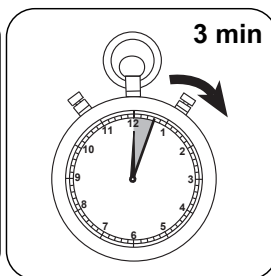
Retourner plusieurs fois pour mélanger le contenu (20 sec.) .



Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure.
Attention à la positionner correctement.



Test



Attendez la fin du **temps de réaction de 3 minute(s)** .

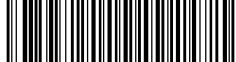
À l'issue du temps de réaction, la mesure est effectuée automatiquement.

Le résultat s'affiche à l'écran en mg/L chlore total.

Réalisation de la quantification Chlore détermination différenciée avec réactifs en sachet de poudre (PP)

Sélectionnez la méthode sur l'appareil.

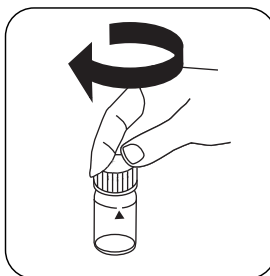
Sélectionnez également la quantification : différenciée



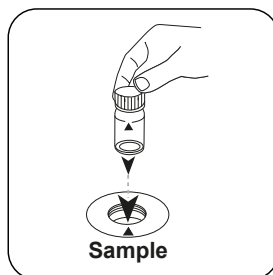
Pour cette méthode, il n'est pas nécessaire d'effectuer une mesure ZÉRO à chaque fois sur les appareils suivants : XD 7000, XD 7500



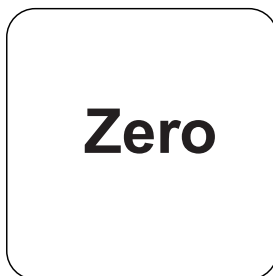
Remplissez une cuvette de 24 mm de **10 mL** d'échantillon.



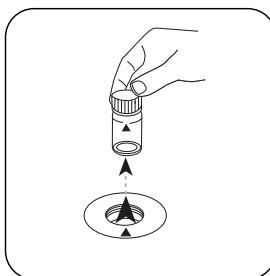
Fermez la(les) cuvette(s).



Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.

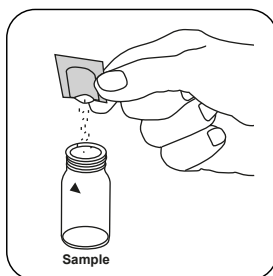


Effectuer le zéro.

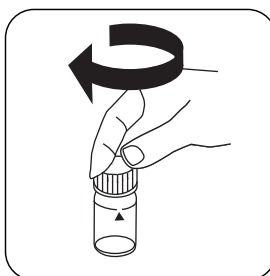


Retirez la cuvette de la chambre de mesure.

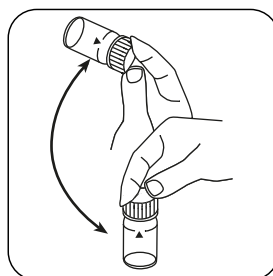
Sur les appareils ne nécessitant **aucune mesure ZÉRO** , commencez ici.



Ajoutez un **sachet de poudre Chlorine FREE-DPD/ F10**.



Fermez la(les) cuvette(s).

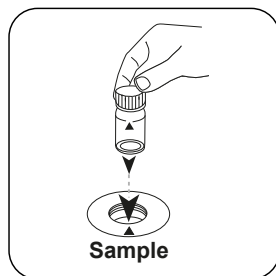


Retourner plusieurs fois pour mélanger le contenu (20 sec.) .

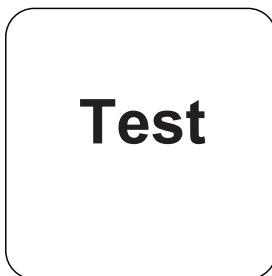
FR



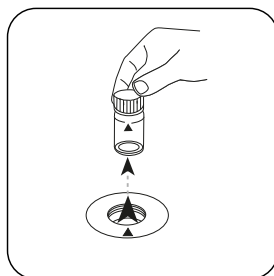
FR



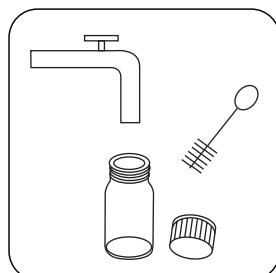
Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.



Effectuer un test.



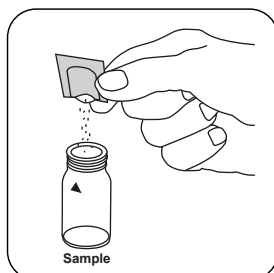
Retirez la cuvette de la chambre de mesure.



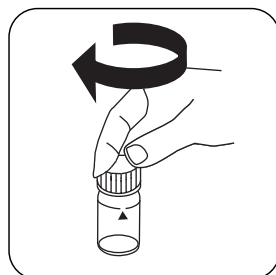
Nettoyez à fond la cuvette et le couvercle de la cuvette.



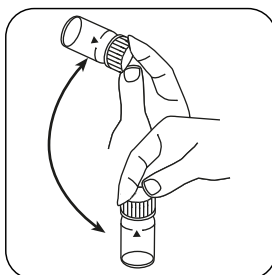
Remplissez une cuvette de 24 mm de **10 mL d'échantillon**.



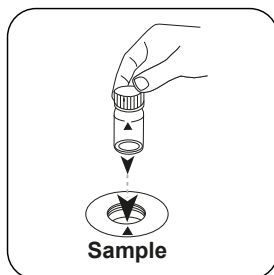
Ajoutez un **sachet de poudre TOTAL-DPD/ F10**.



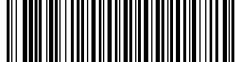
Fermez la(les) cuvette(s).



Retourner plusieurs fois pour mélanger le contenu (20 sec.) .

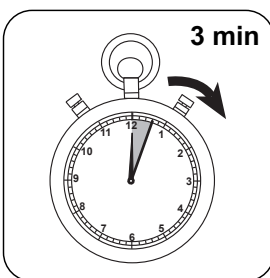


Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.



Test

Effectuer un test.



Attendez la fin du **temps de réaction de 3 minute(s)** .

À l'issue du temps de réaction, la mesure est effectuée automatiquement.

Le résultat s'affiche à l'écran en mg/L chlore libre, mg/l chlore combiné, mg/l chlore total.

FR



Méthode chimique

DPD

Appendice

FR

Interférences

Interférences persistantes

- Les agents oxydants contenus dans les échantillons réagissent tous comme le chlore, ce qui entraîne des résultats plus élevés.

Interférences exclues

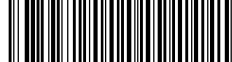
- Les perturbations causées par le cuivre et le fer (III) seront éliminées par EDTA.
- Les concentrations de chlore supérieures à 2 mg/L peuvent provoquer des résultats dans la plage de mesure allant jusqu'à 0 mg/L en utilisant des sachets de poudre. Dans ce cas, diluez l'échantillon à l'eau déchlorée. Le réactif est ajouté à 10 ml d'échantillon dilué. Ensuite, la mesure est répétée (test de plausibilité).

Interférences	de / [mg/L]
CrO_4^{2-}	0,01
MnO_2	0,01

Conformité

EN ISO 7393-2

^{a)}Détermination du libre, combiné et total



Chlore HR 2 PP

M112-2

0.1 - 10 mg/L Cl₂

DPD

FR

Matériel

Matériel requis (partiellement optionnel):

Réactifs	Pack contenant	Code
VARIO Chlore libre DPD F25-100	Poudre / 100 Pièces	530110
VARIO Chlore total DPD F25-100	Poudre / 100 Pièces	530130
Chlore libre DPD F10	Poudre / 100 Pièces	530100
Chlore total DPD F10	Poudre / 100 Pièces	530120

Échantillonnage

1. Lors de la préparation de l'échantillon, il faudra éviter le dégazage du chrome, par ex. par pipetage ou agitation.
2. L'analyse devra avoir lieu immédiatement après le prélèvement de l'échantillon.

Préparation

1. Nettoyage des cuvettes :
Beaucoup de produits de nettoyage domestiques (par ex. liquide vaisselle) contenant des agents réducteurs, il est possible que lors de la quantification du chlore, les résultats soient plus bas. Pour exclure ces erreurs, les instruments en verre utilisés devraient être insensibles aux effets du chlore. Pour ce faire, il convient de laisser les instruments en verre pendant une heure dans une solution d'hypochlorite de sodium (0,1 g/L) et de bien les rincer ensuite à l'eau déminéralisée (eau entièrement dessalée).
2. Pour la quantification individuelle du chlore libre et du chlore total, il est recommandé d'utiliser à chaque fois un nouveau lot de cuvettes (voir EN ISO 7393-2, § 5.3).
3. La coloration due au DPD a lieu à un pH compris entre 6,2 et 6,5. C'est pourquoi, les réactifs contiennent un tampon pour l'ajustage du pH. Avant l'analyse, les eaux fortement alcalines ou acides devraient être cependant ajustées sur un pH compris entre 6 et 7 (avec 0,5 mol/l d'acide sulfurique ou 1 mol/l de soude caustique).



Indication

1. Pour effectuer le test dans le MD50/150, on utilise, au lieu de la cuvette multiple, une cuvette de 24 mm Ø.

FR



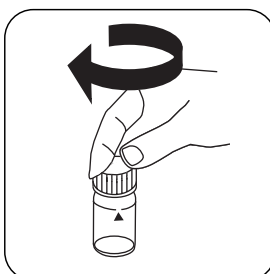
Réalisation de la quantification Chlore HR 2 libre avec réactifs en sachet de poudre (PP) (MD50/MD150)

Sélectionnez la méthode sur l'appareil.

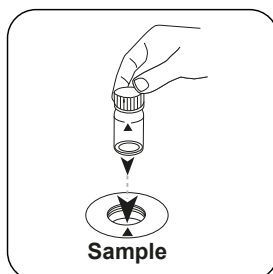
FR



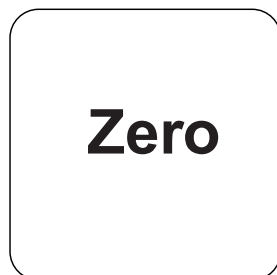
Remplissez une cuvette de 24 mm de **10 mL d'échantillon**.



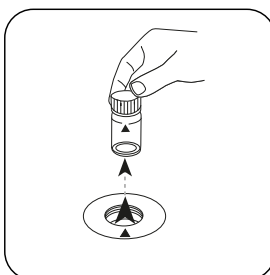
Fermez la(les) cuvette(s).



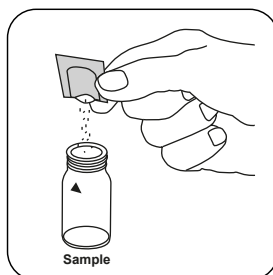
Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.



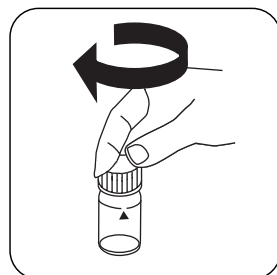
Effectuer le zéro.



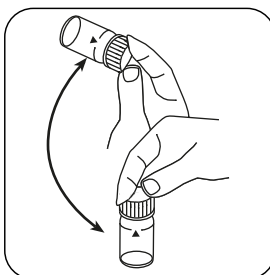
Retirez la cuvette de la chambre de mesure.



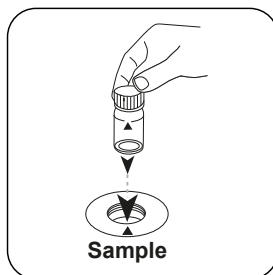
Ajoutez un **sachet de poudre 1 Vario Chlorine Free / F25 ou 2 Chlorine Total / F10**.



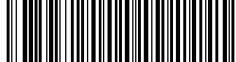
Fermez la(les) cuvette(s).



Retourner plusieurs fois pour mélanger le contenu (20 sec.) .



Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.



Test

Effectuer un test.

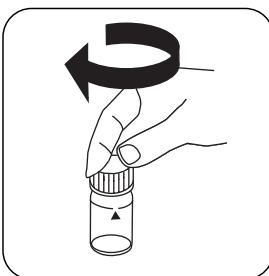
Le résultat s'affiche à l'écran en mg/L chlore.

Réalisation de la quantification Chlore HR 2 total avec réactifs en sachet de poudre (PP) (MD50/MD150)

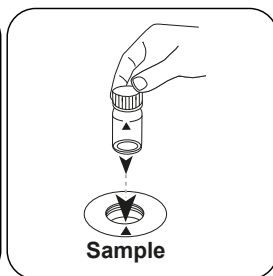
Sélectionnez la méthode sur l'appareil.



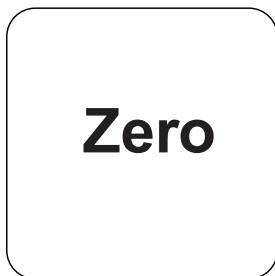
Remplissez une cuvette de 24 mm de **10 mL d'échantillon**.



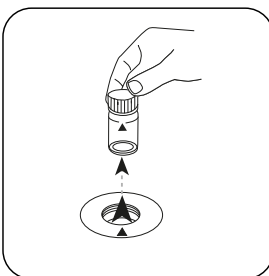
Fermez la(les) cuvette(s).



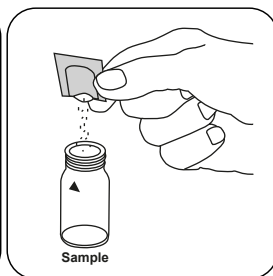
Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.



Effectuer le zéro.

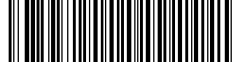


Retirez la cuvette de la chambre de mesure.

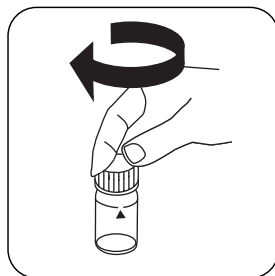


Ajoutez un **sachet de poudre 1 Vario Chlorine Free / F25 ou 2 Chlorine Total / F10**.

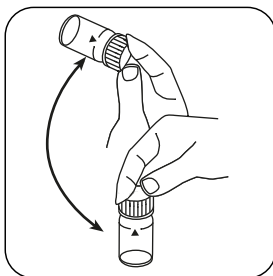
FR



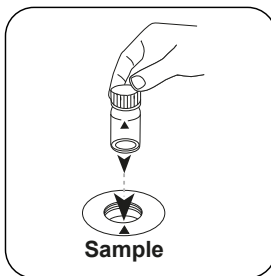
FR



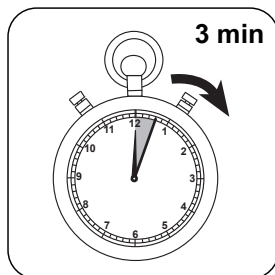
Fermez la(les) cuvette(s).



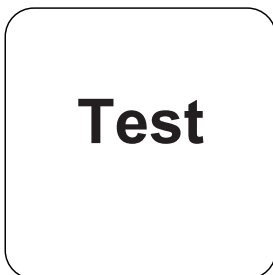
Retourner plusieurs fois pour mélanger le contenu (20 sec.) .



Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.

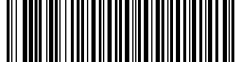


Attendez la fin du **temps de réaction de 3 minute(s)** .



Effectuer un test.

Le résultat s'affiche à l'écran en mg/L chlore.



Méthode chimique

DPD

Appendice

Interférences

FR

Interférences persistantes

- Les agents oxydants contenus dans les échantillons réagissent tous comme le chlore, ce qui entraîne des résultats plus élevés.

Interférences exclues

- Les perturbations causées par le cuivre et le fer (III) seront éliminées par EDTA.
- Les concentrations de chlore supérieures à 10 mg/L peuvent provoquer des résultats dans la plage de mesure allant jusqu'à 0 mg/L en utilisant des sachets de poudre. Dans ce cas, diluez l'échantillon à l'eau déchlorée. Le réactif est ajouté à 5 ml d'échantillon dilué. Ensuite, la mesure est répétée (test de plausibilité).

Conformité

EN ISO 7393-2

**CyA HR T****M161****10 - 200 mg/L CyA****CyAH****Mélatamine**

FR

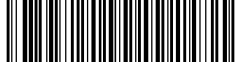
Matériel

Matériel requis (partiellement optionnel):

Réactifs	Pack contenant	Code
Test CyA HR	Pastilles / 100	511430BT
Test CyA HR	Pastilles / 250	511431BT

Indication

1. L'acide cyanurique cause une turbidité très fine répartie d'aspect laiteux. Certaines particules ne s'expliquent pas par la présence d'acide cyanurique.
2. Après l'ajout du pastille CyA-HR-Test, il se dissout automatiquement en deux minutes.



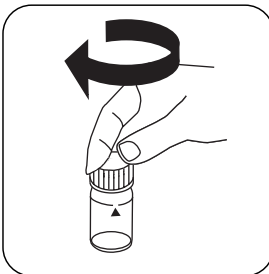
Réalisation de la quantification Test à l'acide cyanurique avec pastille

Sélectionnez la méthode sur l'appareil.

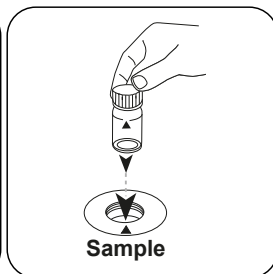
Pour cette méthode, il n'est pas nécessaire d'effectuer une mesure ZERO à chaque fois sur les appareils suivants : XD 7000, XD 7500



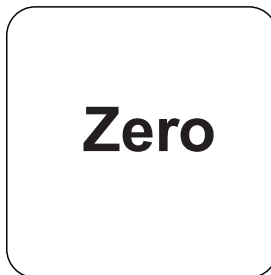
Remplissez une cuvette de 24 mm de **10 mL** d'échantillon.



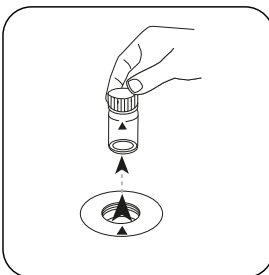
Fermez la(les) cuvette(s).



Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.

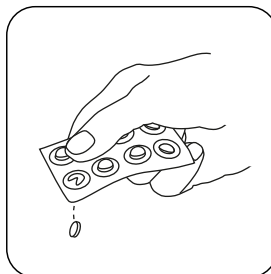


Effectuer le zéro.

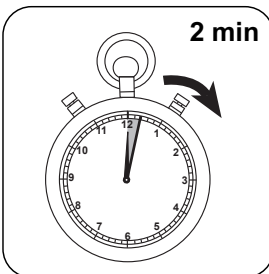


Retirez la cuvette de la chambre de mesure.

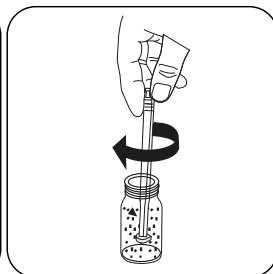
Sur les appareils ne nécessitant **aucune mesure ZÉRO** , commencez ici.



Ajoutez une **pastille de CyA HR Test**.

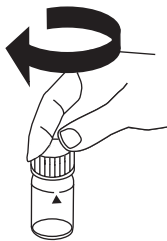


Attendez la fin du **temps de réaction de 2 minute(s)** .

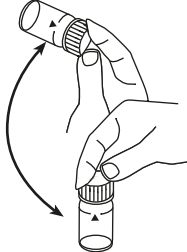


Dissolvez la(les) pastille(s) en mélangeant à l'aide d'une spatule propre.

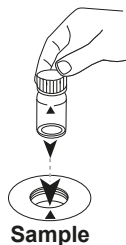
FR



Fermez la(les) cuvette(s).



Retourner plusieurs fois pour mélanger le contenu (ne pas agiter) .

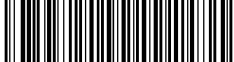


Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.

Test

Effectuer un test.

Le résultat s'affiche à l'écran en mg/L Acide cyanurique.



Méthode chimique

Mélamine

Interférences

Interférences persistantes

1. Les particules non dissoutes peuvent entraîner des résultats plus élevés.

FR

Méthode Validation

Limite de détection	2.07 mg/L
Limite de détermination	6.2 mg/L
Fin de la gamme de mesure	200 mg/L
Sensibilité	77.47 mg/L / Abs
Intervalle de confiance	4.6 mg/L
Déviatiion standard	4.78 mg/L
Coefficient de variation	4.55 %



Valeur du pH T

M330

6.5 - 8.4 pH

PH

Rouge de phénol

FR

Matériel

Matériel requis (partiellement optionnel):

Réactifs	Pack contenant	Code
Rouge de phénol Photomètre	Pastilles / 100	511770BT
Rouge de phénol Photomètre	Pastilles / 250	511771BT
Rouge de phénol Photomètre	Pastilles / 500	511772BT

Échantillonnage

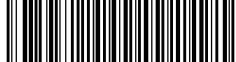
Concentration en sel de l'échantillon en g/L	30 (eau de mer)	60	120	180
Correction	-0,15 ¹⁾	-0,21 ²⁾	-0,26 ²⁾	-0,29 ²⁾

¹⁾ selon Kolthoff (1922)

²⁾ selon Parson et Douglas (1926)

Indication

1. Pour la quantification photométrique du pH, n'utilisez que des pastilles PHENOL RED avec étiquette noire, sur lesquelles le terme PHOTOMER est apposé.



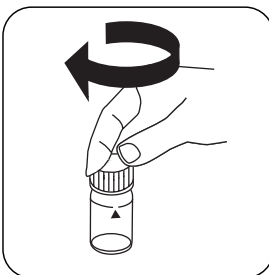
Réalisation de la quantification Valeur du pH avec pastille

Sélectionnez la méthode sur l'appareil.

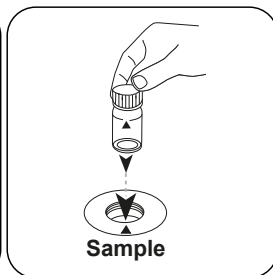
Pour cette méthode, il n'est pas nécessaire d'effectuer une mesure ZERO à chaque fois sur les appareils suivants : XD 7000, XD 7500



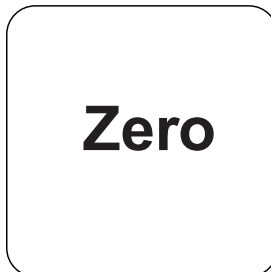
Remplissez une cuvette de 24 mm de **10 mL d'échantillon**.



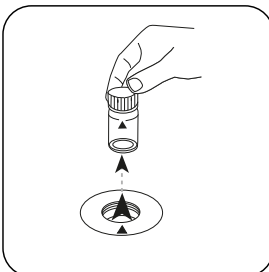
Fermez la(les) cuvette(s).



Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.

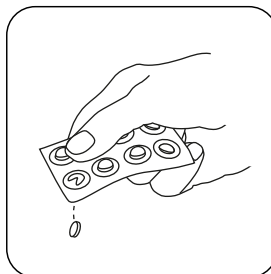


Effectuer le zéro.

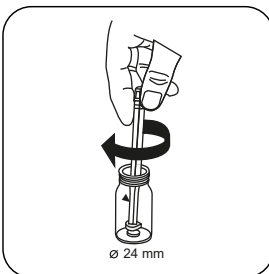


Retirez la cuvette de la chambre de mesure.

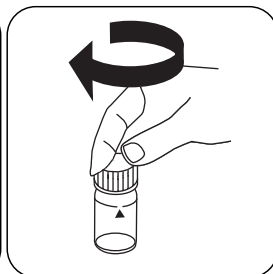
Sur les appareils ne nécessitant **aucune mesure ZÉRO**, commencez ici.



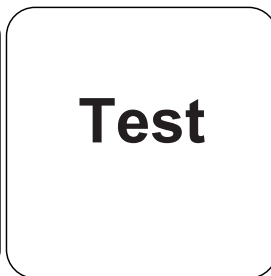
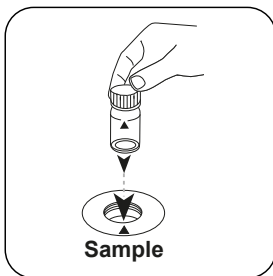
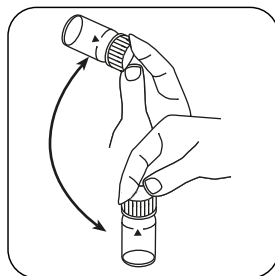
Ajoutez une **pastille de PHENOL RED PHOTOMETER**.



Écrasez la(les) pastille(s) en la(les) tournant un peu.



Fermez la(les) cuvette(s).



Test

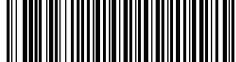
FR

Dissolvez la(les) pastille(s) en mettant le tube plusieurs fois à l'envers.

Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.

Effectuer un test.

Le résultat s'affiche à l'écran en valeur du pH.



Méthode chimique

Rouge de phénol

Appendice

Interférences

FR

Interférences persistantes

1. Les échantillons d'eau avec faible dureté carbonatée* peuvent fausser les pH.
* $K_{S4,3} < 0,7 \text{ mmol/l} \triangleq \text{alcalinité totale} < 35 \text{ mg/L CaCO}_3$.

Interférences exclues

1. Les pH inférieurs à 6,5 et supérieurs à 8,4 peuvent provoquer des résultats dans la plage de mesure. Il est recommandé d'effectuer un test de plausibilité (appareil de mesure du pH).
2. Erreur de sel :
À des concentrations du sel jusqu'à 2 g/L, il ne faut s'attendre à aucune erreur digne de ce nom en raison de la concentration en sel de la pastille de réactif. À des concentrations supérieures, les valeurs mesurées seront corrigées comme suit :

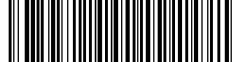
Concentration en sel de l'échantillon en g/L	30 (eau de mer)	60	120	180
Correction	-0,15 ¹⁾	-0,21 ²⁾	-0,26 ²⁾	-0,29 ²⁾

¹⁾ selon Kolthoff (1922)

²⁾ selon Parson et Douglas (1926)

Bibliographie

Colorimetric Chemical Analytical Methods, 9th Edition, London



Valeur du pH L

M331

6.5 - 8.4 pH

PH

Rouge de phénol

Matériel

FR

Matériel requis (partiellement optionnel):

Réactifs	Pack contenant	Code
Solution de phénol rouge	15 mL	471040
Solution de phénol rouge	100 mL	471041
Solution de phénol rouge dans un lot de 6	1 Pièces	471046

Échantillonnage

Concentration en sel de l'échantillon	Correction
30 g/L (eau de mer)	-0,15 ¹⁾
60 g/L	-0,21 ²⁾
120 g/L	-0,26 ²⁾
180 g/L	-0,29 ²⁾
¹⁾ selon Kolthoff (1922)	²⁾ selon Parson et Douglas (1926)

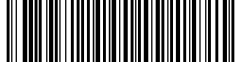
Lors de l'analyse de l'eau chlorée, la concentration résiduelle en chlore peut influencer la coloration du réactif liquide. Ceci est empêché en introduisant un petit cristal de hiosulfate de sodium ($\text{Na}_2\text{S}_2\text{O}_3 \cdot 5 \text{H}_2\text{O}$) dans la solution d'échantillonnage avant d'ajouter la solution PHENOL RED.

Préparation

- En raison des différentes tailles de gouttes, le résultat peut présenter des écarts supérieurs à ceux des pastilles.
Cet écart peut être réduit à un minimum en utilisant une pipette (0,18 ml correspondent à 6 gouttes).

Indication

- Après emploi, refermez immédiatement le flacon compte-goutte en utilisant le capot de même couleur.
- Conservez le réactif à une température de +6 °C à +10 °C.



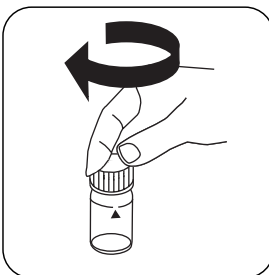
Réalisation de la quantification Valeur du pH avec réactif liquide

Sélectionnez la méthode sur l'appareil.

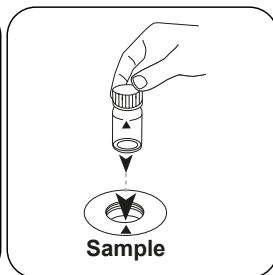
Pour cette méthode, il n'est pas nécessaire d'effectuer une mesure ZERO à chaque fois sur les appareils suivants : XD 7000, XD 7500



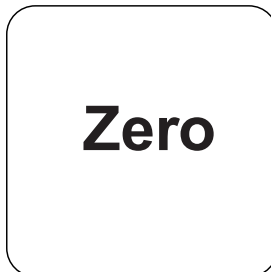
Remplissez une cuvette de 24 mm de **10 mL d'échantillon**.



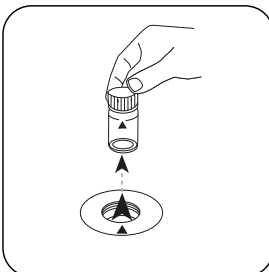
Fermez la(les) cuvette(s).



Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.

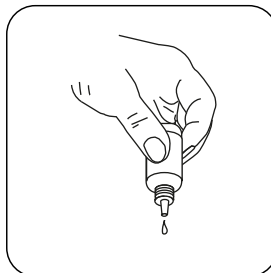


Effectuer le zéro.

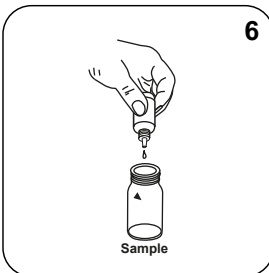


Retirez la cuvette de la chambre de mesure.

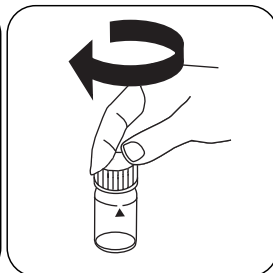
Sur les appareils ne nécessitant **aucune mesure ZÉRO**, commencez ici.



Tenez les flacons compte-goutte à la verticale et ajoutez des gouttes uniformes en appuyant lentement.

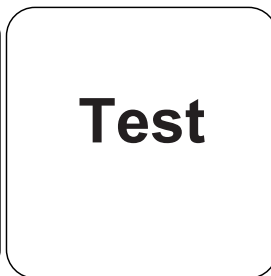
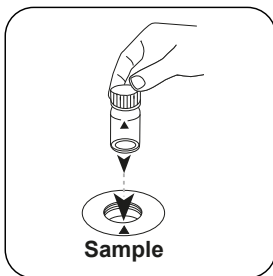
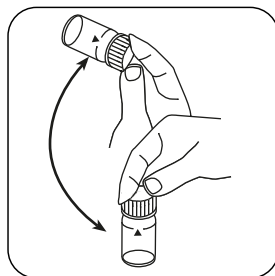
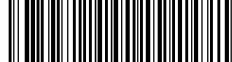


Ajoutez **6 gouttes de PHENOL Red-Lösung** dans la cuvette réservée à l'échantillon.



Fermez la(les) cuvette(s).

FR



Test

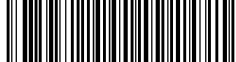
FR

Mélangez le contenu en mettant le tube plusieurs fois à l'envers puis à l'endroit.

Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.

Effectuer un test.

Le résultat s'affiche à l'écran en valeur du pH.



Méthode chimique

Rouge de phénol

Appendice

Interférences

FR

Interférences exclues

1. Erreur de sel : Correction de la mesure du sel (valeurs moyennes) pour les échantillons présentant une concentration en sel de :

2.	Concentration en sel de l'échantillon	Correction
	30 g/L (eau de mer)	-0,15 ¹⁾
	60 g/L	-0,21 ²⁾
	120 g/L	-0,26 ²⁾
	180 g/L	-0,29 ²⁾
	¹⁾ selon Kolthoff (1922)	²⁾ selon Parson et Douglas (1926)

3. Lors de l'analyse de l'eau chlorée, la concentration résiduelle en chlore peut influencer la coloration du réactif liquide. Ceci est empêché en introduisant un petit cristal de biosulfate de sodium ($\text{Na}_2\text{S}_2\text{O}_3 \cdot 5 \text{H}_2\text{O}$) dans la solution d'échantillonnage avant d'ajouter la solution PHENOL RED.

Bibliographie

Colorimetric Chemical Analytical Methods, 9th Edition, London

KS4.3 T / 20

Nome do método

Número do método

Código de barras para a detecção dos métodos

Área de medição

KS_{4.3} T

0.1 - 4 mmol/l K_{4.3}

Ácido / Indicador

20

S:4.3

Indicado no display: MD 100 MD 110 / MD 200

Método Químico

Informação específica do instrumento

O teste pode ser realizado nos seguintes dispositivos. Além disso, a cubeta necessária e a faixa de absorção do fotômetro são indicadas.

Dispositivos	Cubeta	λ	Faixa de Medição
MD 200, MD 600, MD 610, MD 640, MultiDirect, PM 620, PM 630	ø 24 mm	610 nm	0.1 - 4 mmol/l K _{4.3}
SpectroDirect, XD 7000, XD 7500	ø 24 mm	615 nm	0.1 - 4 mmol/l K _{4.3}

Material

Material necessário (parcialmente opcional):

Título	Unidade de Embalagem	Artigo No
Alka-M-Photometer	Pastilhas / 100	513210BT
Alka-M-Photometer	Pastilhas / 250	513211BT

Lista de Aplicações

- Tratamento de Esgotos
- Tratamento de Água Potável
- Tratamento de Água Bruta

Notas

1. Os termos alcalinidade-m, m-valor, alcalinidade total e capacidade de acidez K_{4.3} são idênticos.
2. O cumprimento exato do volume da amostra de 10 ml é decisivo para a precisão do resultado de análise.

Códigos de idioma ISO 639-1

Nível de revisão

PT Métodos Manual 01/20

Efetuar a medição

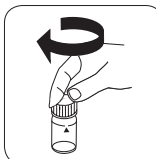
Realização da determinação Capacidade de acidez $K_{s4.3}$ com pastilha

Escolher o método no equipamento.

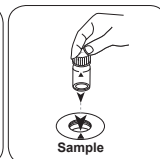
Para este método não tem de ser efetuada uma medição ZERO nos seguintes equipamentos: XD 7000, XD 7500



Encher a célula de 24 mm com 10 ml de amostra .

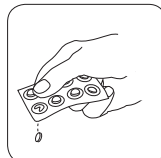


Fechar a(s) célula(s).

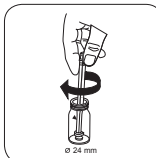


Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.

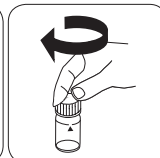
• • •



Pastilha ALKA-M-PHOTO-METER.



Esmagar a(s) pastilha(s) rodando ligeiramente.



Fechar a(s) célula(s).

**Cloro T****M100****0.01 - 6.0 mg/L Cl₂ ^{a)}****CL6****DPD**

PT

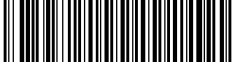
Material

Material necessário (parcialmente opcional):

Reagentes	Unidade de Embalagem	Código do Produto
DPD Nº.1	Pastilhas / 100	511050BT
DPD Nº. 1	Pastilhas / 250	511051BT
DPD Nº. 1	Pastilhas / 500	511052BT
DPD Nº. 3	Pastilhas / 100	511080BT
DPD Nº. 3	Pastilhas / 250	511081BT
DPD Nº. 3	Pastilhas / 500	511082BT
DPD Nº. 1 Alto Cálcio ^{e)}	Pastilhas / 100	515740BT
DPD Nº. 1 Alto Cálcio ^{e)}	Pastilhas / 250	515741BT
DPD Nº. 1 Alto Cálcio ^{e)}	Pastilhas / 500	515742BT
DPD Nº. 3 Alto Cálcio ^{e)}	Pastilhas / 100	515730BT
DPD Nº. 3 Alto Cálcio ^{e)}	Pastilhas / 250	515731BT
DPD Nº. 3 Alto Cálcio ^{e)}	Pastilhas / 500	515732BT
DPD Nº. 4	Pastilhas / 100	511220BT
DPD Nº. 4	Pastilhas / 250	511221BT
DPD Nº. 4	Pastilhas / 500	511222BT
DPD Nº. 3 Evo	Pastilhas / 100	511420BT
DPD Nº. 3 Evo	Pastilhas / 250	511421BT
DPD Nº. 3 Evo	Pastilhas / 500	511422BT
DPD Nº.4 Evo	Pastilhas / 100	511970BT
DPD Nº. 4 Evo	Pastilhas / 250	511971BT
DPD Nº. 4 Evo	Pastilhas / 500	511972BT

Padrões disponíveis

Título	Unidade de Embalagem	Código do Produto
ValidCheck Cloro 1,5 mg/l	1 pc.	48105510



Amostragem

1. Na preparação da amostra é preciso evitar a libertação de gases de cloro, p. ex. através da pipetagem e agitação.
2. A análise tem de ser efetuada logo após a recolha da amostra.

Preparação

1. Limpeza das células:
Uma vez que muitos produtos de limpeza domésticos (p. ex. lava-louça) contêm substâncias redutoras, na determinação de cloro pode haver demasiadas reduções. Para excluir este erro de medição, os equipamentos de vidro não deviam ter a capacidade de absorção de cloro. Para esse efeito, os equipamentos de vidro são guardados por uma hora sob solução de hipoclorito de sódio (0,1 g/L) e depois devem ser bem enxaguados com água desmineralizada.
2. Para a determinação individual de cloro livre e cloro total é conveniente usar respetivamente um conjunto próprio de células (ver EN ISO 7393-2, alínea 5.3).
3. A formação de cores DPD ocorre com um valor pH entre 6,2 e 6,5. Os reagentes contêm, por isso, um tampão para ajustar o valor pH. As águas fortemente alcalinas ou ácidas devem, porém, antes da análise, ser ajustadas para um valor pH entre 6 e 7 (com 0,5 mol/l de ácido sulfúrico ou 1 mol/l soda cáustica).

Notas

1. Os pastilhas EVO podem ser utilizadas como alternativa à pastilha padrão correspondente (por exemplo, DPD N° 3 EVO em vez da DPD N° 3).



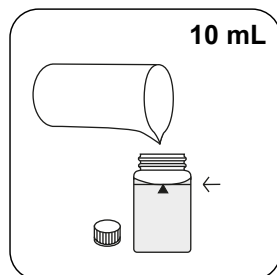
Realização da determinação Cloro livre com pastilha

Escolher o método no equipamento.

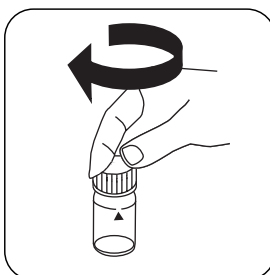
Escolha ainda a determinação: livre

Para este método, uma medição ZERO não precisa ser realizada todas as vezes nos seguintes dispositivos: XD 7000, XD 7500

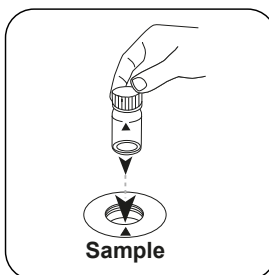
PT



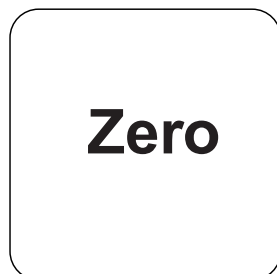
Encher a célula de 24 mm com **10 mL de amostra**.



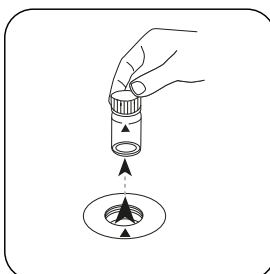
Fechar a(s) célula(s).



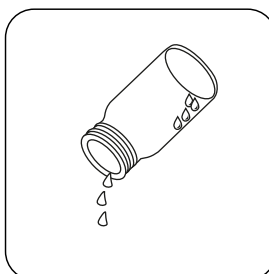
Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.



Efetuar Zero.

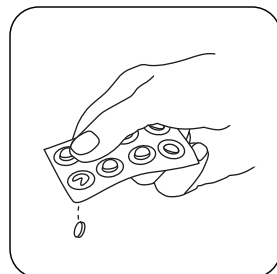


Retirar a célula do compartimento de medição.

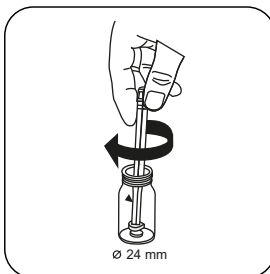


Esvaziar a célula até ficarem apenas algumas gotas.

Nos equipamentos que **não requerem uma medição ZERO**, deve começar aqui.



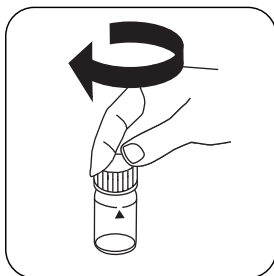
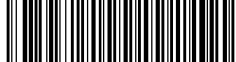
Pastilha DPD No. 1.



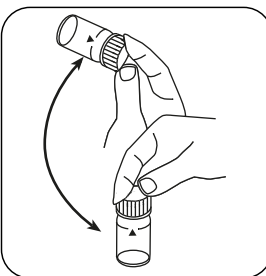
Esmagar a(s) pastilha(s) rodando ligeiramente.



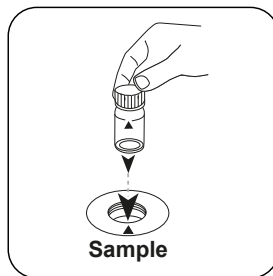
Encher a célula até à **marca de 10 mL** com a **amostra**.



Fechar a(s) célula(s).



Dissolver a(s) pastilha(s) girando.



Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.

Test

Efetuar teste.

No visor aparece o resultado em mg/L Cloro livre.

Realização da determinação Cloro total com pastilha

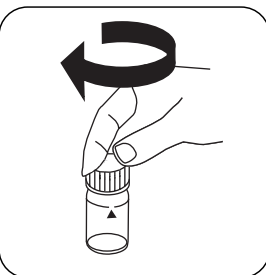
Escolher o método no equipamento.

Escolha ainda a determinação: total

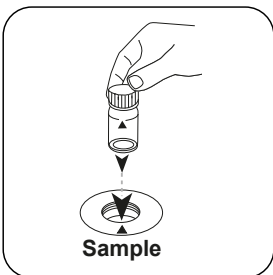
Para este método, uma medição ZERO não precisa ser realizada todas as vezes nos seguintes dispositivos: XD 7000, XD 7500



Encher a célula de 24 mm com **10 mL de amostra**.



Fechar a(s) célula(s).

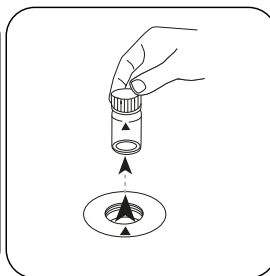


Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.

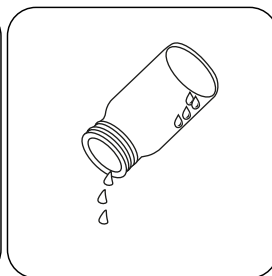


Zero

Efetuar Zero.

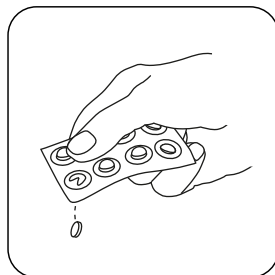


Retirar a célula do compartimento de medição.

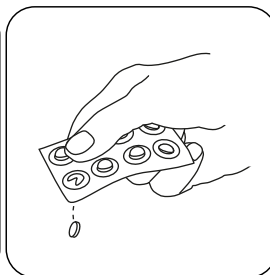


Esvaziar a célula até ficarem apenas algumas gotas.

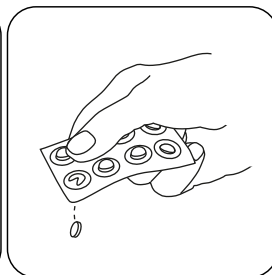
Nos equipamentos que **não requerem uma medição ZERO**, deve começar aqui.



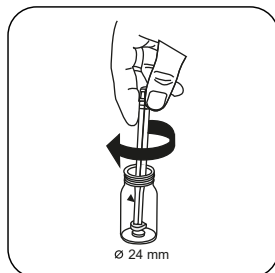
Pastilha DPD No. 1.



Pastilha DPD No. 3.



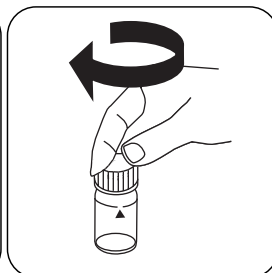
Como alternativa aos comprimidos DPD No. 1 e No. 3, pode ser adicionado 1 comprimido DPD No. 4.



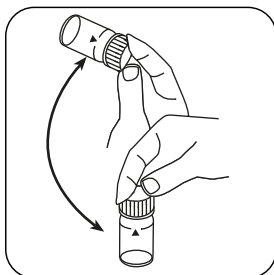
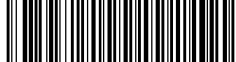
Esmagar a(s) pastilha(s) rodando ligeiramente.



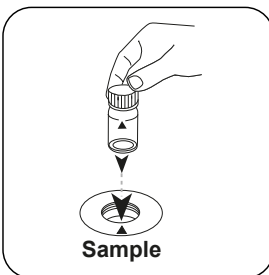
Encher a célula até à **marca de 10 mL** com a amostra.



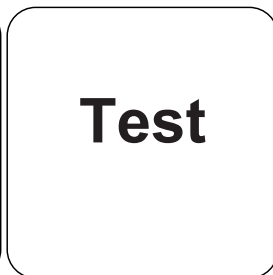
Fechar a(s) célula(s).



Dissolver a(s) pastilha(s) girando.

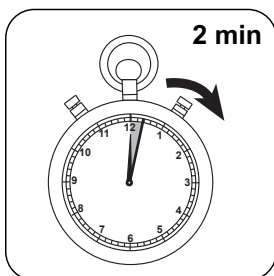


Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.



Efetuar teste.

PT



Aguardar **2 minuto(s)** de tempo de reação.

Decorrido o tempo de reação, a medição é efetuada automaticamente.

No visor aparece o resultado em mg/L Cloro total.

Realização da determinação Cloro diferenciado com pastilha

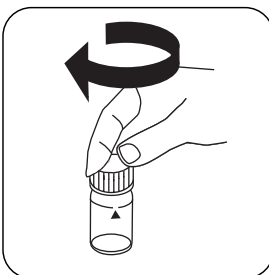
Escolher o método no equipamento.

Escolha ainda a determinação: diferenciado

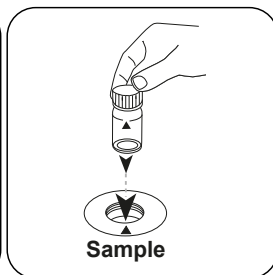
Para este método, uma medição ZERO não precisa ser realizada todas as vezes nos seguintes dispositivos: XD 7000, XD 7500



Encher a célula de 24 mm com **10 mL de amostra**.



Fechar a(s) célula(s).

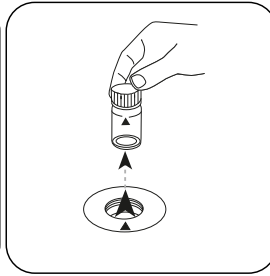


Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.

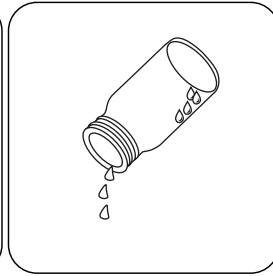


Zero

Efetuar Zero.

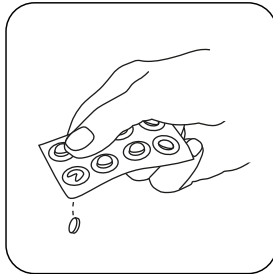


Retirar a célula do compartimento de medição.

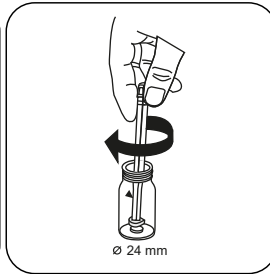


Esvaziar a célula até ficarem apenas algumas gotas.

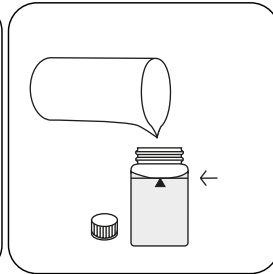
Nos equipamentos que **não requerem uma medição ZERO**, deve começar aqui.



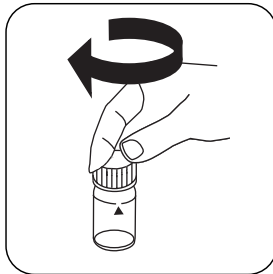
Pastilha DPD No. 1.



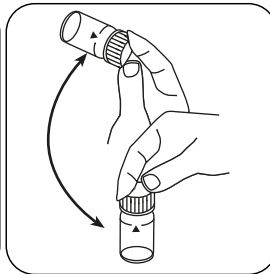
Esmagar a(s) pastilha(s) rodando ligeiramente.



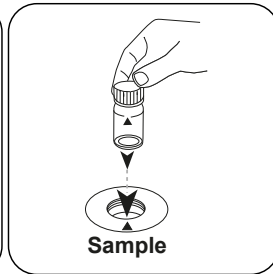
Encher a célula até à **marca de 10 mL** com a amostra.



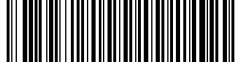
Fechar a(s) célula(s).



Dissolver a(s) pastilha(s) girando.

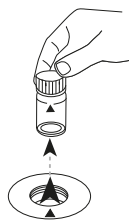


Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.

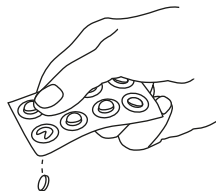


Test

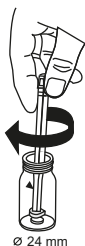
Efetuar teste.



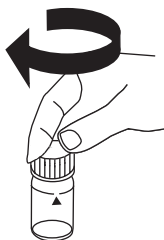
Retirar a célula do compartimento de medição.



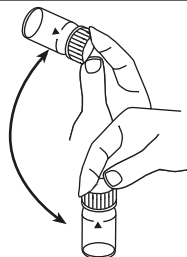
Pastilha DPD No. 3.



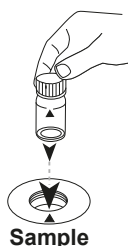
Esmagar a(s) pastilha(s) rodando ligeiramente.



Fechar a(s) célula(s).



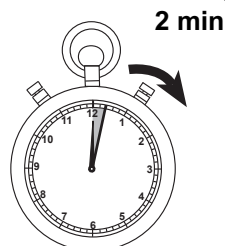
Dissolver a(s) pastilha(s) girando.



Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.

Test

Efetuar teste.



Aguardar **2 minuto(s)** de tempo de reação.

Decorrido o tempo de reação, a medição é efetuada automaticamente.

No visor aparece o resultado em mg/L Cloro livre, mg/l Cloro combinado, mg/l Cloro total.



Método Químico

DPD

Apêndice

PT

Texto de Interferências

Interferências Persistentes

- Todos os oxidantes presentes nas amostras reagem como o cloro, o que leva a resultados demasiado altos.

Interferências Removíveis

- As interferências por cobre e ferro(III) devem ser eliminadas por EDTA.
- Nas amostras com elevado teor de cálcio* e/ou elevada condutividade* pode ocorrer, se forem usadas as pastilhas de reagente, uma turvação da amostra e, por conseguinte, a medição pode ficar errada. Neste caso, deve usar em alternativa a pastilha de reagente DPD No. 1 High Calcium e a pastilha de reagente DPD No. 3 High Calcium.
*não podem ser indicados valores exatos, uma vez que a formação de uma turvação depende do tipo e da composição da água da amostra.
- Concentrações de cloro superiores a 10 mg/L, se forem usadas pastilhas, podem causar resultados dentro da área de medição até 0 mg/L. No caso de uma concentração demasiado alta de cloro, deve diluir a amostra com água sem cloro. 10 ml da amostra diluída é colocada em reagente e a medição é repetida (teste de plausibilidade).

Interferências	a partir de / [mg/L]
CrO_4^{2-}	0.01
MnO_2	0.01

Conformidade

EN ISO 7393-2

^{a)}Determinação do possível livre, vinculado, total | ^{a)}Reagente auxiliar, alternativamente ao DPD no. 1 / não 3 quando a amostra é nublada devido ao alto teor de íons de cálcio e / ou alta condutividade

**Cloro L****M101****0.02 - 4.0 mg/L Cl₂ ^{a)}****CL6****DPD**

PT

Material

Material necessário (parcialmente opcional):

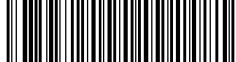
Reagentes	Unidade de Embalagem	Código do Produto
DPD 1 solução tampão, frasco azul	15 mL	471010
Solução tampão DPD 1	100 mL	471011
DPD 1 solução tampão em embalagem de 6	1 pc.	471016
Solução de reagente DPD 1, frasco verde	15 mL	471020
Solução de reagente DPD 1	100 mL	471021
Solução de reagente DPD 1 numa embalagem de 6 unidades	1 pc.	471026
DPD 3 Solução, frasco vermelho	15 mL	471030
Solução DPD 3	100 mL	471031
Solução DPD 3 numa embalagem de 6 unidades	1 pc.	471036
Kit de reagentes DPD	1 pc.	471056

Padrões disponíveis

Título	Unidade de Embalagem	Código do Produto
ValidCheck Cloro 1,5 mg/l	1 pc.	48105510

Amostragem

1. Na preparação da amostra é preciso evitar a libertação de gases de cloro, p. ex. através da pipetagem e agitação.
2. A análise tem de ser efetuada logo após a recolha da amostra.



Preparação

1. Limpeza das células:
Uma vez que muitos produtos de limpeza domésticos (p. ex. lava-louça) contêm substâncias redutoras, na determinação de cloro pode haver demasiadas reduções. Para excluir este erro de medição, os equipamentos de vidro não deviam ter a capacidade de absorção de cloro. Para esse efeito, os equipamentos de vidro são guardados por uma hora sob solução de hipoclorito de sódio (0,1 g/L) e depois devem ser bem enxaguados com água desmineralizada.
2. Para a determinação individual de cloro livre e cloro total é conveniente usar respetivamente um conjunto próprio de células (ver EN ISO 7393-2, alínea 5.3).
3. A formação de cores DPD ocorre com um valor pH entre 6,2 e 6,5. Os reagentes contêm, por isso, um tampão para ajustar o valor pH. As águas fortemente alcalinas ou ácidas devem, porém, antes da análise, ser ajustadas para um valor pH entre 6 e 7 (com 0,5 mol/l de ácido sulfúrico ou 1 mol/l soda cáustica).

Notas

1. Depois de usados, os frascos conta-gotas devem ser novamente fechados com a respetiva tampa de enroscar à cor.
2. Guardar o conjunto de reagentes em local fresco entre +6 °C e +10 °C.



Realização da determinação Cloro livre com reagente líquido

Escolher o método no equipamento.

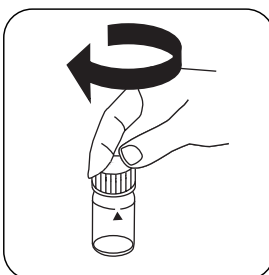
Escolha ainda a determinação: livre

Para este método, uma medição ZERO não precisa ser realizada todas as vezes nos seguintes dispositivos: XD 7000, XD 7500

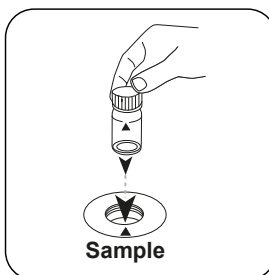
PT



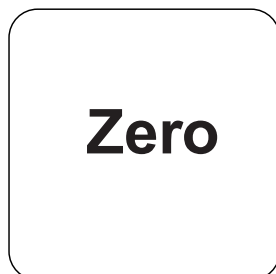
Encher a célula de 24 mm com **10 mL de amostra**.



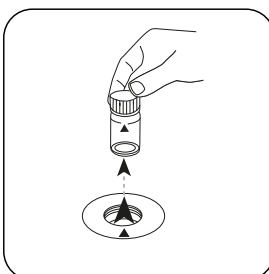
Fechar a(s) célula(s).



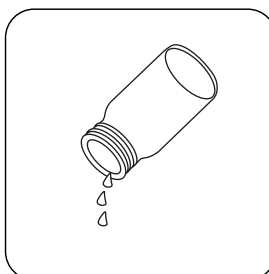
Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.



Efetuar Zero.

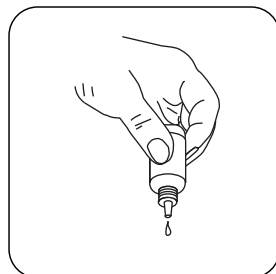


Retirar a célula do compartimento de medição.

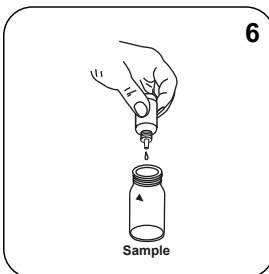


Esvaziar a célula.

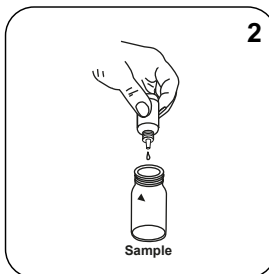
Nos equipamentos que **não requerem uma medição ZERO**, deve começar aqui.



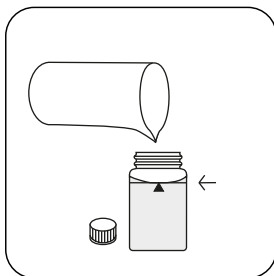
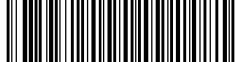
Manter os frascos conta gotas na vertical e pressionar lentamente para adicionar gotas de igual dimensão.



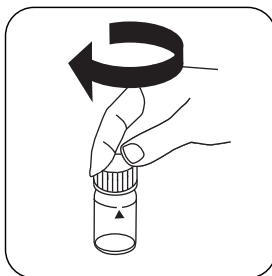
Adicionar **6 gotas DPD 1 Buffer Solution** à célula de amostra.



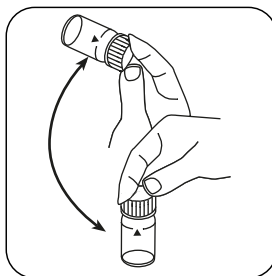
Adicionar **2 gotas DPD 1 Reagent Solution** à célula de amostra.



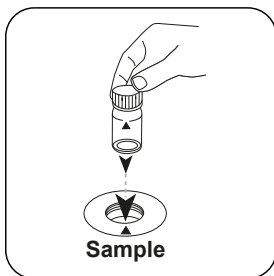
Encher a célula até à **marca de 10 mL** com a **amostra**.



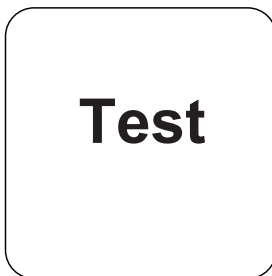
Fechar a(s) célula(s).



Misturar o conteúdo girando.



Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.



Efetuar teste.

No visor aparece o resultado em mg/L Cloro livre.

Realização da determinação Cloro total com reagente líquido

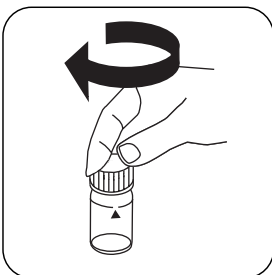
Escolher o método no equipamento.

Escolha ainda a determinação: total

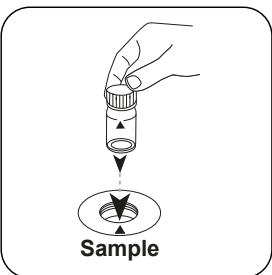
Para este método, uma medição ZERO não precisa ser realizada todas as vezes nos seguintes dispositivos: XD 7000, XD 7500



Encher a célula de 24 mm com **10 mL de amostra**.



Fechar a(s) célula(s).

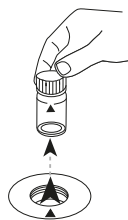


Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.



Zero

Efetuar Zero.

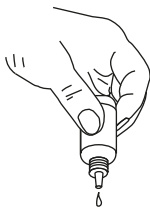


Retirar a célula do compartimento de medição.



Esvaziar a célula.

Nos equipamentos que **não requerem uma medição ZERO**, deve começar aqui.



Manter os frascos conta gotas na vertical e pressionar lentamente para adicionar gotas de igual dimensão.



6

Adicionar **6 gotas DPD 1 Buffer Solution** à célula de amostra.



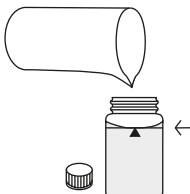
2

Adicionar **2 gotas DPD 1 Reagent Solution** à célula de amostra.

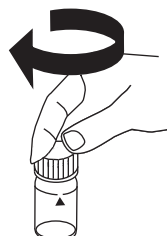


3

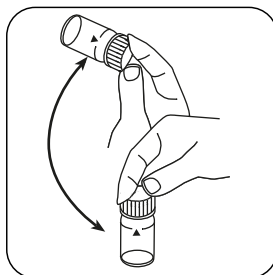
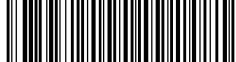
Adicionar **3 gotas DPD 3 Solution** à célula de amostra.



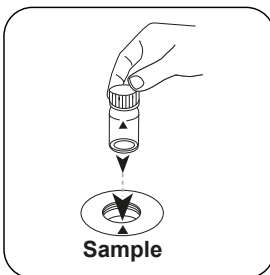
Encher a célula até à **marca de 10 mL** com a amostra.



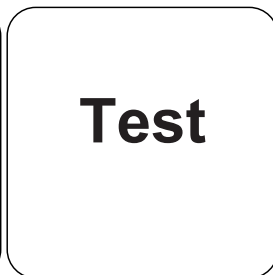
Fechar a(s) célula(s).



Misturar o conteúdo girando.

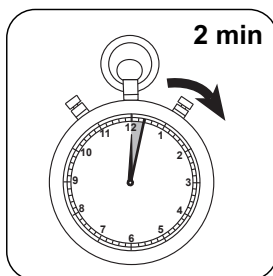


Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.



Efetuar teste.

PT



Aguardar **2 minuto(s)** de tempo de reação.

Decorrido o tempo de reação, a medição é efetuada automaticamente.

No visor aparece o resultado em mg/L Cloro total.

Realização da determinação Cloro diferenciado com reagente líquido

Escolher o método no equipamento.

Escolha ainda a determinação: diferenciado

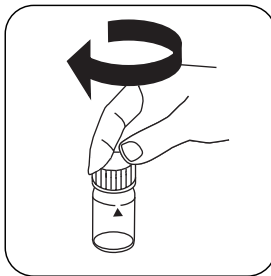
Para este método, uma medição ZERO não precisa ser realizada todas as vezes nos seguintes dispositivos: XD 7000, XD 7500



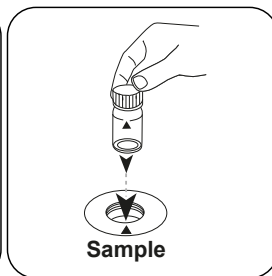
PT



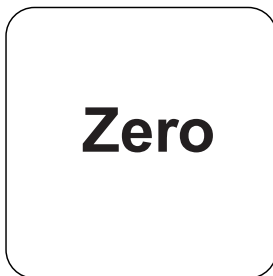
Encher a célula de 24 mm com **10 mL de amostra**.



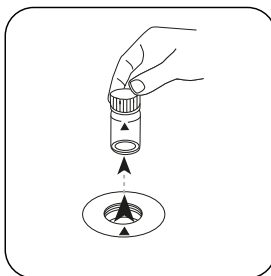
Fechar a(s) célula(s).



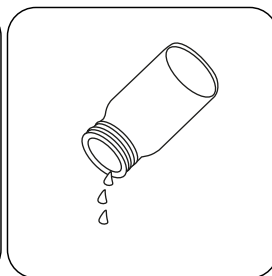
Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.



Efetuar Zero.

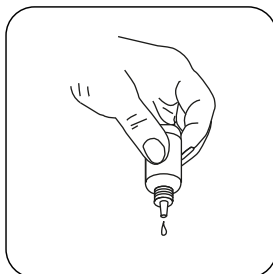


Retirar a célula do compartimento de medição.

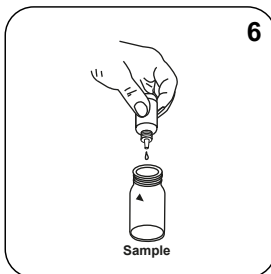


Esvaziar a célula.

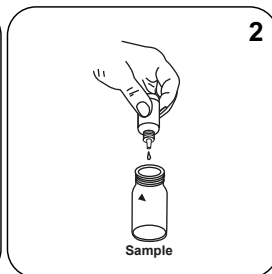
Nos equipamentos que **não requerem uma medição ZERO**, deve começar aqui.



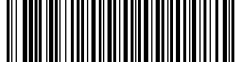
Manter os frascos conta gotas na vertical e pressionar lentamente para adicionar gotas de igual dimensão.



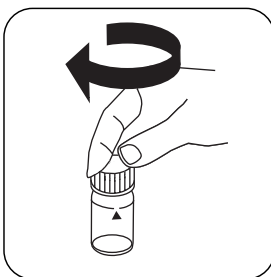
Adicionar **6 gotas DPD 1 Buffer Solution** à célula de amostra.



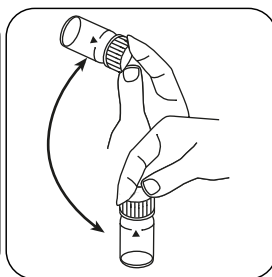
Adicionar **2 gotas DPD 1 Reagent Solution** à célula de amostra.



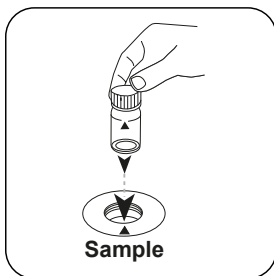
Encher a célula até à **marca de 10 mL** com a amostra .



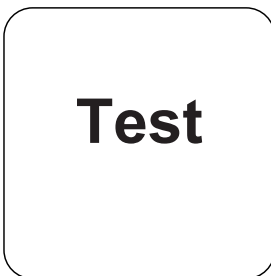
Fechar a(s) célula(s).



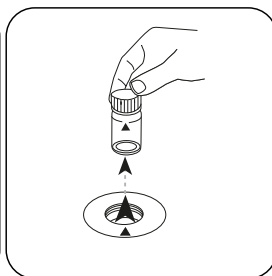
Misturar o conteúdo girando.



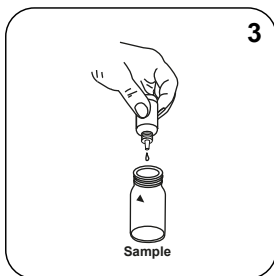
Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.



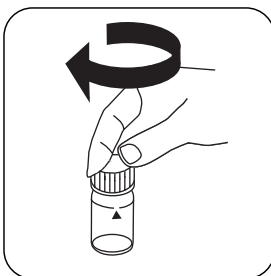
Efetuar teste.



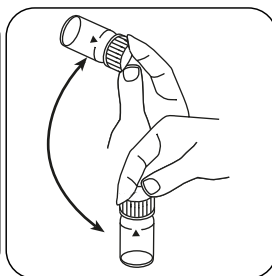
Retirar a célula do compartimento de medição.



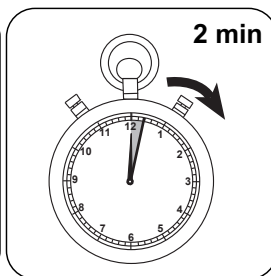
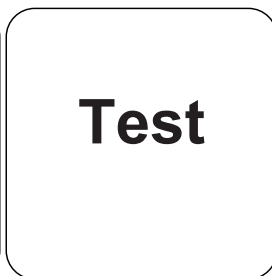
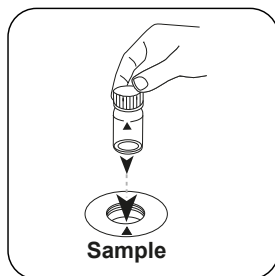
Adicionar **3 gotas DPD 3 Solution** à célula de amostra.



Fechar a(s) célula(s).



Misturar o conteúdo girando.



PT

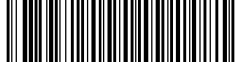
Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.

Efetuar teste.

Aguardar **2 minuto(s) de tempo de reação**.

Decorrido o tempo de reação, a medição é efetuada automaticamente.

No visor aparece o resultado em mg/L Cloro livre, mg/l Cloro combinado, mg/l Cloro total.



Método Químico

DPD

Apêndice

Texto de Interferências

PT

Interferências Persistentes

- Todos os oxidantes presentes nas amostras reagem como o cloro, o que leva a resultados demasiado altos.

Interferências Removíveis

- As interferências por cobre e ferro(III) devem ser eliminadas por EDTA.
- Concentrações de cloro superiores a 4 mg/L, se forem usados reagentes líquidos, podem causar resultados dentro da área de medição até 0 mg/L. Neste caso, deve diluir a amostra com água sem cloro. 10 ml da amostra diluída é colocada em reagente e a medição é repetida (teste de plausibilidade).

Interferências	a partir de / [mg/L]
CrO_4^{2-}	0,01
MnO_2	0,01

Conformidade

EN ISO 7393-2

^aDeterminação do possível livre, vinculado, total

**Cloro HR T****M103****0.1 - 10 mg/L Cl₂ ^{a)}****CL10****DPD**

PT

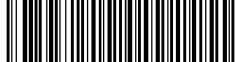
Material

Material necessário (parcialmente opcional):

Reagentes	Unidade de Embalagem	Código do Produto
DPD N°. 1 HR	Pastilhas / 100	511500BT
DPD N°. 1 HR	Pastilhas / 250	511501BT
DPD N°. 1 HR	Pastilhas / 500	511502BT
DPD N°. 3 HR	Pastilhas / 100	511590BT
DPD N°. 3 HR	Pastilhas / 250	511591BT
DPD N°. 3 HR	Pastilhas / 500	511592BT
Definir N.º DPD 1 HR/No. 3 HR [#]	cada 100	517791BT
Definir N.º DPD 1 HR/No. 3 HR [#]	cada 250	517792BT
DPD N°. 1 Alto Cálcio ^{e)}	Pastilhas / 100	515740BT
DPD N°. 1 Alto Cálcio ^{e)}	Pastilhas / 250	515741BT
DPD N°. 1 Alto Cálcio ^{e)}	Pastilhas / 500	515742BT
DPD N°. 3 Alto Cálcio ^{e)}	Pastilhas / 100	515730BT
DPD N°. 3 Alto Cálcio ^{e)}	Pastilhas / 250	515731BT
DPD N°. 3 Alto Cálcio ^{e)}	Pastilhas / 500	515732BT
DPD N°. 3 HR Evo	Pastilhas / 100	511920BT
DPD N°. 3 HR Evo	Pastilhas / 250	511921BT
DPD N°. 3 HR Evo	Pastilhas / 500	511922BT

Amostragem

1. Na preparação da amostra é preciso evitar a libertação de gases de cloro, p. ex. através da pipetagem e agitação.
2. A análise tem de ser efetuada logo após a recolha da amostra.



Preparação

1. Limpeza das células:
Uma vez que muitos produtos de limpeza domésticos (p. ex. lava-louça) contêm substâncias redutoras, na determinação de cloro pode haver demasiadas reduções. Para excluir este erro de medição, os equipamentos de vidro não deviam ter a capacidade de absorção de cloro. Para esse efeito, os equipamentos de vidro são guardados por uma hora sob solução de hipoclorito de sódio (0,1 g/L) e depois devem ser bem enxaguados com água desmineralizada.
2. Para a determinação individual de cloro livre e cloro total é conveniente usar respetivamente um conjunto próprio de células (ver EN ISO 7393-2, alínea 5.3).
3. A formação de cores DPD ocorre com um valor pH entre 6,2 e 6,5. Os reagentes contêm, por isso, um tampão para ajustar o valor pH. As águas fortemente alcalinas ou ácidas devem, porém, antes da análise, ser ajustadas para um valor pH entre 6 e 7 (com 0,5 mol/L de ácido sulfúrico ou 1 mol/L soda cáustica).

Notas

1. Os pastilhas Evo podem ser utilizadas como alternativa à pastilha padrão correspondente (por exemplo, DPD N° 3 Evo em vez da DPD N° 3).



Realização da determinação Cloro HR livre com pastilha

Escolher o método no equipamento.

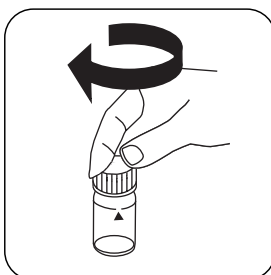
Escolha ainda a determinação: livre

Para este método, uma medição ZERO não precisa ser realizada todas as vezes nos seguintes dispositivos: XD 7000, XD 7500

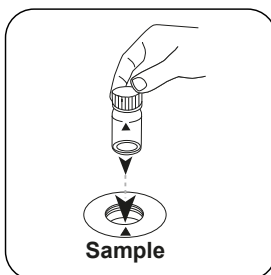
PT



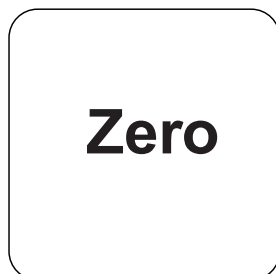
Encher a célula de 24 mm com **10 mL de amostra**.



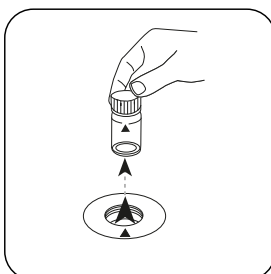
Fechar a(s) célula(s).



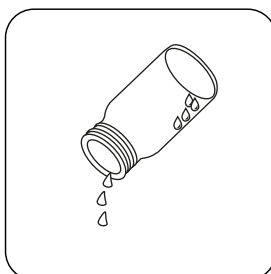
Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.



Efetuar Zero.

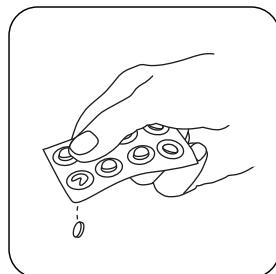


Retirar a célula do compartimento de medição.

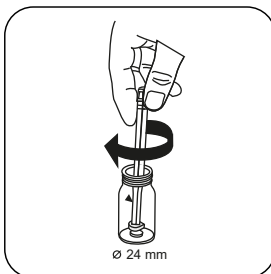


Esvaziar a célula até ficarem apenas algumas gotas.

Nos equipamentos que **não requerem uma medição ZERO**, deve começar aqui.



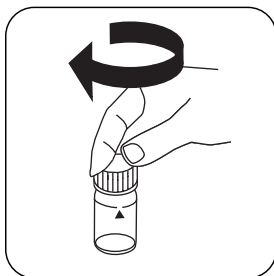
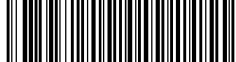
Pastilha DPD No. 1 HR.



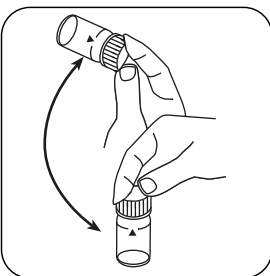
Esmagar a(s) pastilha(s) rodando ligeiramente.



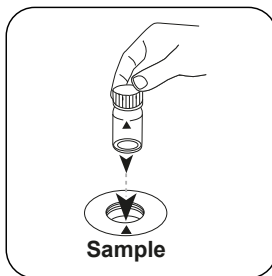
Encher a célula até à **marca de 10 mL** com a **amostra**.



Fechar a(s) célula(s).



Dissolver a(s) pastilha(s) girando.



Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.

Test

Efetuar teste.

No visor aparece o resultado em mg/L Cloro livre.

Realização da determinação Cloro HR total com pastilha

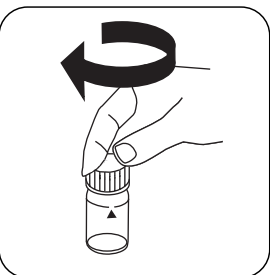
Escolher o método no equipamento.

Escolha ainda a determinação: total

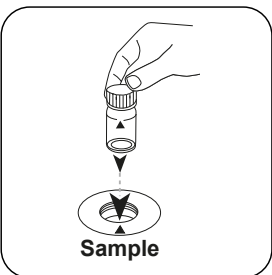
Para este método, uma medição ZERO não precisa ser realizada todas as vezes nos seguintes dispositivos: XD 7000, XD 7500



Encher a célula de 24 mm com **10 mL de amostra**.



Fechar a(s) célula(s).

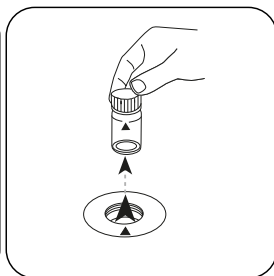


Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.

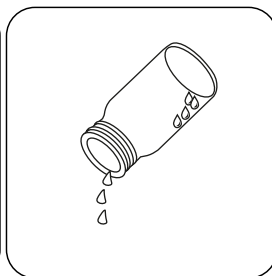


Zero

Efetuar Zero.

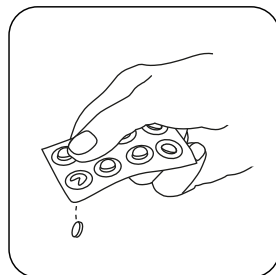


Retirar a célula do compartimento de medição.

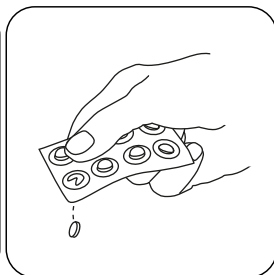


Esvaziar a célula até ficarem apenas algumas gotas.

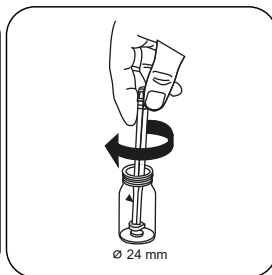
Nos equipamentos que **não requerem uma medição ZERO**, deve começar aqui.



Pastilha DPD No. 1 HR .



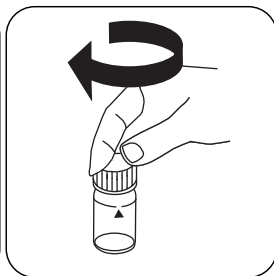
Pastilha DPD No. 3 HR .



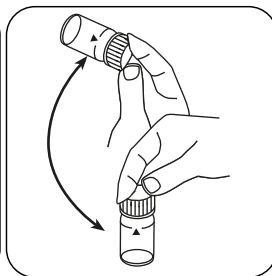
Esmagar a(s) pastilha(s) rodando ligeiramente.



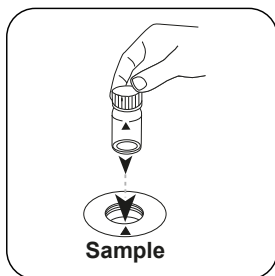
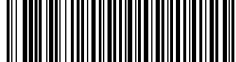
Encher a célula até à **marca de 10 mL** com a amostra .



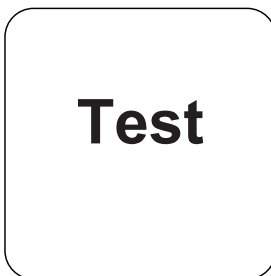
Fechar a(s) célula(s).



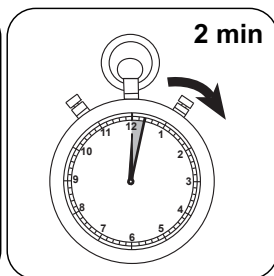
Dissolver a(s) pastilha(s) girando.



Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.



Efetuar teste.



Aguardar **2 minuto(s) de tempo de reação**.

Decorrido o tempo de reação, a medição é efetuada automaticamente.

No visor aparece o resultado em mg/L Cloro total.

Realização da determinação Cloro HR diferenciado com pastilha

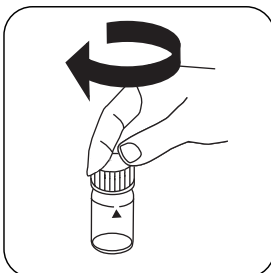
Escolher o método no equipamento.

Escolha ainda a determinação: diferenciado

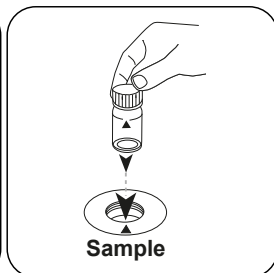
Para este método, uma medição ZERO não precisa ser realizada todas as vezes nos seguintes dispositivos: XD 7000, XD 7500



Encher a célula de 24 mm com **10 mL de amostra**.



Fechar a(s) célula(s).

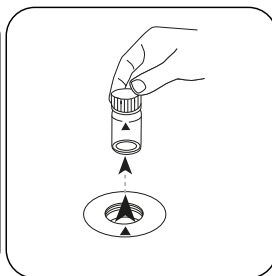


Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.

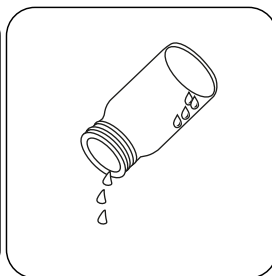


Zero

Efetuar Zero.

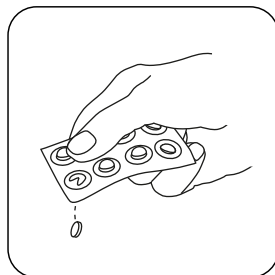


Retirar a célula do compartimento de medição.

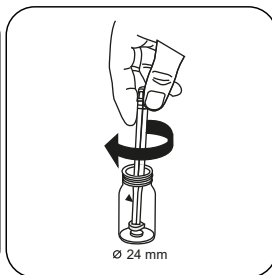


Esvaziar a célula até ficarem apenas algumas gotas.

Nos equipamentos que **não requerem uma medição ZERO**, deve começar aqui.



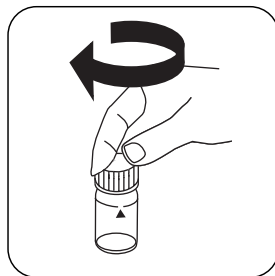
Pastilha DPD No. 1 HR.



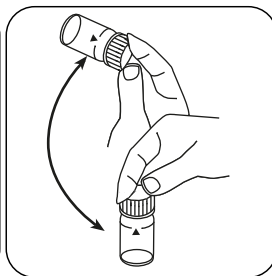
Esmagar a(s) pastilha(s) rodando ligeiramente.



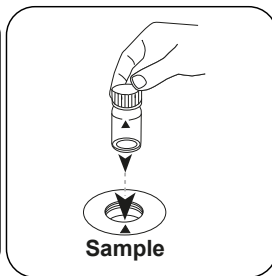
Encher a célula até à **marca de 10 mL** com a amostra.



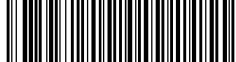
Fechar a(s) célula(s).



Dissolver a(s) pastilha(s) girando.

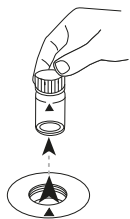


Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.

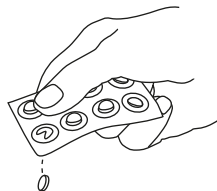


Test

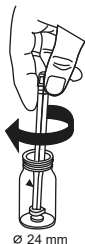
Efetuar teste.



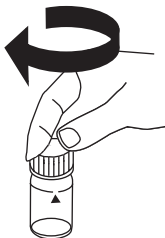
Retirar a célula do compartimento de medição.



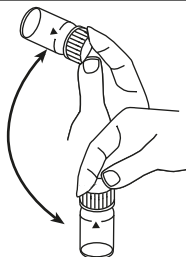
Pastilha DPD No. 3 HR .



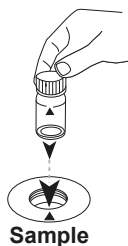
Esmagar a(s) pastilha(s) rodando ligeiramente.



Fechar a(s) célula(s).



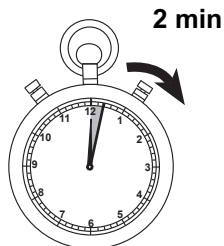
Dissolver a(s) pastilha(s) girando.



Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.

Test

Efetuar teste.



Aguardar **2 minuto(s)** de tempo de reação.

Decorrido o tempo de reação, a medição é efetuada automaticamente.

No visor aparece o resultado em mg/L Cloro livre, mg/l Cloro combinado, mg/l Cloro total.



Método Químico

DPD

Apêndice

PT

Texto de Interferências

Interferências Persistentes

- Todos os oxidantes presentes nas amostras reagem como o cloro, o que leva a resultados demasiado altos.

Interferências Removíveis

- As interferências por cobre e ferro(III) devem ser eliminadas por EDTA.
- Nas amostras com elevado teor de cálcio* e/ou elevada condutividade* pode ocorrer, se forem usadas as pastilhas de reagente, uma turvação da amostra e, por conseguinte, a medição pode ficar errada. Neste caso, deve usar em alternativa a pastilha de reagente DPD No. 1 High Calcium e a pastilha de reagente DPD No. 3 High Calcium.
*não podem ser indicados valores exatos, uma vez que a formação de uma turvação depende do tipo e da composição da água da amostra.

Conformidade

EN ISO 7393-2

^{a)}Determinação do possível livre, vinculado, total | ^{b)}Reagente auxiliar, alternativamente ao DPD no. 1 / não 3 quando a amostra é nublada devido ao alto teor de íons de cálcio e / ou alta condutividade | ^{c)}incluindo vareta de agitação

**Cloro PP****M110****0.02 - 2 mg/L Cl₂ ^{a)}****CL2****DPD**

PT

Material

Material necessário (parcialmente opcional):

Reagentes	Unidade de Embalagem	Código do Produto
Sem cloro DPD F10	Pó / 100 pc.	530100
Sem cloro DPD F10	Pó / 1000 pc.	530103
Cloro Total DPD F10	Pó / 100 pc.	530120
Cloro Total DPD F10	Pó / 1000 pc.	530123

Padrões disponíveis

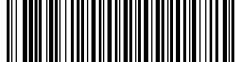
Título	Unidade de Embalagem	Código do Produto
ValidCheck Cloro 1,5 mg/l	1 pc.	48105510

Amostragem

1. Na preparação da amostra é preciso evitar a libertação de gases de cloro, p. ex. através da pipetagem e agitação.
2. A análise tem de ser efetuada logo após a recolha da amostra.

Preparação

1. Limpeza das células:
Uma vez que muitos produtos de limpeza domésticos (p. ex. lava-louça) contêm substâncias redutoras, na determinação de cloro pode haver demasiadas reduções. Para excluir este erro de medição, os equipamentos de vidro não deviam ter a capacidade de absorção de cloro. Para esse efeito, os equipamentos de vidro são guardados por uma hora sob solução de hipoclorito de sódio (0,1 g/L) e depois devem ser bem enxaguados com água desmineralizada.
2. Para a determinação individual de cloro livre e cloro total é conveniente usar respetivamente um conjunto próprio de células (ver EN ISO 7393-2, alínea 5.3).
3. A formação de cores DPD ocorre com um valor pH entre 6,2 e 6,5. Os reagentes contêm, por isso, um tampão para ajustar o valor pH. As águas fortemente alcalinas ou ácidas devem, porém, antes da análise, ser ajustadas para um valor pH entre 6 e 7 (com 0,5 mol/l de ácido sulfúrico ou 1 mol/l soda cáustica).



Realização da determinação Cloro livre com pacotes de pó

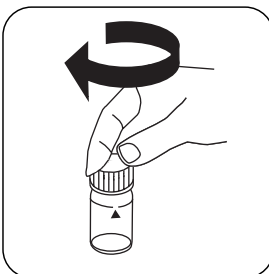
Escolher o método no equipamento.

Escolha ainda a determinação: livre

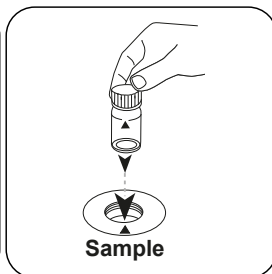
Para este método, uma medição ZERO não precisa ser realizada todas as vezes nos seguintes dispositivos: XD 7000, XD 7500



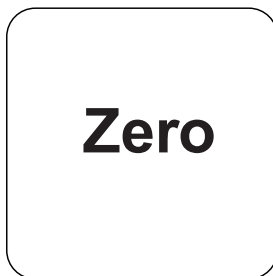
Encher a célula de 24 mm com **10 mL de amostra**.



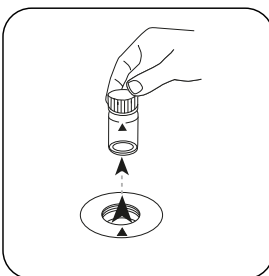
Fechar a(s) célula(s).



Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.

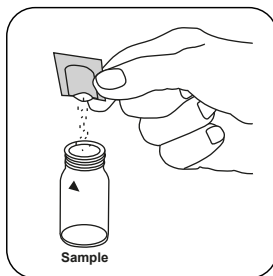


Efetuar Zero.

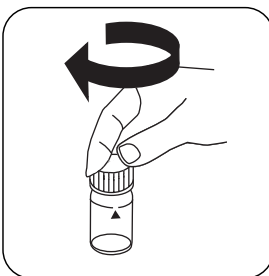


Retirar a célula do compartimento de medição.

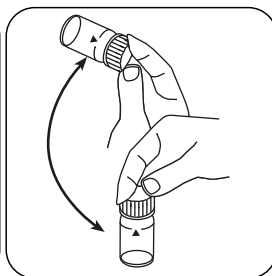
Nos equipamentos que **não requerem uma medição ZERO**, deve começar aqui.



Adicionar um **pacote de pó Chlorine FREE-DPD/ F10**.



Fechar a(s) célula(s).

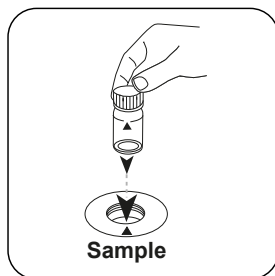


Misturar o conteúdo girando (20 sec.).

PT



PT



Test

Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.

Efetuar teste.

No visor aparece o resultado em mg/L Cloro livre.

Realização da determinação Cloro total com pacotes de pó

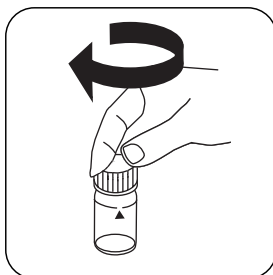
Escolher o método no equipamento.

Escolha ainda a determinação: total

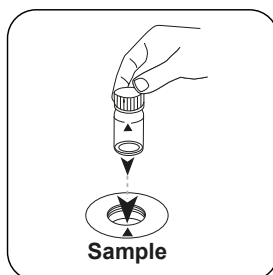
Para este método, uma medição ZERO não precisa ser realizada todas as vezes nos seguintes dispositivos: XD 7000, XD 7500



Encher a célula de 24 mm com **10 mL de amostra**.



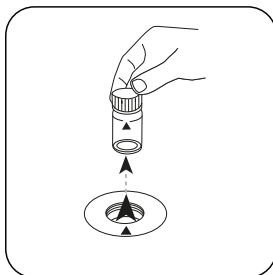
Fechar a(s) célula(s).



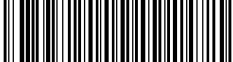
Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.

Zero

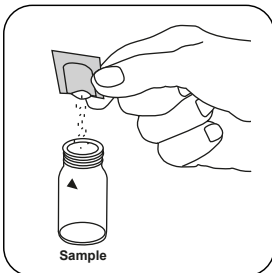
Efetuar Zero.



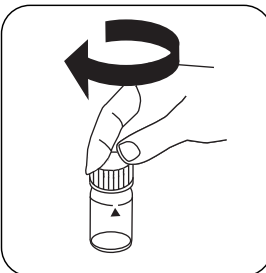
Retirar a célula do compartimento de medição.



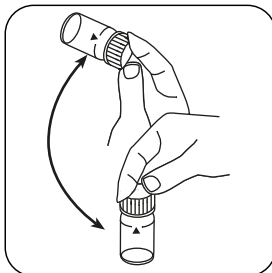
Nos equipamentos que **não requerem uma medição ZERO**, deve começar aqui.



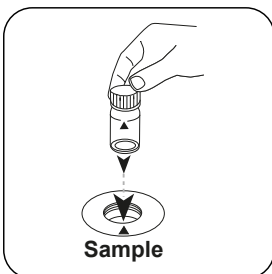
Adicionar um **pacote de pó Chlorine TOTAL-DPD/ F10**



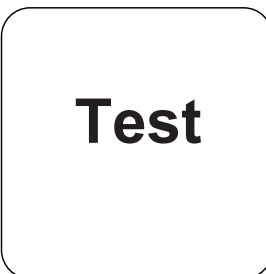
Fechar a(s) célula(s).



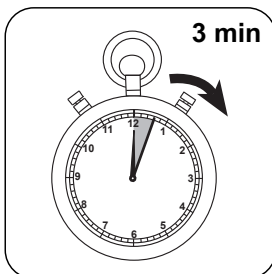
Misturar o conteúdo girando (20 sec.).



Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.



Efetuar teste.



Aguardar **3 minuto(s) de tempo de reação**.

Decorrido o tempo de reação, a medição é efetuada automaticamente.

No visor aparece o resultado em mg/L Cloro total.

Realização da determinação Cloro diferenciado com pacotes de pó

Escolher o método no equipamento.

Escolha ainda a determinação: diferenciado

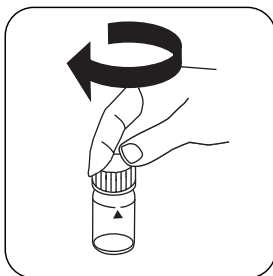
Para este método, uma medição ZERO não precisa ser realizada todas as vezes nos seguintes dispositivos: XD 7000, XD 7500



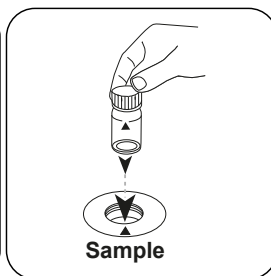
PT



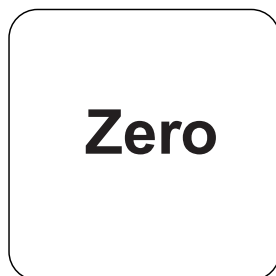
Encher a célula de 24 mm com **10 mL de amostra**.



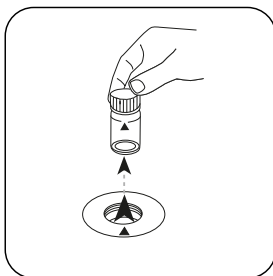
Fechar a(s) célula(s).



Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.

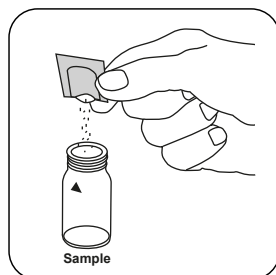


Efetuar Zero.

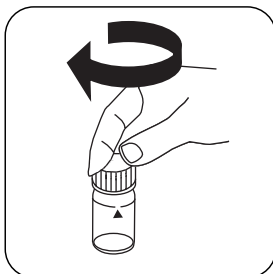


Retirar a célula do compartimento de medição.

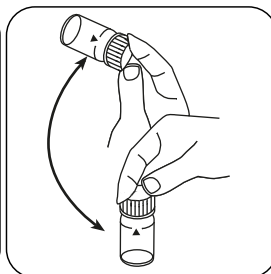
Nos equipamentos que **não requerem uma medição ZERO**, deve começar aqui.



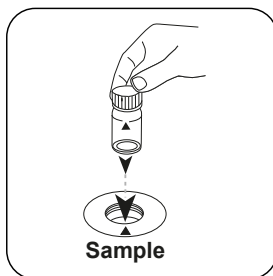
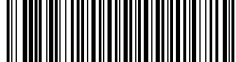
Adicionar um **pacote de pó Chlorine FREE-DPD/ F10**.



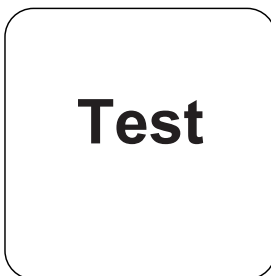
Fechar a(s) célula(s).



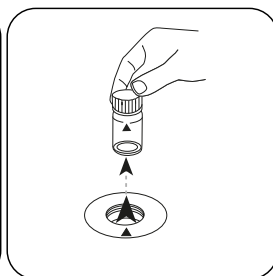
Misturar o conteúdo girando (20 sec.).



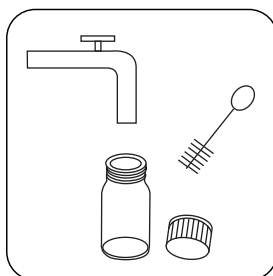
Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.



Efetuar teste.



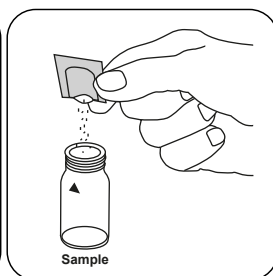
Retirar a célula do compartimento de medição.



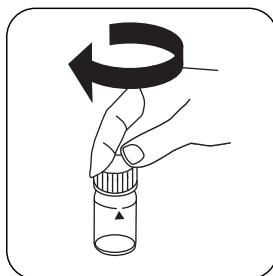
Limpar bem a célula e a tampa da mesma.



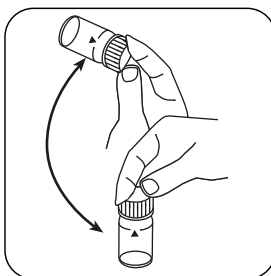
Encher a célula de 24 mm com **10 mL de amostra**.



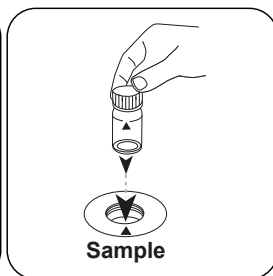
Adicionar um **pacote de pó TOTAL-DPD/ F10**.



Fechar a(s) célula(s).



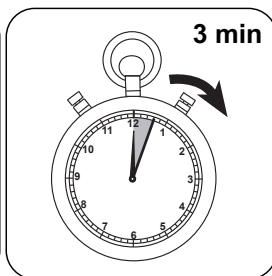
Misturar o conteúdo girando (20 sec.).



Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.



Test



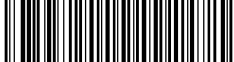
PT

Efetuar teste.

Aguardar **3 minuto(s) de tempo de reação.**

Decorrido o tempo de reação, a medição é efetuada automaticamente.

No visor aparece o resultado em mg/L Cloro livre, mg/l Cloro combinado, mg/l Cloro total.



Método Químico

DPD

Apêndice

Texto de Interferências

PT

Interferências Persistentes

- Todos os oxidantes presentes nas amostras reagem como o cloro, o que leva a resultados demasiado altos.

Interferências Removíveis

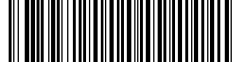
- As interferências por cobre e ferro(III) devem ser eliminadas por EDTA.
- Concentrações de cloro superiores a 2 mg/L, se forem usados pacotes de pó, podem causar resultados dentro da área de medição até 0 mg/L. Neste caso, deve diluir a amostra com água sem cloro. 10 ml da amostra diluída é colocada em reagente e a medição é repetida (teste de plausibilidade).

Interferências	a partir de / [mg/L]
CrO_4^{2-}	0,01
MnO_2	0,01

Conformidade

EN ISO 7393-2

^aDeterminação do possível livre, vinculado, total

**Cloro HR 2 PP****M112-2****0.1 - 10 mg/L Cl₂****DPD**

PT

Material

Material necessário (parcialmente opcional):

Reagentes	Unidade de Embalagem	Código do Produto
VARIO Sem cloro DPD F25-100	Pó / 100 pc.	530110
VARIO Cloro Total DPD F25-100	Pó / 100 pc.	530130
Sem cloro DPD F10	Pó / 100 pc.	530100
Cloro Total DPD F10	Pó / 100 pc.	530120

Amostragem

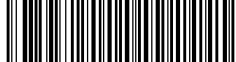
1. Na preparação da amostra é preciso evitar a libertação de gases de cloro, p. ex. através da pipetagem e agitação.
2. A análise tem de ser efetuada logo após a recolha da amostra.

Preparação

1. Limpeza das células:
Uma vez que muitos produtos de limpeza domésticos (p. ex. lava-louça) contêm substâncias redutoras, na determinação de cloro pode haver demasiadas reduções. Para excluir este erro de medição, os equipamentos de vidro não deviam ter a capacidade de absorção de cloro. Para esse efeito, os equipamentos de vidro são guardados por uma hora sob solução de hipoclorito de sódio (0,1 g/L) e depois devem ser bem enxaguados com água desmineralizada.
2. Para a determinação individual de cloro livre e cloro total é conveniente usar respetivamente um conjunto próprio de células (ver EN ISO 7393-2, alínea 5.3).
3. A formação de cores DPD ocorre com um valor pH entre 6,2 e 6,5. Os reagentes contêm, por isso, um tampão para ajustar o valor pH. As águas fortemente alcalinas ou ácidas devem, porém, antes da análise, ser ajustadas para um valor pH entre 6 e 7 (com 0,5 mol/l de ácido sulfúrico ou 1 mol/l soda cáustica).

Notas

1. Para efetuar o teste no MD50/150, utiliza-se uma cuvete de 24 mm Ø em vez da cuvete múltipla.

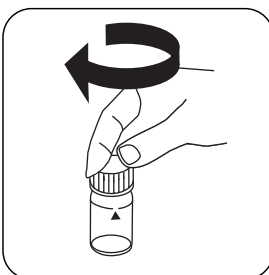


Realização da determinação Cloro HR 2 livre com pacotes de pó (MD50/MD150)

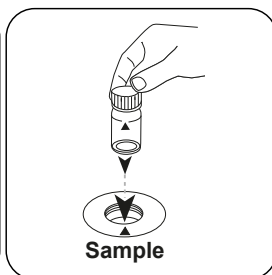
Escolher o método no equipamento.



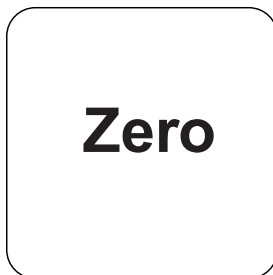
Encher a célula de 24 mm com **10 mL de amostra**.



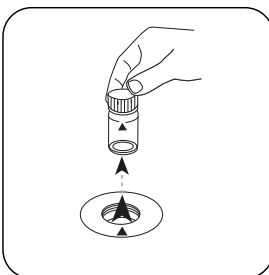
Fechar a(s) célula(s).



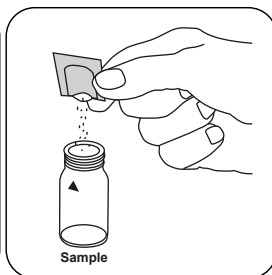
Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.



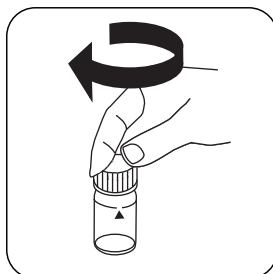
Efetuar Zero.



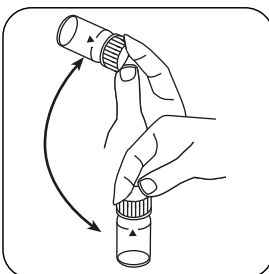
Retirar a célula do compartimento de medição.



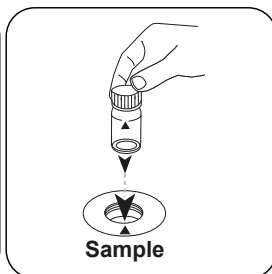
Adicionar um **pacote de pó 1 Vario Chlorine Free / F25 ou 2 Chlorine Total / F10**.



Fechar a(s) célula(s).

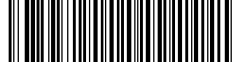


Misturar o conteúdo girando (20 sec.).



Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.

PT



Test

PT

Efetuar teste.

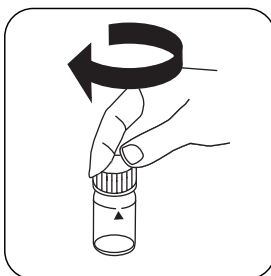
No visor aparece o resultado em mg/L Cloro.

Realização da determinação Cloro HR 2 total com pacotes de pó (MD50/MD150)

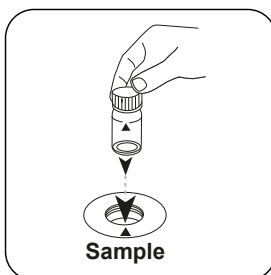
Escolher o método no equipamento.



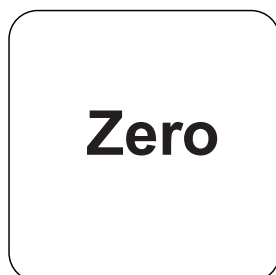
Encher a célula de 24 mm com **10 mL de amostra**.



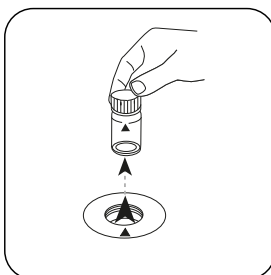
Fechar a(s) célula(s).



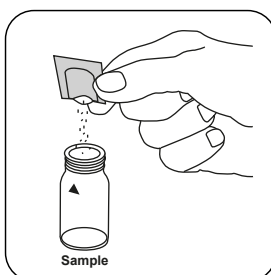
Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.



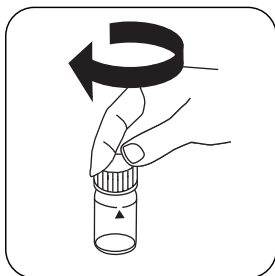
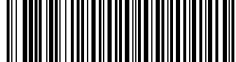
Efetuar Zero.



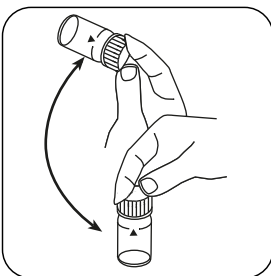
Retirar a célula do compartimento de medição.



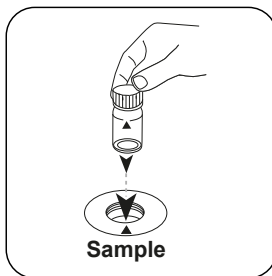
Adicionar um **pacote de pó 1 Vario Chlorine Free / F25 ou 2 Chlorine Total / F10**.



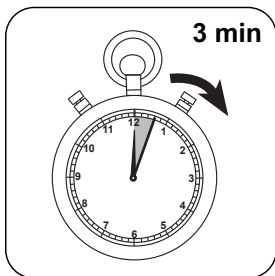
Fechar a(s) célula(s).



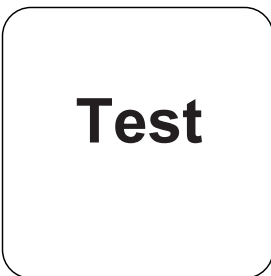
Misturar o conteúdo girando (20 sec.).



Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.

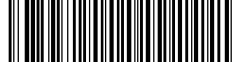


Aguardar **3 minuto(s) de tempo de reação**.



Efetuar teste.

No visor aparece o resultado em mg/L Cloro.



Método Químico

DPD

Apêndice

PT

Texto de Interferências

Interferências Persistentes

- Todos os oxidantes presentes nas amostras reagem como o cloro, o que leva a resultados demasiado altos.

Interferências Removíveis

- As interferências por cobre e ferro(III) devem ser eliminadas por EDTA.
- Concentrações de cloro superiores a 10 mg/L, se forem usados pacotes de pó, podem causar resultados dentro da área de medição até 0 mg/L. Neste caso, deve diluir a amostra com água sem cloro. 5 ml da amostra diluída é colocada em reagente e a medição é repetida (teste de plausibilidade).

Conformidade

EN ISO 7393-2

**CyA HR T****M161****10 - 200 mg/L CyA****CyAH****Melamine**

PT

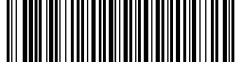
Material

Material necessário (parcialmente opcional):

Reagentes	Unidade de Embalagem	Código do Produto
CyA HR-Test-100	Pastilhas / 100	511430BT
CyA HR-Test-250	Pastilhas / 250	511431BT

Notas

1. O ácido cianúrico causa uma turvação muito finamente distribuída com aspeto leitoso. A presença de algumas partículas não remete para a presença de ácido cianúrico.
2. Após a adição do comprimido CyA-HR-Test, este dissolve-se automaticamente em dois minutos.



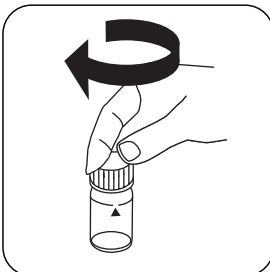
Realização da determinação Teste de ácido cianúrico com pastilha

Escolher o método no equipamento.

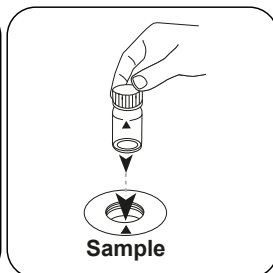
Para este método, uma medição ZERO não precisa ser realizada todas as vezes nos seguintes dispositivos: XD 7000, XD 7500



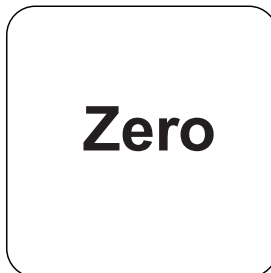
Encher a célula de 24 mm com **10 mL de amostra**.



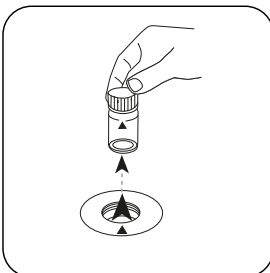
Fechar a(s) célula(s).



Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.

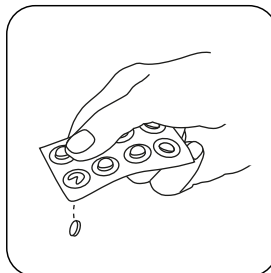


Efetuar Zero.

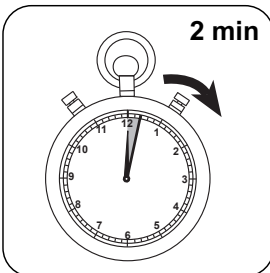


Retirar a célula do compartimento de medição.

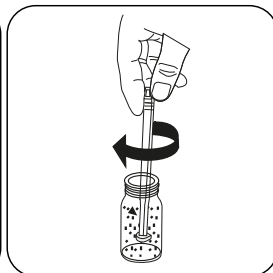
Nos equipamentos que **não requerem uma medição ZERO**, deve começar aqui.



Pastilha CyA HR Test.



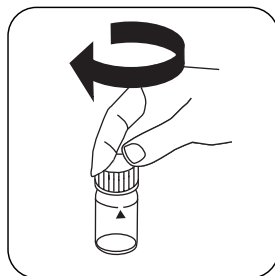
Aguardar **2 minuto(s)** de tempo de reação.



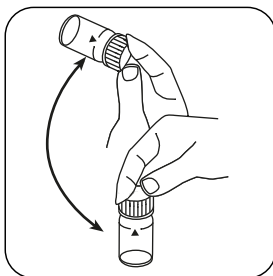
Agitar a(s) pastilha(s) para dissolver com uma vareta agitadora limpa.



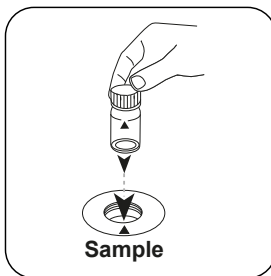
PT



Fechar a(s) célula(s).



Misturar o conteúdo girando (não agite).



Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.

Test

Efetuar teste.

No visor aparece o resultado em mg/L Cyanuric Acid.



Método Químico

Melamine

Texto de Interferências

Interferências Persistentes

1. Partículas não dissolvidas podem causar resultados demasiado altos.

PT

Validação de método

Limite de Detecção	2.07 mg/L
Limite de Determinação	6.2 mg/L
Fim da Faixa de Medição	200 mg/L
Sensibilidade	77.47 mg/L / Abs
Faixa de Confiança	4.6 mg/L
Desvio Padrão	4.78 mg/L
Coeficiente de Variação	4.55 %

**Valor pH T****M330****6.5 - 8.4 pH****PH****Phenol Red**

PT

Material

Material necessário (parcialmente opcional):

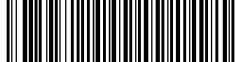
Reagentes	Unidade de Embalagem	Código do Produto
Fotômetro Fenol Vermelho	Pastilhas / 100	511770BT
Fotômetro Fenol Vermelho	Pastilhas / 250	511771BT
Fotômetro Fenol Vermelho	Pastilhas / 500	511772BT

Amostragem

Teor de sal da amostra emg/L	30 (água do mar)	60	120	180
Correção	-0,15 ¹⁾	-0,21 ²⁾	-0,26 ²⁾	-0,29 ²⁾

¹⁾ segundo Koltthoff (1922)²⁾ segundo Parson e Douglas (1926)**Notas**

1. Para a determinação fotométrica do valor pH deve usar somente pastilhas PHENOL RED com impressão de película preta, que estão identificadas com o termo PHOTOMETER.



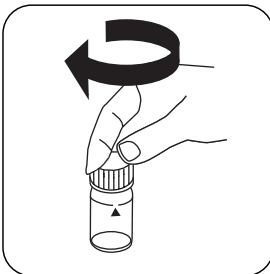
Realização da determinação Valor pH com pastilha

Escolher o método no equipamento.

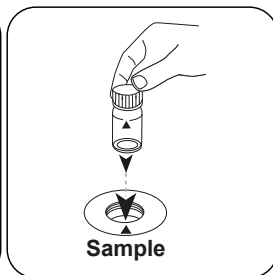
Para este método, uma medição ZERO não precisa ser realizada todas as vezes nos seguintes dispositivos: XD 7000, XD 7500



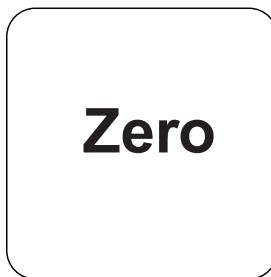
Encher a célula de 24 mm com **10 mL de amostra**.



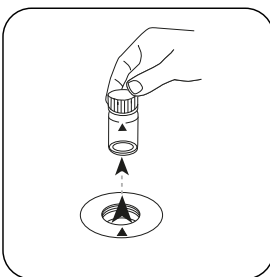
Fechar a(s) célula(s).



Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.

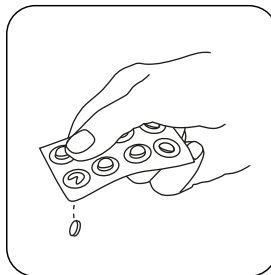


Efetuar Zero.

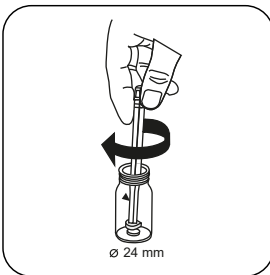


Retirar a célula do compartimento de medição.

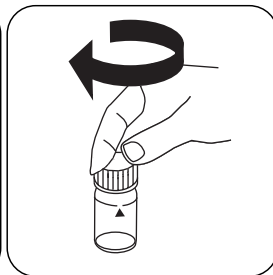
Nos equipamentos que **não requerem uma medição ZERO**, deve começar aqui.



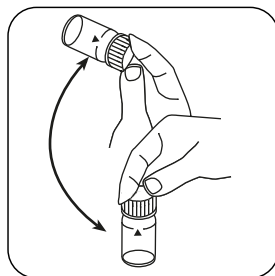
Pastilha PHENOL RED PHOTOMETER.



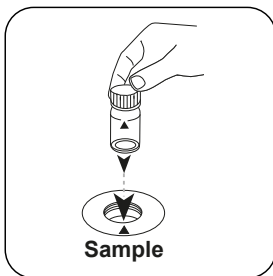
Esmagar a(s) pastilha(s) rodando ligeiramente.



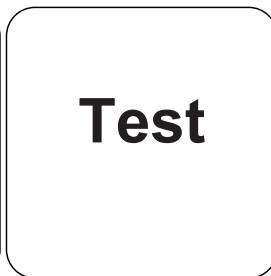
Fechar a(s) célula(s).



Dissolver a(s) pastilha(s) girando.



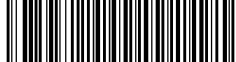
Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.



Efetuar teste.

No visor aparece o resultado como valor pH.

PT



Método Químico

Phenol Red

Apêndice

Texto de Interferências

PT

Interferências Pesistentes

1. As amostras de água com baixa dureza de carbonato* podem obter valores pH incorretos.

* $K_{S4,3} < 0,7 \text{ mmol/l} \triangleq \text{Alcalinidade total} < 35 \text{ mg/L CaCO}_3$.

Interferências Removíveis

1. Os valores pH inferiores a 6,5 e superiores a 8,4 podem causar resultados dentro da área de medição. Recomenda-se um teste de plausibilidade (medidor de pH).

2. Erro de sal:

No caso de teores de sal até 2 g/L não é expectável nenhum erro de sal significativo devido ao teor de sal da pastilha de reagente. No caso de teores de sal superiores, deve corrigir os valores de medição do seguinte modo:

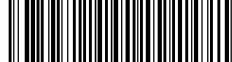
Teor de sal da amostra mg/L	30 (água do mar)	60	120	180
Correção	-0,15 ¹⁾	-0,21 ²⁾	-0,26 ²⁾	-0,29 ²⁾

¹⁾ segundo Kolthoff (1922)

²⁾ segundo Parson e Douglas (1926)

Bibliografia

Colorimetric Chemical Analytical Methods, 9th Edition, London



Valor pH L

M331

6.5 - 8.4 pH

PH

Phenol Red

PT

Material

Material necessário (parcialmente opcional):

Reagentes	Unidade de Embalagem	Código do Produto
Solução de vermelho fenol	15 mL	471040
Solução de vermelho fenol	100 mL	471041
Solução de vermelho fenol em embalagem de -6	1 pc.	471046

Amostragem

Teor de sal da amostra	Correção
30 g/L (água do mar)	-0,15 ¹⁾
60 g/L	-0,21 ²⁾
120 g/L	-0,26 ²⁾
180 g/L	-0,29 ²⁾

¹⁾segundo Kolthoff (1922)

²⁾segundo Parson e Douglas (1926)

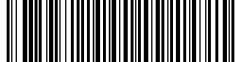
Na análise de água clorada, o teor de cloro residual existente pode influenciar a reação de cor do reagente líquido. Isto é evitado, na medida em que se insere um pequeno cristal de tiosulfato de sódio ($\text{Na}_2\text{S}_2\text{O}_3 \cdot 5 \text{H}_2\text{O}$) na solução de amostra antes de ser adicionada a solução PHENOL RED.

Preparação

- Devido aos diferentes tamanhos de gotas, o resultado de medição pode apresentar desvios maiores do que ao utilizar pastilhas.
Se utilizar uma pipeta (0,18 ml corresponde a 6 gotas) pode reduzir este desvio.

Notas

- Depois de usado, o frasco conta-gotas deve ser novamente fechado com a respectiva tampa de enroscar à cor.
- Guardar o reagente em local fresco entre +6 °C e +10 °C.



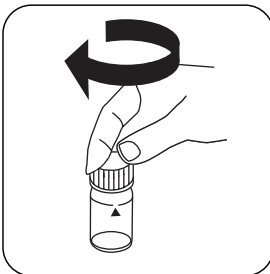
Realização da determinação Valor pH com reagente líquido

Escolher o método no equipamento.

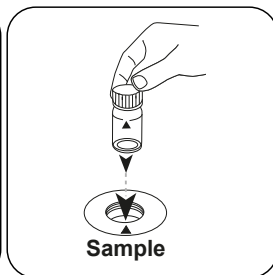
Para este método, uma medição ZERO não precisa ser realizada todas as vezes nos seguintes dispositivos: XD 7000, XD 7500



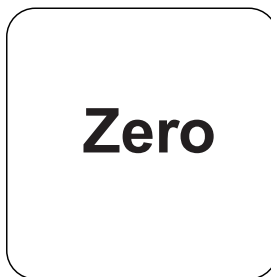
Encher a célula de 24 mm com **10 mL de amostra**.



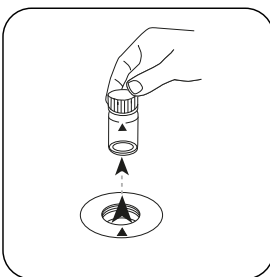
Fechar a(s) célula(s).



Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.

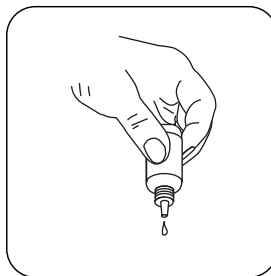


Efetuar Zero.

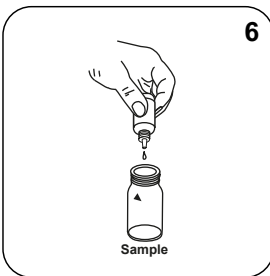


Retirar a célula do compartimento de medição.

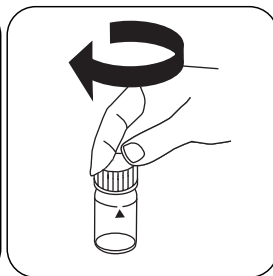
Nos equipamentos que **não requerem uma medição ZERO**, deve começar aqui.



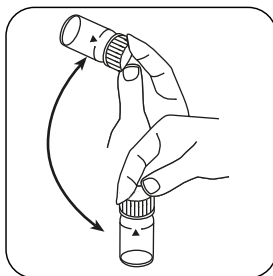
Manter os frascos conta gotas na vertical e pressionar lentamente para adicionar gotas de igual dimensão.



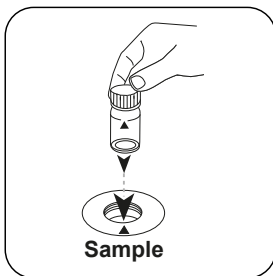
Adicionar **6 gotas PHENOL Red-Lösung** à célula de amostra.



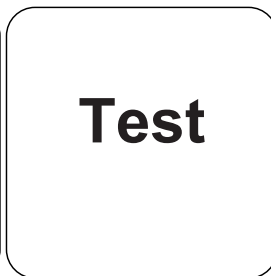
Fechar a(s) célula(s).



Misturar o conteúdo girando.

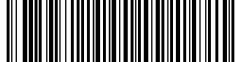


Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.



Efetuar teste.

No visor aparece o resultado como valor pH.



Método Químico

Phenol Red

Apêndice

Texto de Interferências

PT

Interferências Removíveis

1. Erro de sal: Correção do valor de medição (valores médios) para amostras com um teor de sal de:

2.	Teor de sal da amostra	Correção
	30 g/L (água do mar)	-0,15 ¹⁾
	60 g/L	-0,21 ²⁾
	120 g/L	-0,26 ²⁾
	180 g/L	-0,29 ²⁾
	¹⁾ segundo Kolthoff (1922)	²⁾ segundo Parson e Douglas (1926)

3. Na análise de água clorada, o teor de cloro residual existente pode influenciar a reação de cor do reagente líquido. Isto é evitado, na medida em que se insere um pequeno cristal de tiosulfato de sódio ($\text{Na}_2\text{S}_2\text{O}_3 \cdot 5 \text{H}_2\text{O}$) na solução de amostra antes de ser adicionada a solução PHENOL RED.

Bibliografia

Colorimetric Chemical Analytical Methods, 9th Edition, London

KS4.3 T / 20

Denominazione metodo

Numero metodo

Codice a barre per riconoscere il metodo

Range di misura

Metodo chimico

Indicazione sul display del MD 100 / MD 110 / MD 200

Informazioni specifiche dello strumento

Il test può essere eseguito sui seguenti dispositivi. Inoltre, sono indicate la cuvetta richiesta e il range di assorbimento del fotometro.

Dispositivi	Cuvetta	λ	Campo di misura
MD 200, MD 600, MD 610, MD 640, MultiDirect, PM 620, PM 630	ø 24 mm	610 nm	0.1 - 4 mmol/l $K_{S4.3}$
SpectroDirect, XD 7000, XD 7500	ø 24 mm	615 nm	0.1 - 4 mmol/l $K_{S4.3}$

Materiale

Materiale richiesto (in parte facoltativo):

Titolo	Unità di imballaggio	N. ordine
Alka-M-Photometer	Pastiglia / 100	513210BT
Alka-M-Photometer	Pastiglia / 250	513211BT

Campo di applicazione

- Trattamento acqua di scarico
- Trattamento acqua potabile
- Trattamento acqua non depurata

Note

1. I termini alcalinità M, valore M, alcalinità totale e capacità acida $K_{S4.3}$ sono equivalenti.
2. Per l'accuratezza del risultato dell'analisi è fondamentale che il volume del campione misuri esattamente 10 ml.

ISO 639-1 codici linguistici

Stato di revisione

IT Manuale dei Metodi 01/20

**Svolgimento della
misurazione**
Esecuzione della rilevazione Capacità acida $K_{s4.3}$ con pastiglia

Selezionare il metodo nel dispositivo.

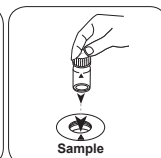
Con i seguenti dispositivi, per questo metodo non è necessario eseguire una misurazione ZERO: XD 7000, XD 7500



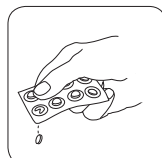
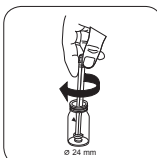
Riempire una cuvetta da 24 mm con 10 ml di campione.



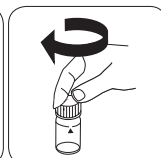
Chiudere la/e cuvetta/e.


 Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.

• • •


 Aggiungere una pastiglia **ALKA-M-PHOTOMETER**.


Frantumare la/e pastiglia/e con una leggera rotazione.



Chiudere la/e cuvetta/e.

**Cloro T****M100****0.01 - 6.0 mg/L Cl₂ ^{a)}****CL6****DPD**

IT

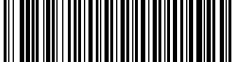
Materiale

Materiale richiesto (in parte facoltativo):

Reagenti	Unità di imballaggio	N. ordine
DPD No.1	Pastiglia / 100	511050BT
DPD No. 1	Pastiglia / 250	511051BT
DPD No. 1	Pastiglia / 500	511052BT
DPD No. 3	Pastiglia / 100	511080BT
DPD No. 3	Pastiglia / 250	511081BT
DPD No. 3	Pastiglia / 500	511082BT
DPD No. 1 Alto Calcio ^{e)}	Pastiglia / 100	515740BT
DPD No. 1 Alto Calcio ^{e)}	Pastiglia / 250	515741BT
DPD No. 1 Alto Calcio ^{e)}	Pastiglia / 500	515742BT
DPD No. 3 High Calcium ^{e)}	Pastiglia / 100	515730BT
DPD No. 3 High Calcium ^{e)}	Pastiglia / 250	515731BT
DPD No. 3 High Calcium ^{e)}	Pastiglia / 500	515732BT
DPD No. 4	Pastiglia / 100	511220BT
DPD No. 4	Pastiglia / 250	511221BT
DPD No. 4	Pastiglia / 500	511222BT
DPD No. 3 Evo	Pastiglia / 100	511420BT
DPD No. 3 Evo	Pastiglia / 250	511421BT
DPD No. 3 Evo	Pastiglia / 500	511422BT
DPD No.4 Evo	Pastiglia / 100	511970BT
DPD No. 4 Evo	Pastiglia / 250	511971BT
DPD No. 4 Evo	Pastiglia / 500	511972BT

Standards disponibles

Titolo	Unità di imballaggio	N. ordine
ValidCheck Cloro 1,5 mg/l	1 pz.	48105510



Prelievo del campione

1. Nella preparazione del campione occorre evitare la degassificazione del cloro, ad es. utilizzando pipette e agitando.
2. L'analisi deve essere eseguita subito dopo il prelievo del campione.

Preparazione

1. Pulizia delle cuvette:
Poiché molti detergenti ad uso domestico (ad es. detersivo per piatti) contengono sostanze riducenti, nella rilevazione del cloro si potrebbero ottenere risultati troppo bassi. Per escludere tali errori di misura è necessario che i dispositivi in vetro siano esenti dal consumo di cloro. I dispositivi in vetro inoltre vengono conservati in una soluzione di ipoclorito di sodio (0,1 g/L) per un'ora e successivamente vengono risciacquati abbondantemente con acqua demineralizzata.
2. Per la singola rilevazione del cloro libero e del cloro totale è opportuno utilizzare un apposito kit di cuvette per ciascuna procedura (vedere EN ISO 7393-2, par. 5.3).
3. Lo sviluppo della colorazione del DPD avviene con un valore di pH compreso tra 6,2 e 6,5. I reagenti contengono pertanto un tampone per la regolazione del valore di pH. Le acque fortemente alcaline o acide tuttavia devono essere portate prima dell'analisi entro un range di pH compreso tra 6 e 7 (con 0,5 mol/l di acido solforico o 1 mol/l di liscivia).

Note

1. Le compresse EVO possono essere utilizzate come alternativa alla corrispondente compressa standard (ad esempio DPD No. 3 EVO invece di DPD No. 3).



Esecuzione della rilevazione Cloro, libero con compressa

Selezionare il metodo nel dispositivo.

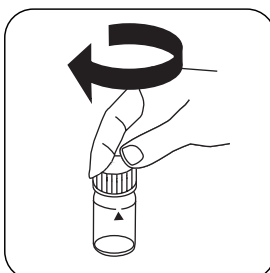
Selezionare inoltre la determinazione: libero

Per questo metodo, non è necessario eseguire una misurazione ZERO ogni volta sui seguenti dispositivi: XD 7000, XD 7500

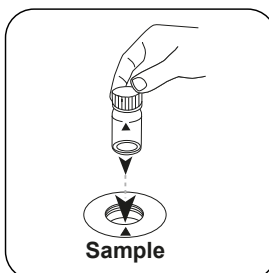
IT



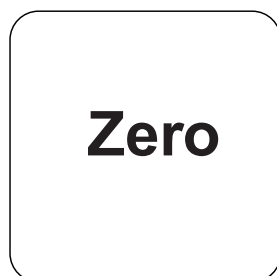
Riempire una cuvetta da 24 mm con **10 mL di campione**.



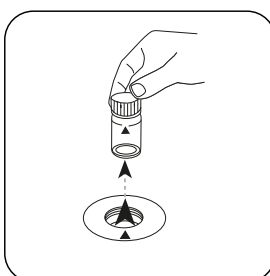
Chiudere la/e cuvetta/e.



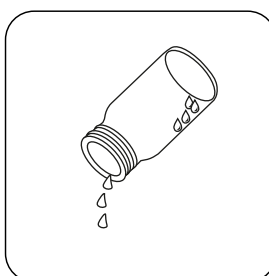
Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



Eeguire il Zero.

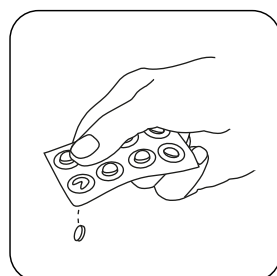


Prelevare la cuvetta dal vano di misurazione.

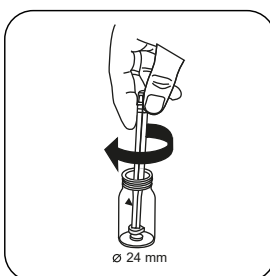


Svuotare la cuvetta finché non rimangono alcune gocce.

In caso di dispositivi che **non richiedono una misurazione ZERO**, iniziare da qui.



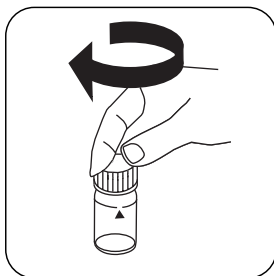
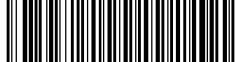
Aggiungere una **pastiglia DPD No. 1**.



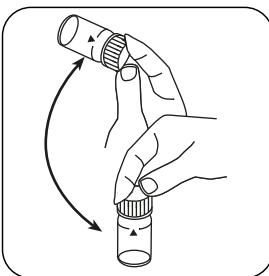
Frantumare la/e pastiglia/e con una leggera rotazione.



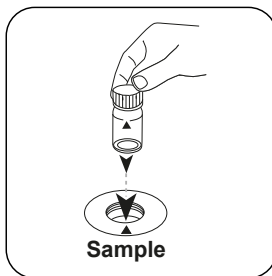
Immettere il **campione** nella cuvetta fino a raggiungere la **tacca dei 10 mL**.



Chiudere la/e cuvetta/e.



Far sciogliere la/e pastiglia/e agitando.



Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.

IT

Test

Eseguire il test.

Sul display compare il risultato in mg/L di Cloro libero.

Esecuzione della rilevazione Cloro, totale con compressa

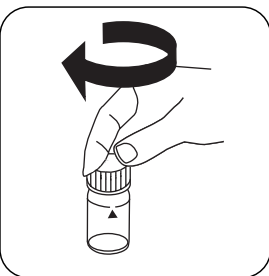
Selezionare il metodo nel dispositivo.

Selezionare inoltre la determinazione: totale

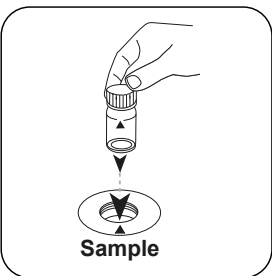
Per questo metodo, non è necessario eseguire una misurazione ZERO ogni volta sui seguenti dispositivi: XD 7000, XD 7500



Riempire una cuvetta da 24 mm con **10 mL di campione**.



Chiudere la/e cuvetta/e.



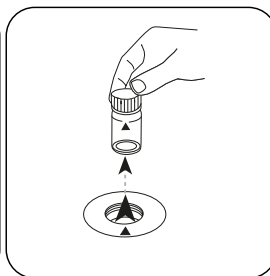
Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



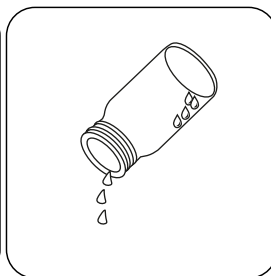
IT

Zero

Eseguire il Zero.

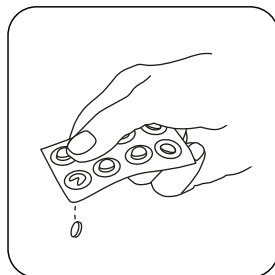


Prelevare la cuvetta dal vano di misurazione.

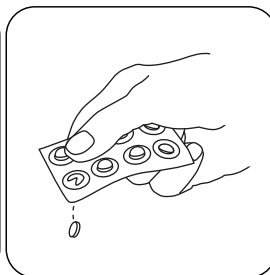


Svuotare la cuvetta finché non rimangono alcune gocce.

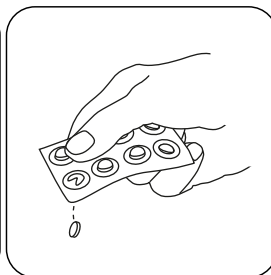
In caso di dispositivi che **non richiedono una misurazione ZERO**, iniziare da qui.



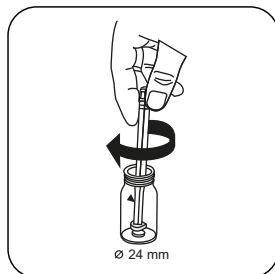
Aggiungere **una pastiglia DPD No. 1.**



Aggiungere **una pastiglia DPD No. 3.**



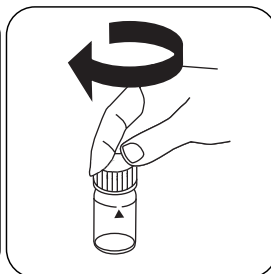
In alternativa al DPD No. 1 e No. 3 tablet, un DPD No. 4 tablet può essere aggiunto.



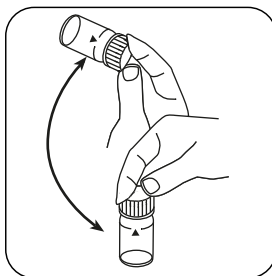
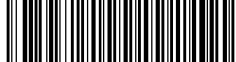
Frantumare la/e pastiglia/e con una leggera rotazione.



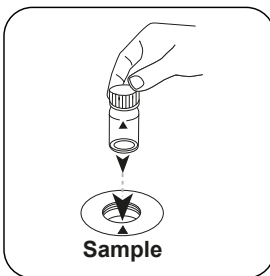
Immettere il **campione** nella cuvetta fino a raggiungere la **tacca dei 10 mL**.



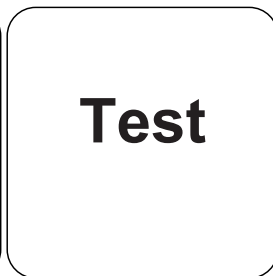
Chiudere la/e cuvetta/e.



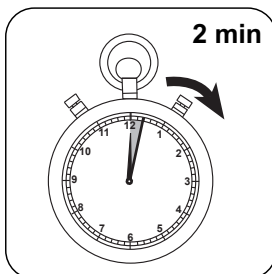
Far sciogliere la/e pastiglia/e agitando.



Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



Eseguire il test.



Attendere un **tempo di reazione di 2 minuto/i**.

Allo scadere del tempo di reazione viene effettuata automaticamente la misurazione.

Sul display compare il risultato in mg/L di Cloro totale.

Esecuzione della rilevazione Cloro, determinazione differenziata con compressa

Selezionare il metodo nel dispositivo.

Selezionare inoltre la determinazione: differenziato

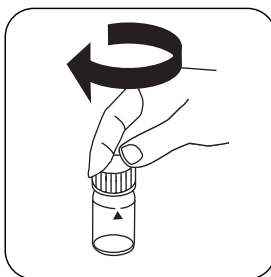
Per questo metodo, non è necessario eseguire una misurazione ZERO ogni volta sui seguenti dispositivi: XD 7000, XD 7500



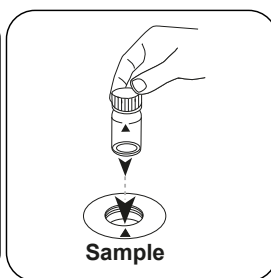
IT



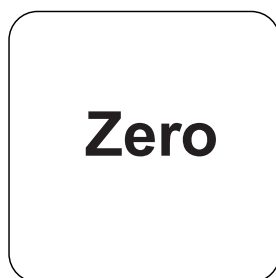
Riempire una cuvetta da 24 mm con **10 mL di campione**.



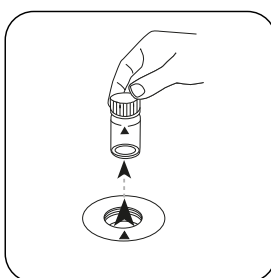
Chiudere la/e cuvetta/e.



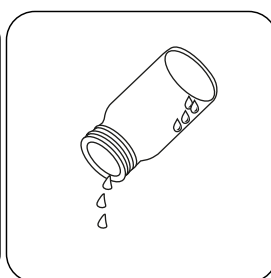
Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



Eseguire il Zero.

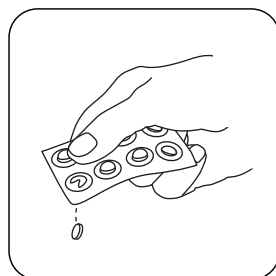


Prelevare la cuvetta dal vano di misurazione.

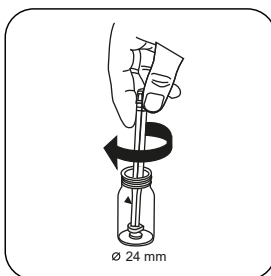


Svuotare la cuvetta finché non rimangono alcune gocce.

In caso di dispositivi che **non richiedono una misurazione ZERO**, iniziare da qui.



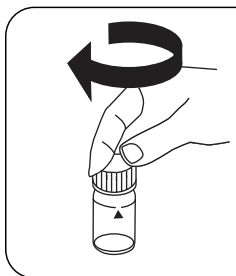
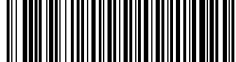
Aggiungere **una pastiglia DPD No. 1**.



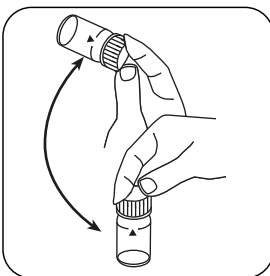
Frantumare la/e pastiglia/e con una leggera rotazione.



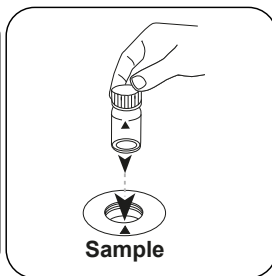
Immettere il **campione** nella cuvetta fino a raggiungere la **tacca dei 10 mL**.



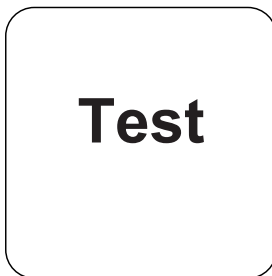
Chiudere la/e cuvetta/e.



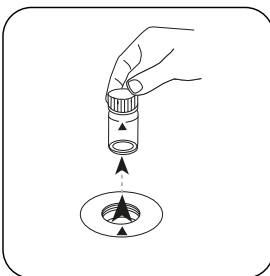
Far sciogliere la/e pastiglia/e agitando.



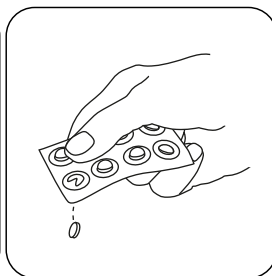
Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



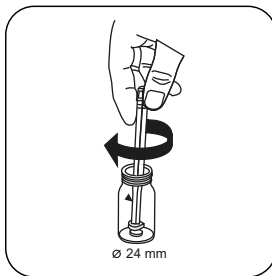
Eeguire il test.



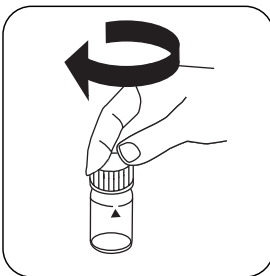
Prelevare la cuvetta dal vano di misurazione.



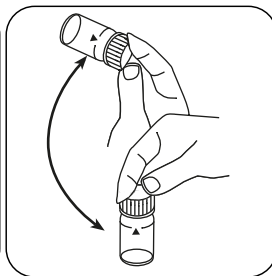
Aggiungere **una pastiglia DPD No. 3**.



Frantumare la/e pastiglia/e con una leggera rotazione.



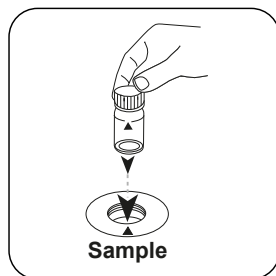
Chiudere la/e cuvetta/e.



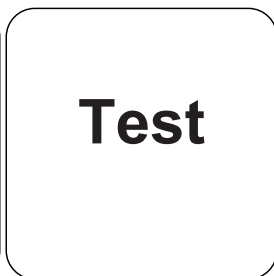
Far sciogliere la/e pastiglia/e agitando.



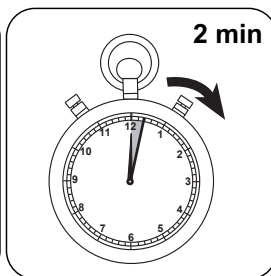
IT



Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



Eeguire il test.



Attendere un **tempo di reazione di 2 minuto/i**.

Allo scadere del tempo di reazione viene effettuata automaticamente la misurazione.

Sul display compare il risultato in mg/L di cloro libero, mg/l cloro combinato, mg/l cloro totale.

Metodo chimico

DPD

Appendice

Interferenze

Interferenze permanenti

- Tutti gli ossidanti presenti nei campioni reagiscono come il cloro dando risultati troppo elevati.

Interferenze escludibili

- Le interferenze da parte di rame e ferro(III) devono essere eliminate con EDTA.
- In caso di campioni con un elevato tenore di calcio* e/o un'elevata conducibilità*, utilizzando le pastiglie di reagenti potrebbe verificarsi un intorbidimento del campione con conseguenti errori di misurazione. In questo caso si possono utilizzare in alternativa la pastiglia di reagente DPD No. 1 High Calcium e la pastiglia di reagente DPD No. 3 High Calcium.

*Non è possibile indicare i valori esatti in quanto l'intorbidimento dipende dal tipo e dalla composizione dell'acqua campione.

- Se si utilizzano pastiglie, le concentrazioni di cloro maggiori di 10 mg/L possono dare risultati entro il range di misura fino a 0 mg/L. Se la concentrazione di cloro è troppo elevata, il campione deve essere diluito con acqua priva di cloro. 10 ml del campione diluito vengono addizionati con il reagente e la misurazione viene ripetuta (test di plausibilità).

Interferenze	da / [mg/L]
CrO_4^{2-}	0.01
MnO_2	0.01

Conforme

EN ISO 7393-2

^aDeterminazione di libero, vincolato, totale possibile | ^bReagente ausiliario, in alternativa a DPD n. 1 / no 3 in caso di torbidità del campione a causa di alto contenuto di ioni di calcio e / o alta conduttività

**Cloro L****M101****0.02 - 4.0 mg/L Cl₂ ^{a)}****CL6****DPD**

IT

Materiale

Materiale richiesto (in parte facoltativo):

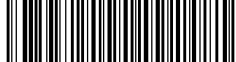
Reagenti	Unità di imballaggio	N. ordine
DPD 1 soluzione tampone, bottiglia blu	15 mL	471010
Soluzione tampone DPD 1	100 mL	471011
DPD 1 Soluzione tampone in confezione da 6	1 pz.	471016
DPD 1 soluzione reagente, bottiglia verde	15 mL	471020
Soluzione reagente DPD 1	100 mL	471021
DPD 1 Soluzione reagente in confezione da 6	1 pz.	471026
DPD 3 soluzione, bottiglia rossa	15 mL	471030
Soluzione DPD 3	100 mL	471031
DPD 3 Soluzione in confezione da 6	1 pz.	471036
Set di reagenti DPD	1 pz.	471056

Standards disponibles

Titolo	Unità di imballaggio	N. ordine
ValidCheck Cloro 1,5 mg/l	1 pz.	48105510

Prelievo del campione

1. Nella preparazione del campione occorre evitare la degassificazione del cloro, ad es. utilizzando pipette e agitando.
2. L'analisi deve essere eseguita subito dopo il prelievo del campione.



Preparazione

1. Pulizia delle cuvette:
Poiché molti detergenti ad uso domestico (ad es. detersivo per piatti) contengono sostanze riducenti, nella rilevazione del cloro si potrebbero ottenere risultati troppo bassi. Per escludere tali errori di misura è necessario che i dispositivi in vetro siano esenti dal consumo di cloro. I dispositivi in vetro inoltre vengono conservati in una soluzione di ipoclorito di sodio (0,1 g/L) per un'ora e successivamente vengono risciacquati abbondantemente con acqua demineralizzata.
2. Per la singola rilevazione del cloro libero e del cloro totale è opportuno utilizzare un apposito kit di cuvette per ciascuna procedura (vedere EN ISO 7393-2, par. 5.3).
3. Lo sviluppo della colorazione del DPD avviene con un valore di pH compreso tra 6,2 e 6,5. I reagenti contengono pertanto un tampone per la regolazione del valore di pH. Le acque fortemente alcaline o acide tuttavia devono essere portate prima dell'analisi entro un range di pH compreso tra 6 e 7 (con 0,5 mol/l di acido solforico o 1 mol/l di liscivia).

Note

1. Dopo l'uso bisogna richiudere immediatamente le boccette contagocce con i rispettivi tappi dello stesso colore.
2. Conservare al fresco il kit di reagenti a una temperatura compresa tra +6 °C e +10 °C.



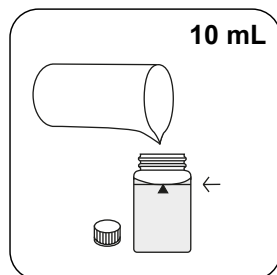
Esecuzione della rilevazione Cloro, libero con reagente liquido

Selezionare il metodo nel dispositivo.

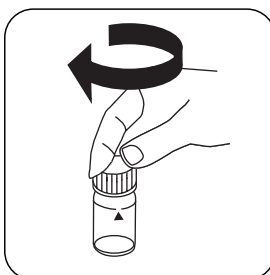
Selezionare inoltre la determinazione: libero

Per questo metodo, non è necessario eseguire una misurazione ZERO ogni volta sui seguenti dispositivi: XD 7000, XD 7500

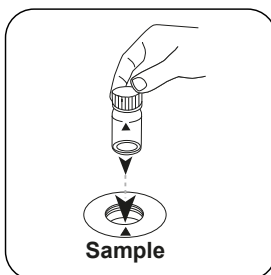
IT



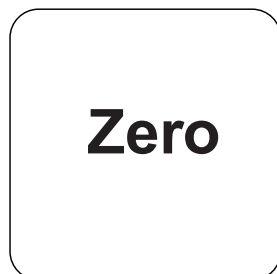
Riempire una cuvetta da 24 mm con **10 mL di campione**.



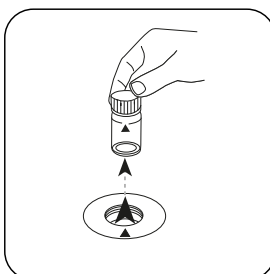
Chiudere la/e cuvetta/e.



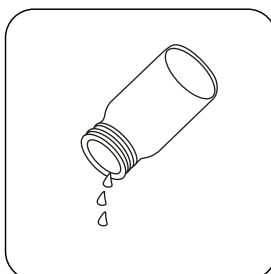
Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



Eeguire il Zero.

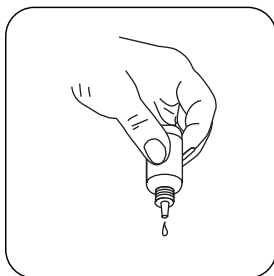
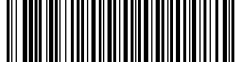


Prelevare la cuvetta dal vano di misurazione.

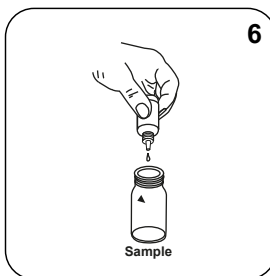


Svuotare la cuvetta.

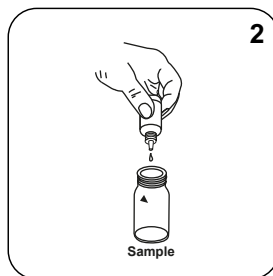
In caso di dispositivi che **non richiedono una misurazione ZERO**, iniziare da qui.



Tenere le boccette contagocce in posizione verticale e introdurre, premendo lentamente, gocce della stessa dimensione nella cuvetta.



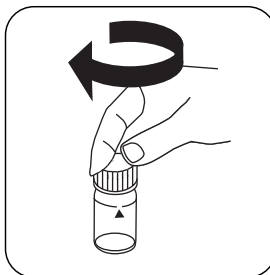
Introdurre **6 gocce di DPD 1 Buffer Solution** nella cuvetta del campione.



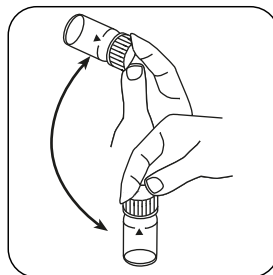
Introdurre **2 gocce di DPD 1 Reagent Solution** nella cuvetta del campione.



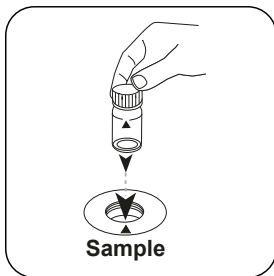
Immettere il **campione** nella cuvetta fino a raggiungere la **tacca dei 10 mL**.



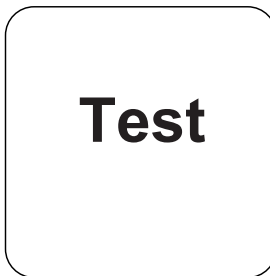
Chiudere la/e cuvetta/e.



Miscelare il contenuto capovolgendo.



Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



Eeguire il test.

Sul display compare il risultato in mg/L di Cloro libero.

Esecuzione della rilevazione Cloro, totale con reagente liquido

Selezionare il metodo nel dispositivo.



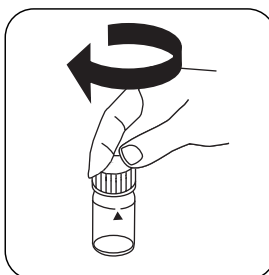
Selezionare inoltre la determinazione: totale

Per questo metodo, non è necessario eseguire una misurazione ZERO ogni volta sui seguenti dispositivi: XD 7000, XD 7500

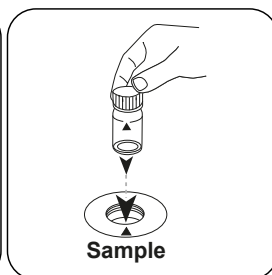
IT



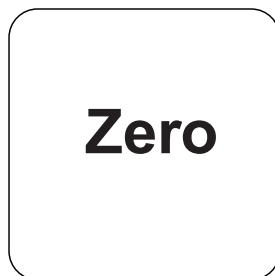
Riempire una cuvetta da 24 mm con **10 mL di campione**.



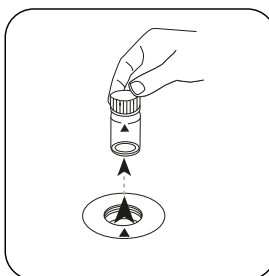
Chiudere la/e cuvetta/e.



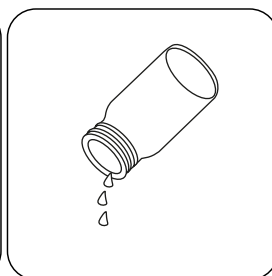
Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



Eseguire il Zero.

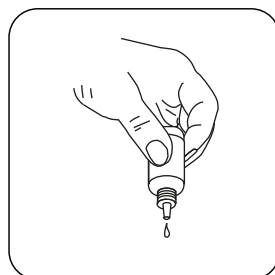


Prelevare la cuvetta dal vano di misurazione.

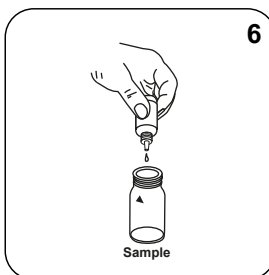


Svuotare la cuvetta.

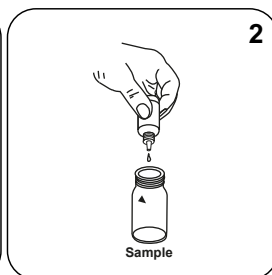
In caso di dispositivi che **non richiedono una misurazione ZERO**, iniziare da qui.



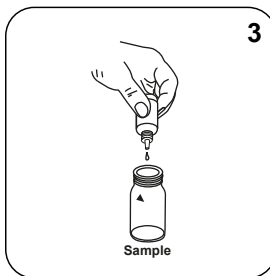
Tenere le boccette contagocce in posizione verticale e introdurre, premendo lentamente, gocce della stessa dimensione nella cuvetta.



Introdurre **6 gocce di DPD 1 Buffer Solution** nella cuvetta del campione.



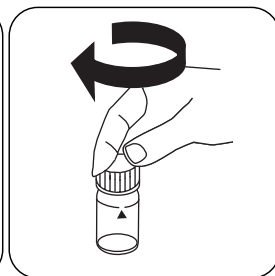
Introdurre **2 gocce di DPD 1 Reagent Solution** nella cuvetta del campione.



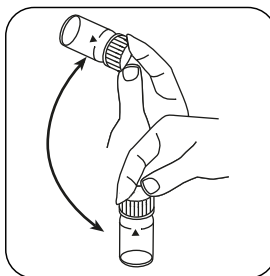
Introdurre **3 gocce di DPD 3 Solution** nella cuvetta del campione.



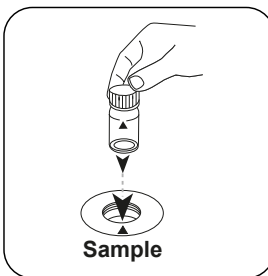
Immettere il **campione** nella cuvetta fino a raggiungere la **tacca dei 10 mL**.



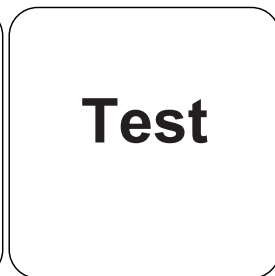
Chiudere la/e cuvetta/e.



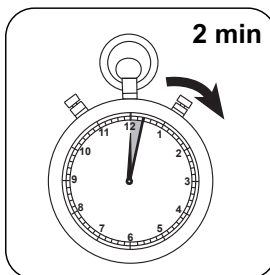
Miscelare il contenuto capovolgendo.



Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



Eseguire il test.



Attendere un **tempo di reazione di 2 minuti/i**.

Allo scadere del tempo di reazione viene effettuata automaticamente la misurazione.

Sul display compare il risultato in mg/L di Cloro totale.

Esecuzione della rilevazione Cloro, differenziato con reagente liquido

Selezionare il metodo nel dispositivo.

Selezionare inoltre la determinazione: differenziato

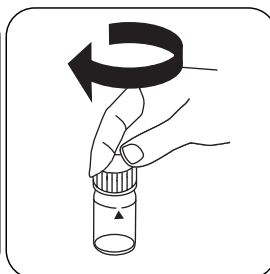


Per questo metodo, non è necessario eseguire una misurazione ZERO ogni volta sui seguenti dispositivi: XD 7000, XD 7500

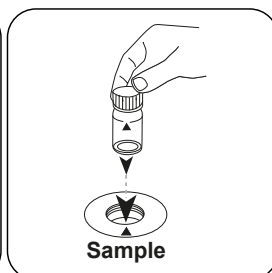
IT



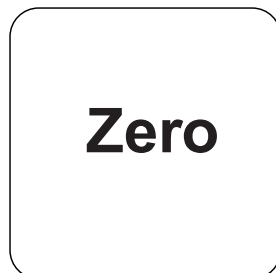
Riempire una cuvetta da 24 mm con **10 mL di campione**.



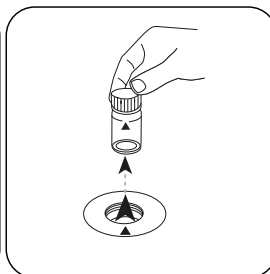
Chiudere la/e cuvetta/e.



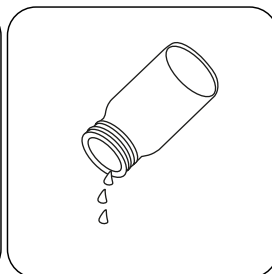
Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



Eseguire il Zero.

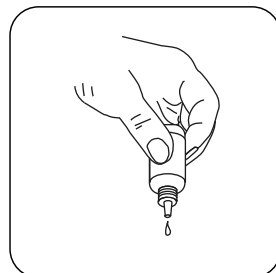


Prelevare la cuvetta dal vano di misurazione.

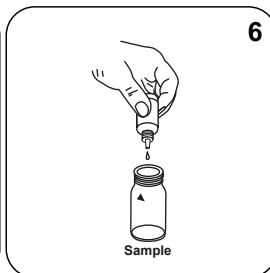


Svuotare la cuvetta.

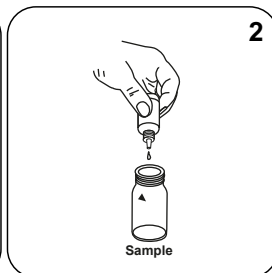
In caso di dispositivi che **non richiedono una misurazione ZERO**, iniziare da qui.



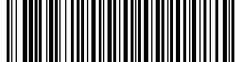
Tenere le boccette contagocce in posizione verticale e introdurre, premendo lentamente, gocce della stessa dimensione nella cuvetta.



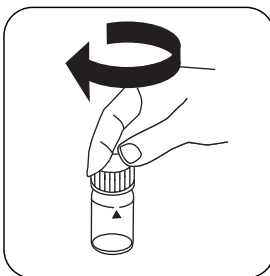
Introdurre **6 gocce di DPD 1 Buffer Solution** nella cuvetta del campione.



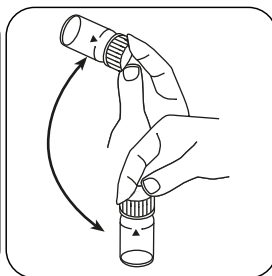
Introdurre **2 gocce di DPD 1 Reagent Solution** nella cuvetta del campione.



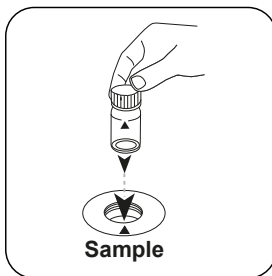
Immettere il **campione** nella cuvetta fino a raggiungere la **tacca dei 10 mL**.



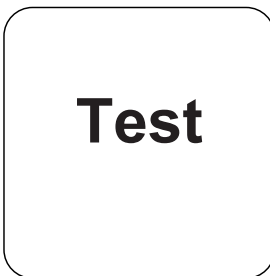
Chiudere la/e cuvetta/e.



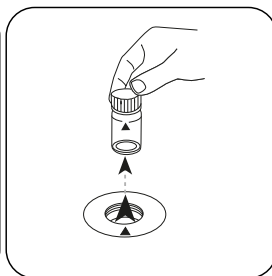
Miscelare il contenuto capovolgendo.



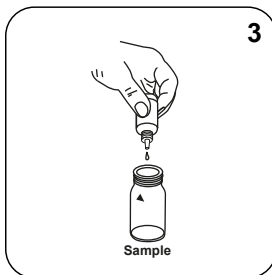
Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



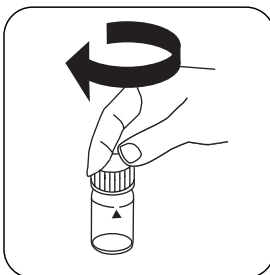
Eseguire il test.



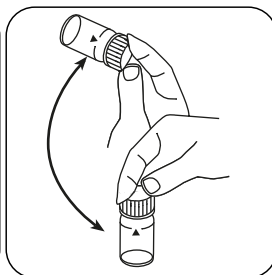
Prelevare la cuvetta dal vano di misurazione.



Introdurre **3 gocce di DPD 3 Solution** nella cuvetta del campione.



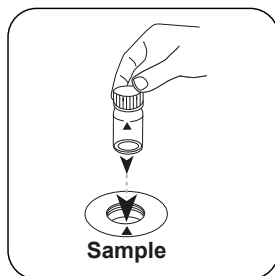
Chiudere la/e cuvetta/e.



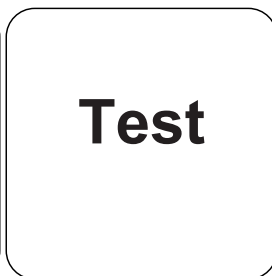
Miscelare il contenuto capovolgendo.



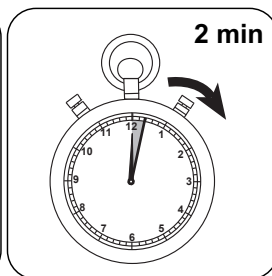
IT



Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



Eseguire il test.



Attendere un **tempo di reazione di 2 minuti**.

Allo scadere del tempo di reazione viene effettuata automaticamente la misurazione.

Sul display compare il risultato in mg/L di cloro libero, mg/l cloro combinato, mg/l cloro totale.

Metodo chimico

DPD

Appendice

Interferenze

Interferenze permanenti

- Tutti gli ossidanti presenti nei campioni reagiscono come il cloro dando risultati troppo elevati.

Interferenze escludibili

- Le interferenze da parte di rame e ferro(III) devono essere eliminate con EDTA.
- Se si utilizzano reagenti liquidi, le concentrazioni di cloro maggiori di 4 mg/L possono dare risultati entro il range di misura fino a 0 mg/L. In questo caso il campione deve essere diluito con acqua priva di cloro. 10 ml del campione diluito vengono addizionati con il reagente e la misurazione viene ripetuta (test di plausibilità).

Interferenze	da / [mg/L]
CrO_4^{2-}	0,01
MnO_2	0,01

Conforme

EN ISO 7393-2

^aDeterminazione di libero, vincolato, totale possibile

**Cloro HR T****M103****0.1 - 10 mg/L Cl₂^{a)}****CL10****DPD**

IT

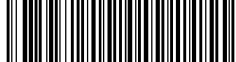
Materiale

Materiale richiesto (in parte facoltativo):

Reagenti	Unità di imballaggio	N. ordine
DPD No. 1 HR	Pastiglia / 100	511500BT
DPD No. 1 HR	Pastiglia / 250	511501BT
DPD No. 1 HR	Pastiglia / 500	511502BT
DPD No. 3 HR	Pastiglia / 100	511590BT
DPD No. 3 HR	Pastiglia / 250	511591BT
DPD No. 3 HR	Pastiglia / 500	511592BT
Set DPD No. 1 HR/No. 3 HR [#]	ciascuna 100	517791BT
Set DPD No. 1 HR/No. 3 HR [#]	ciascuna 250	517792BT
DPD No. 1 Alto Calcio ^{e)}	Pastiglia / 100	515740BT
DPD No. 1 Alto Calcio ^{e)}	Pastiglia / 250	515741BT
DPD No. 1 Alto Calcio ^{e)}	Pastiglia / 500	515742BT
DPD No. 3 High Calcium ^{e)}	Pastiglia / 100	515730BT
DPD No. 3 High Calcium ^{e)}	Pastiglia / 250	515731BT
DPD No. 3 High Calcium ^{e)}	Pastiglia / 500	515732BT
DPD No.3 HR Evo	Pastiglia / 100	511920BT
DPD No. 3 HR Evo	Pastiglia / 250	511921BT
DPD No. 3 HR Evo	Pastiglia / 500	511922BT

Prelievo del campione

1. Nella preparazione del campione occorre evitare la degassificazione del cloro, ad es. utilizzando pipette e agitando.
2. L'analisi deve essere eseguita subito dopo il prelievo del campione.



Preparazione

1. Pulizia delle cuvette:
Poiché molti detersivi ad uso domestico (ad es. detersivo per piatti) contengono sostanze riducenti, nella rilevazione del cloro si potrebbero ottenere risultati troppo bassi. Per escludere tali errori di misura è necessario che i dispositivi in vetro siano esenti dal consumo di cloro. I dispositivi in vetro inoltre vengono conservati in una soluzione di ipoclorito di sodio (0,1 g/L) per un'ora e successivamente vengono risciacquati abbondantemente con acqua demineralizzata.
2. Per la singola rilevazione del cloro libero e del cloro totale è opportuno utilizzare un apposito kit di cuvette per ciascuna procedura (vedere EN ISO 7393-2, par. 5.3).
3. Lo sviluppo della colorazione del DPD avviene con un valore di pH compreso tra 6,2 e 6,5. I reagenti contengono pertanto un tampone per la regolazione del valore di pH. Le acque fortemente alcaline o acide tuttavia devono essere portate prima dell'analisi entro un range di pH compreso tra 6 e 7 (con 0,5 mol/L di acido solforico o 1 mol/L di liscivia).

Note

1. Le compresse Evo possono essere utilizzate come alternativa alla corrispondente compressa standard (ad esempio DPD No. 3 Evo invece di DPD No. 3).



Esecuzione della rilevazione Cloro HR, libero con compressa

Selezionare il metodo nel dispositivo.

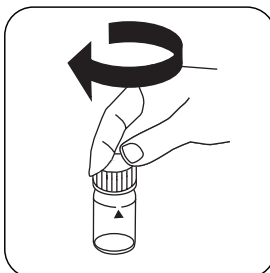
Selezionare inoltre la determinazione: libero

Per questo metodo, non è necessario eseguire una misurazione ZERO ogni volta sui seguenti dispositivi: XD 7000, XD 7500

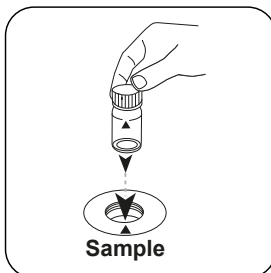
IT



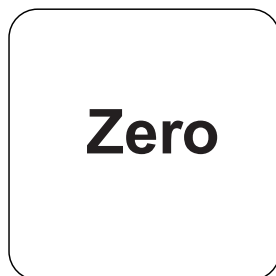
Riempire una cuvetta da 24 mm con **10 mL di campione**.



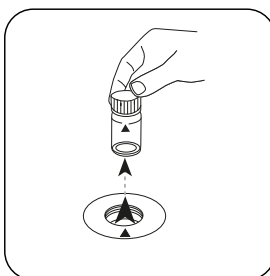
Chiudere la/e cuvetta/e.



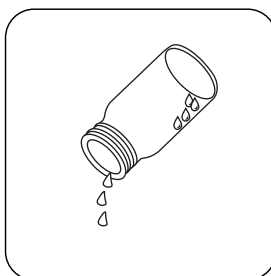
Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



Eeguire il Zero.

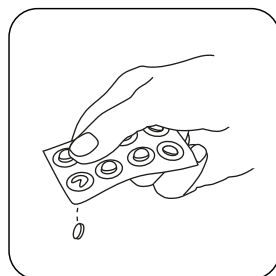


Prelevare la cuvetta dal vano di misurazione.

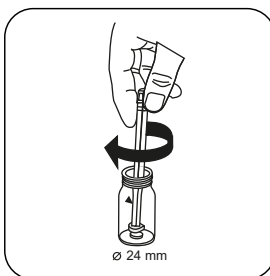


Svuotare la cuvetta finché non rimangono alcune gocce.

In caso di dispositivi che **non richiedono una misurazione ZERO**, iniziare da qui.



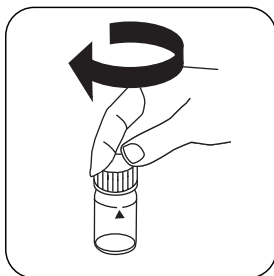
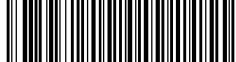
Aggiungere una **pastiglia DPD No. 1 HR**.



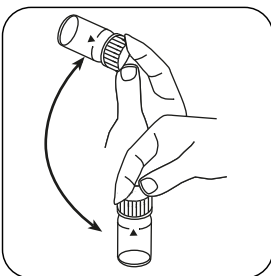
Frantumare la/e pastiglia/e con una leggera rotazione.



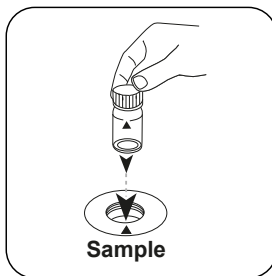
Immettere il **campione** nella cuvetta fino a raggiungere la **tacca dei 10 mL**.



Chiudere la/e cuvetta/e.



Far sciogliere la/e pastiglia/e agitando.



Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.

Test

Eseguire il test.

Sul display compare il risultato in mg/L di Cloro libero.

Esecuzione della rilevazione Cloro HR, totale con compressa

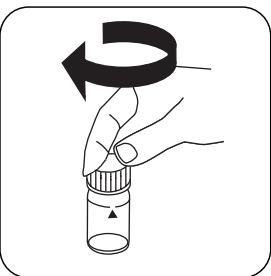
Selezionare il metodo nel dispositivo.

Selezionare inoltre la determinazione: totale

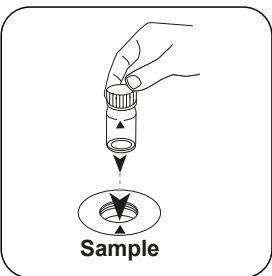
Per questo metodo, non è necessario eseguire una misurazione ZERO ogni volta sui seguenti dispositivi: XD 7000, XD 7500



Riempire una cuvetta da 24 mm con **10 mL di campione**.



Chiudere la/e cuvetta/e.



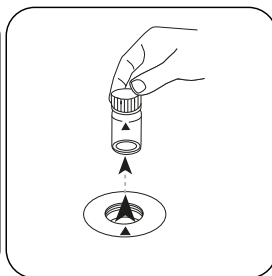
Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



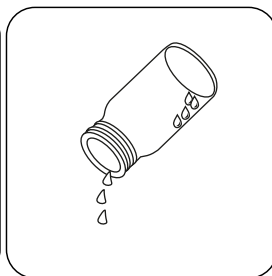
IT

Zero

Eseguire il Zero.

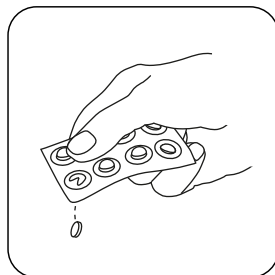


Prelevare la cuvetta dal vano di misurazione.

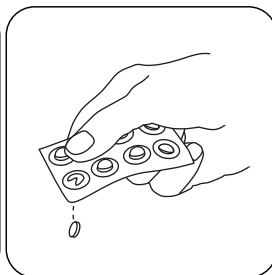


Svuotare la cuvetta finché non rimangono alcune gocce.

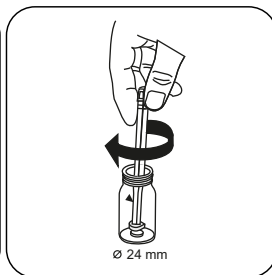
In caso di dispositivi che **non richiedono una misurazione ZERO**, iniziare da qui.



Aggiungere **una pastiglia DPD No. 1 HR**.



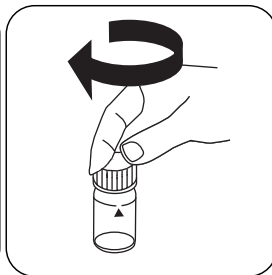
Aggiungere **una pastiglia DPD No. 3 HR**.



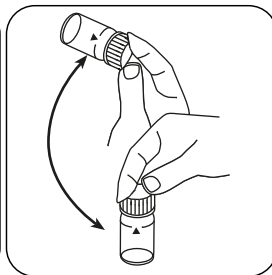
Frantumare la/e pastiglia/e con una leggera rotazione.



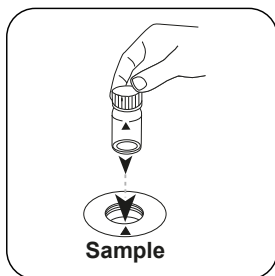
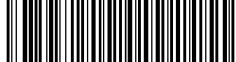
Immettere il **campione** nella cuvetta fino a raggiungere la **tacca dei 10 mL**.



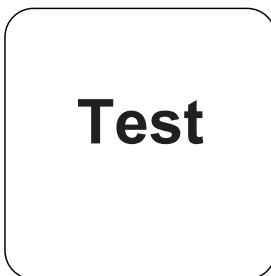
Chiudere la/e cuvetta/e.



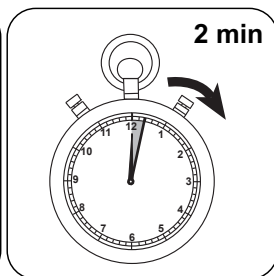
Far sciogliere la/e pastiglia/e agitando.



Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



Eeguire il test.



Attendere un **tempo di reazione di 2 minuto/i**.

Allo scadere del tempo di reazione viene effettuata automaticamente la misurazione.

Sul display compare il risultato in mg/L di Cloro totale.

Esecuzione della rilevazione Cloro HR, determinazione differenziata con compressa

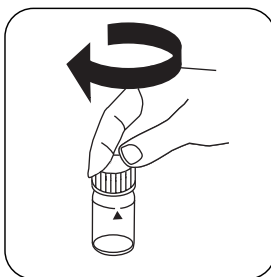
Selezionare il metodo nel dispositivo.

Selezionare inoltre la determinazione: differenziato

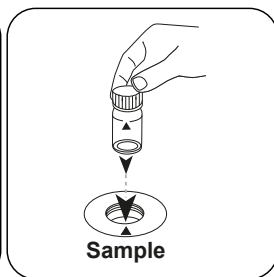
Per questo metodo, non è necessario eseguire una misurazione ZERO ogni volta sui seguenti dispositivi: XD 7000, XD 7500



Riempire una cuvetta da 24 mm con **10 mL di campione**.



Chiudere la/e cuvetta/e.



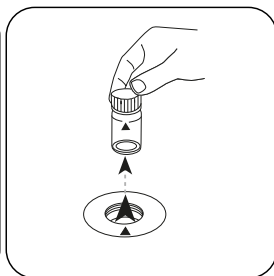
Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



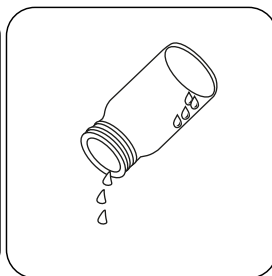
IT

Zero

Eseguire il Zero.

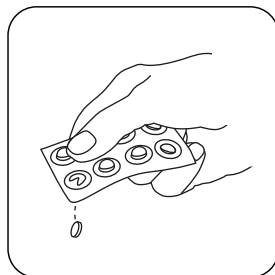


Prelevare la cuvetta dal vano di misurazione.

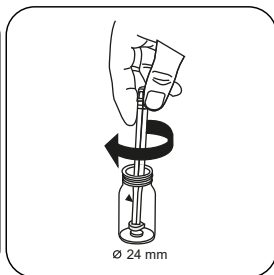


Svuotare la cuvetta finché non rimangono alcune gocce.

In caso di dispositivi che **non richiedono una misurazione ZERO**, iniziare da qui.



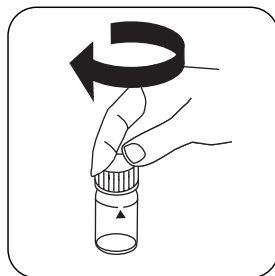
Aggiungere **una pastiglia DPD No. 1 HR**.



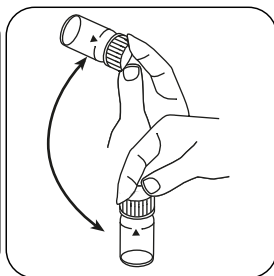
Frantumare la/e pastiglia/e con una leggera rotazione.



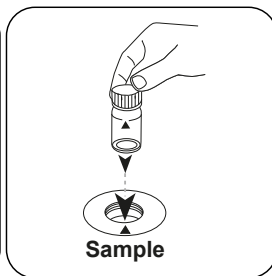
Immettere il **campione** nella cuvetta fino a raggiungere la **tacca dei 10 mL**.



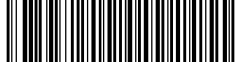
Chiudere la/e cuvetta/e.



Far sciogliere la/e pastiglia/e agitando.

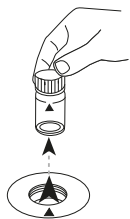


Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.

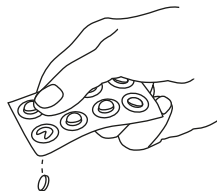


Test

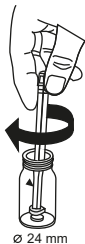
Eeguire il test.



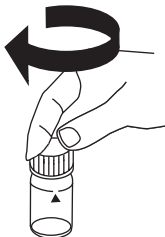
Prelevare la cuvetta dal vano di misurazione.



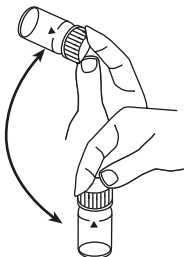
Aggiungere **una pastiglia DPD No. 3 HR**.



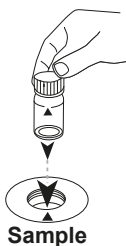
Frantumare la/e pastiglia/e con una leggera rotazione.



Chiudere la/e cuvetta/e.



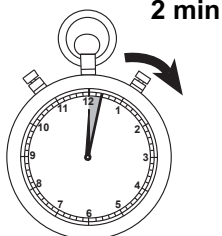
Far sciogliere la/e pastiglia/e agitando.



Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.

Test

Eeguire il test.



Attendere un **tempo di reazione di 2 minuto/i**.

Allo scadere del tempo di reazione viene effettuata automaticamente la misurazione.

Sul display compare il risultato in mg/L di cloro libero, mg/l cloro combinato, mg/l cloro totale.



Metodo chimico

DPD

Appendice

IT

Interferenze

Interferenze permanenti

- Tutti gli ossidanti presenti nei campioni reagiscono come il cloro dando risultati troppo elevati.

Interferenze escludibili

- Le interferenze da parte di rame e ferro(III) devono essere eliminate con EDTA.
- In caso di campioni con un elevato tenore di calcio* e/o un'elevata conducibilità*, utilizzando le pastiglie di reagente potrebbe verificarsi un intorbidimento del campione con conseguenti errori di misurazione. In questo caso si possono utilizzare in alternativa la pastiglia di reagente DPD No. 1 High Calcium e la pastiglia di reagente DPD No. 3 High Calcium.

*Non è possibile indicare i valori esatti in quanto l'intorbidimento dipende dal tipo e dalla composizione dell'acqua campione.

Conforme

EN ISO 7393-2

^aDeterminazione di libero, vincolato, totale possibile | ^aReagente ausiliario, in alternativa a DPD n. 1 / no 3 in caso di torbidità del campione a causa di alto contenuto di ioni di calcio e / o alta conduttività | ^aBacchetta compresa

**Cloro PP****M110****0.02 - 2 mg/L Cl₂ ^{a)}****CL2****DPD**

IT

Materiale

Materiale richiesto (in parte facoltativo):

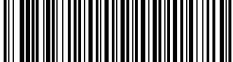
Reagenti	Unità di imballaggio	N. ordine
Cloro libero DPD F10	Polvere / 100 pz.	530100
Cloro libero DPD F10	Polvere / 1000 pz.	530103
Cloro totale DPD F10	Polvere / 100 pz.	530120
Cloro totale DPD F10	Polvere / 1000 pz.	530123

Standards disponibles

Titolo	Unità di imballaggio	N. ordine
ValidCheck Cloro 1,5 mg/l	1 pz.	48105510

Prelievo del campione

1. Nella preparazione del campione occorre evitare la degassificazione del cloro, ad es. utilizzando pipette e agitando.
2. L'analisi deve essere eseguita subito dopo il prelievo del campione.



Preparazione

1. Pulizia delle cuvette:
Poiché molti detersivi ad uso domestico (ad es. detersivo per piatti) contengono sostanze riducenti, nella rilevazione del cloro si potrebbero ottenere risultati troppo bassi. Per escludere tali errori di misura è necessario che i dispositivi in vetro siano esenti dal consumo di cloro. I dispositivi in vetro inoltre vengono conservati in una soluzione di ipoclorito di sodio (0,1 g/L) per un'ora e successivamente vengono risciacquati abbondantemente con acqua demineralizzata.
2. Per la singola rilevazione del cloro libero e del cloro totale è opportuno utilizzare un apposito kit di cuvette per ciascuna procedura (vedere EN ISO 7393-2, par. 5.3).
3. Lo sviluppo della colorazione del DPD avviene con un valore di pH compreso tra 6,2 e 6,5. I reagenti contengono pertanto un tampone per la regolazione del valore di pH. Le acque fortemente alcaline o acide tuttavia devono essere portate prima dell'analisi entro un range di pH compreso tra 6 e 7 (con 0,5 mol/l di acido solforico o 1 mol/l di liscivia).



Esecuzione della rilevazione cloro libero con confezioni in polvere

Selezionare il metodo nel dispositivo.

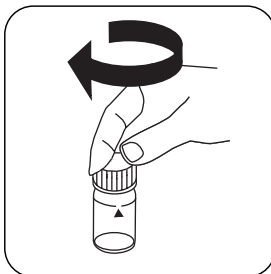
Selezionare inoltre la determinazione: libero

Per questo metodo, non è necessario eseguire una misurazione ZERO ogni volta sui seguenti dispositivi: XD 7000, XD 7500

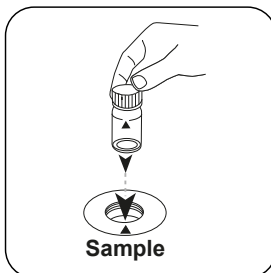
IT



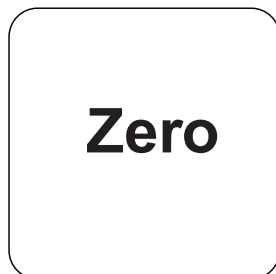
Riempire una cuvetta da 24 mm con **10 mL di campione**.



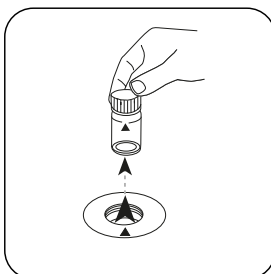
Chiudere la/e cuvetta/e.



Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.

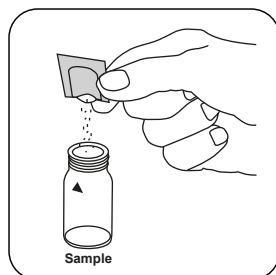


Eseguire il Zero.

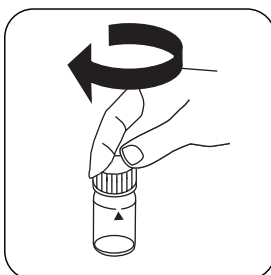


Prelevare la cuvetta dal vano di misurazione.

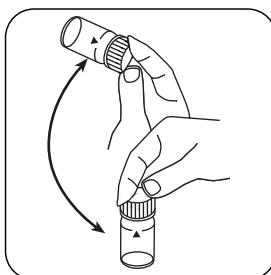
In caso di dispositivi che **non richiedono una misurazione ZERO**, iniziare da qui.



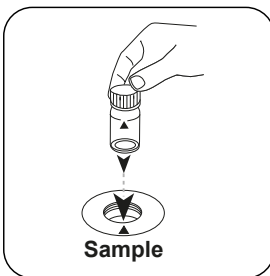
Aggiungere **una bustina di polvere Chlorine FREE-DPD/ F10**.



Chiudere la/e cuvetta/e.



Miscelare il contenuto capovolgendo (20 sec.).



Test

Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.

Eseguire il test.

Sul display compare il risultato in mg/L di Cloro libero.

Esecuzione della rilevazione cloro totale con confezioni in polvere

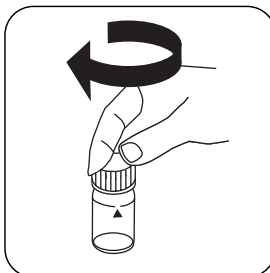
Selezionare il metodo nel dispositivo.

Selezionare inoltre la determinazione: totale

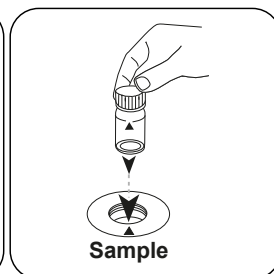
Per questo metodo, non è necessario eseguire una misurazione ZERO ogni volta sui seguenti dispositivi: XD 7000, XD 7500



Riempire una cuvetta da 24 mm con **10 mL di campione**.



Chiudere la/e cuvetta/e.



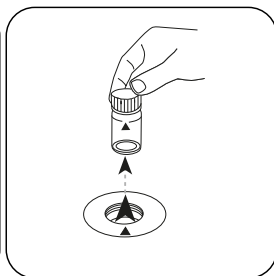
Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



IT

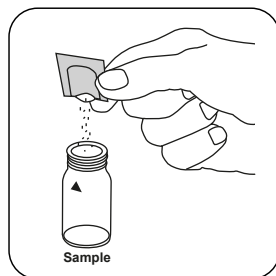
Zero

Eseguire il Zero.

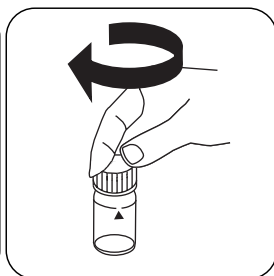


Prelevare la cuvetta dal vano di misurazione.

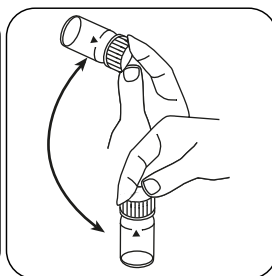
In caso di dispositivi che **non richiedono una misurazione ZERO**, iniziare da qui.



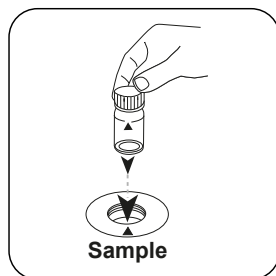
Aggiungere **una bustina di polvere Chlorine TOTAL-DPD/ F10**.



Chiudere la/e cuvetta/e.



Miscelare il contenuto capovolgendo (20 sec.).

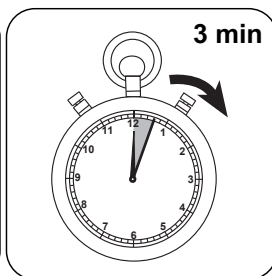


Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



Eseguire il test.

Test



Attendere un **tempo di reazione di 3 minuti/i**.

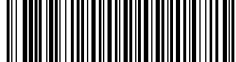
Allo scadere del tempo di reazione viene effettuata automaticamente la misurazione.

Sul display compare il risultato in mg/L di Cloro totale.

Esecuzione della rilevazione Cloro differenziato con confezioni in polvere

Selezionare il metodo nel dispositivo.

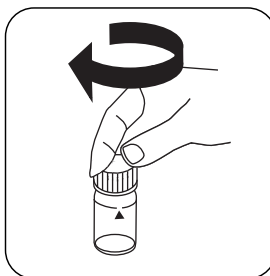
Selezionare inoltre la determinazione: differenziato



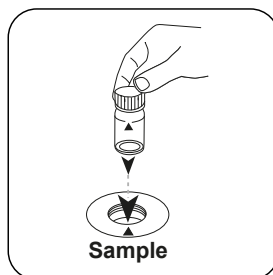
Per questo metodo, non è necessario eseguire una misurazione ZERO ogni volta sui seguenti dispositivi: XD 7000, XD 7500



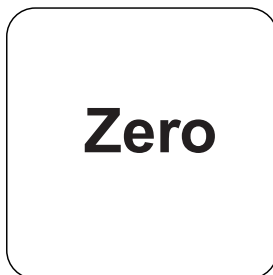
Riempire una cuvetta da 24 mm con **10 mL di campione**.



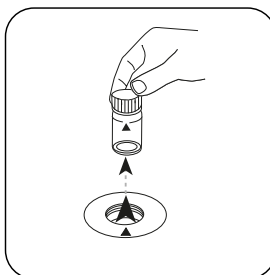
Chiudere la/e cuvetta/e.



Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.

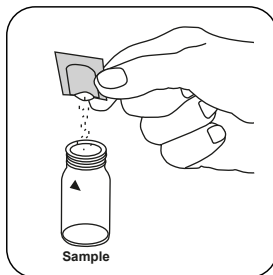


Eseguire il Zero.

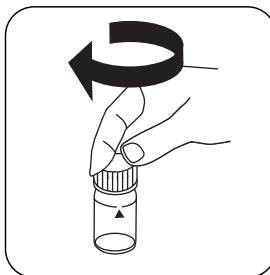


Prelevare la cuvetta dal vano di misurazione.

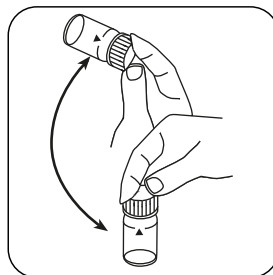
In caso di dispositivi che **non richiedono una misurazione ZERO**, iniziare da qui.



Aggiungere **una bustina di polvere Chlorine FREE-DPD/ F10**.



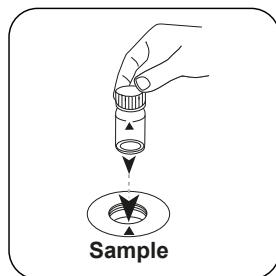
Chiudere la/e cuvetta/e.



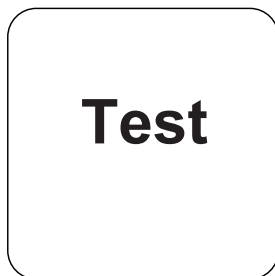
Miscelare il contenuto capovolgendo (20 sec.).



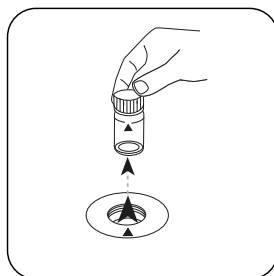
IT



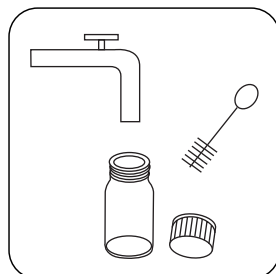
Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



Eeguire il test.



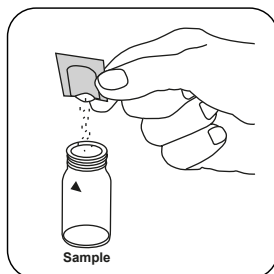
Prelevare la cuvetta dal vano di misurazione.



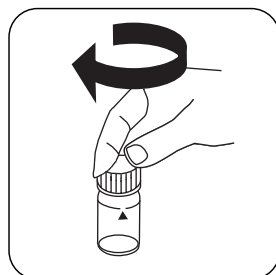
Pulire a fondo la cuvetta e il coperchio della cuvetta.



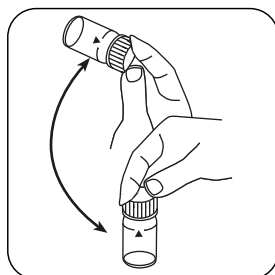
Riempire una cuvetta da 24 mm con **10 mL di campione**.



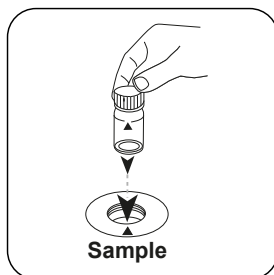
Aggiungere **una bustina di polvere TOTAL-DPD/ F10**.



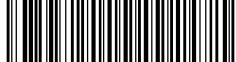
Chiudere la/e cuvetta/e.



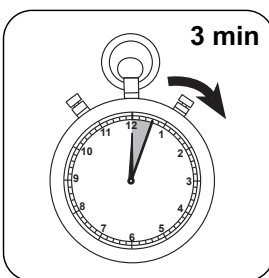
Miscelare il contenuto capovolgendo (20 sec.).



Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



Test



Eeguire il test.

Attendere un **tempo di
reazione di 3 minuto/i** .

Allo scadere del tempo di reazione viene effettuata automaticamente la misurazione.

Sul display compare il risultato in mg/L di cloro libero, mg/l cloro combinato, mg/l cloro totale.

IT



Metodo chimico

DPD

Appendice

IT

Interferenze

Interferenze permanenti

- Tutti gli ossidanti presenti nei campioni reagiscono come il cloro dando risultati troppo elevati.

Interferenze escludibili

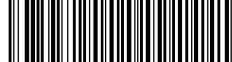
- Le interferenze da parte di rame e ferro(III) devono essere eliminate con EDTA.
- Se si utilizzano Powder Packs, le concentrazioni di cloro maggiori di 2 mg/L possono dare risultati entro il range di misura fino a 0 mg/L. In questo caso il campione deve essere diluito con acqua priva di cloro. 10 ml del campione diluito vengono addizionati con il reagente e la misurazione viene ripetuta (test di plausibilità).

Interferenze	da / [mg/L]
CrO_4^{2-}	0,01
MnO_2	0,01

Conforme

EN ISO 7393-2

^{a)}Determinazione di libero, vincolato, totale possibile

**Cloro HR 2 PP****M112-2****0.1 - 10 mg/L Cl₂****DPD**

IT

Materiale

Materiale richiesto (in parte facoltativo):

Reagenti	Unità di imballaggio	N. ordine
VARIO Senza Cloro DPD F25-100	Polvere / 100 pz.	530110
VARIO Cloro Totale DPD F25-100	Polvere / 100 pz.	530130
Cloro libero DPD F10	Polvere / 100 pz.	530100
Cloro totale DPD F10	Polvere / 100 pz.	530120

Prelievo del campione

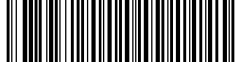
1. Nella preparazione del campione occorre evitare la degassificazione del cloro, ad es. utilizzando pipette e agitando.
2. L'analisi deve essere eseguita subito dopo il prelievo del campione.

Preparazione

1. Pulizia delle cuvette:
Poiché molti detergenti ad uso domestico (ad es. detersivo per piatti) contengono sostanze riducenti, nel rilevamento del cloro si potrebbero ottenere risultati troppo bassi. Per escludere tali errori di misura è necessario che i dispositivi in vetro siano esenti dal consumo di cloro. I dispositivi in vetro inoltre vengono conservati in una soluzione di ipoclorito di sodio (0,1 g/L) per un'ora e successivamente vengono risciacquati abbondantemente con acqua demineralizzata.
2. Per la singola rilevazione del cloro libero e del cloro totale è opportuno utilizzare un apposito kit di cuvette per ciascuna procedura (vedere EN ISO 7393-2, par. 5.3).
3. Lo sviluppo della colorazione del DPD avviene con un valore di pH compreso tra 6,2 e 6,5. I reagenti contengono pertanto un tampone per la regolazione del valore di pH. Le acque fortemente alcaline o acide tuttavia devono essere portate prima dell'analisi entro un range di pH compreso tra 6 e 7 (con 0,5 mol/l di acido solforico o 1 mol/l di liscivia).

Note

1. Per eseguire il test nell'MD50/150 si utilizza una cuvetta da 24 mm Ø al posto della multicuvetta.

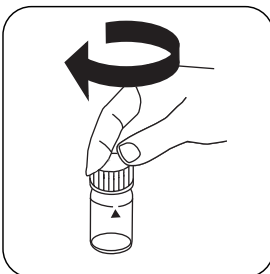


Esecuzione della rilevazione cloro libero HR 2 con confezioni in polvere (MD50/MD150)

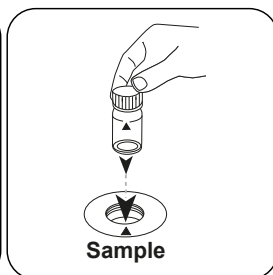
Selezionare il metodo nel dispositivo.



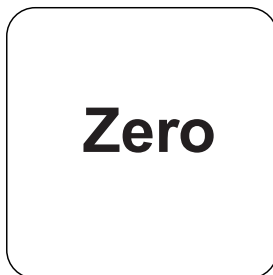
Riempire una cuvetta da 24 mm con **10 mL di campione**.



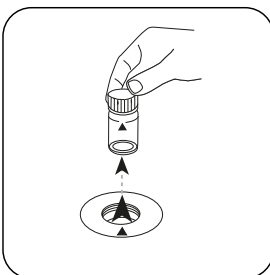
Chiudere la/e cuvetta/e.



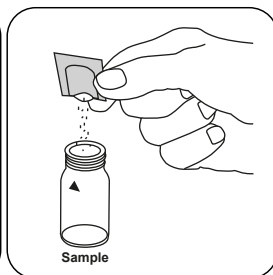
Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



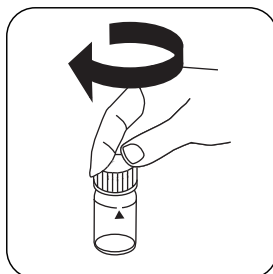
Eeguire il Zero.



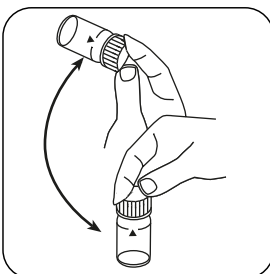
Prelevare la cuvetta dal vano di misurazione.



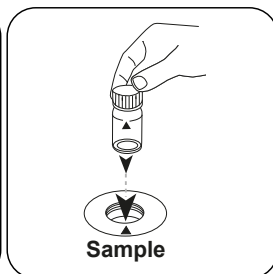
Aggiungere una bustina di polvere **1 Vario Chlorine Free / F25 o 2 Chlorine Total / F10**.



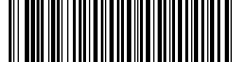
Chiudere la/e cuvetta/e.



Miscelare il contenuto capovolgendo (20 sec.).



Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



Test

IT

Eseguire il test.

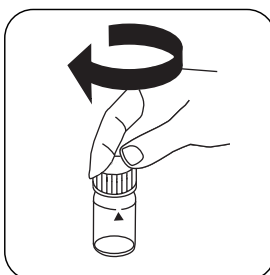
Sul display compare il risultato in mg/L di Cloro.

Esecuzione della rilevazione cloro totale HR 2 con confezioni in polvere (MD50/MD150)

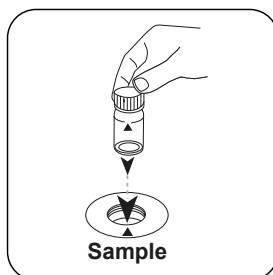
Selezionare il metodo nel dispositivo.



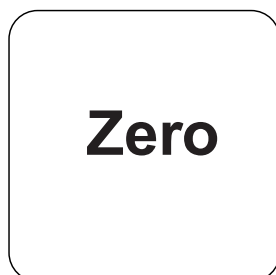
Riempire una cuvetta da 24 mm con **10 mL di campione**.



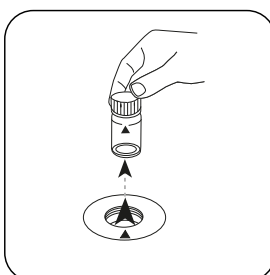
Chiudere la/e cuvetta/e.



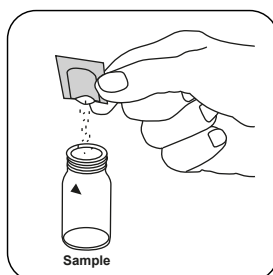
Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



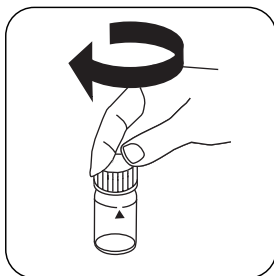
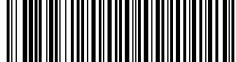
Eseguire il Zero.



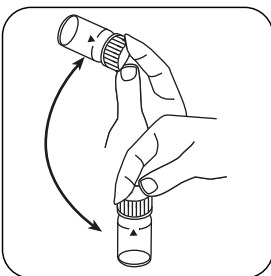
Prelevare la cuvetta dal vano di misurazione.



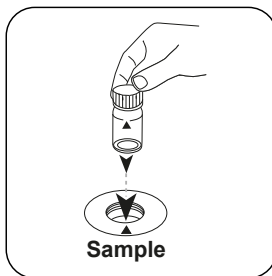
Aggiungere una bustina di polvere **1 Vario Chlorine Free / F25 o 2 Chlorine Total / F10**.



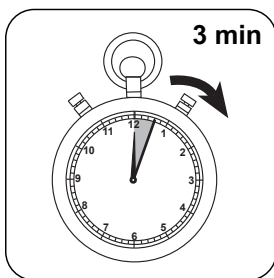
Chiudere la/e cuvetta/e.



Miscelare il contenuto capovolgendo (20 sec.).

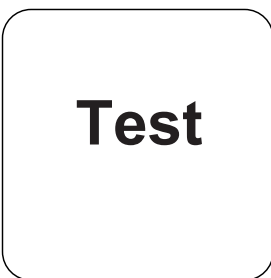


Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.

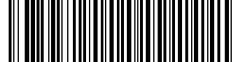


Attendere un **tempo di reazione di 3 minuto/i**.

Sul display compare il risultato in mg/L di Cloro.



Eeguire il test.



Metodo chimico

DPD

Appendice

IT

Interferenze

Interferenze permanenti

- Tutti gli ossidanti presenti nei campioni reagiscono come il cloro dando risultati troppo elevati.

Interferenze escludibili

- Le interferenze da parte di rame e ferro(III) devono essere eliminate con EDTA.
- Se si utilizzano Powder Packs, le concentrazioni di cloro maggiori di 10 mg/L possono dare risultati entro il range di misura fino a 0 mg/L. In questo caso il campione deve essere diluito con acqua priva di cloro. 5 ml del campione diluito vengono addizionati con il reagente e la misurazione viene ripetuta (test di plausibilità).

Conforme

EN ISO 7393-2

**CyA HR T****M161****10 - 200 mg/L CyA****CyAH****Melamina**

IT

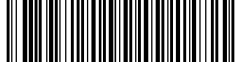
Materiale

Materiale richiesto (in parte facoltativo):

Reagenti	Unità di imballaggio	N. ordine
CyA HR-Test-100	Pastiglia / 100	511430BT
CyA HR-Test-250	Pastiglia / 250	511431BT

Note

1. L'acido cianurico provoca un intorbidimento distribuito molto finemente dall'aspetto lattiginoso. Singole particelle non sono imputabili alla presenza di acido cianurico.
2. Dopo aver aggiunto la compressa di test CyA-HR, si dissolve automaticamente entro due minuti.



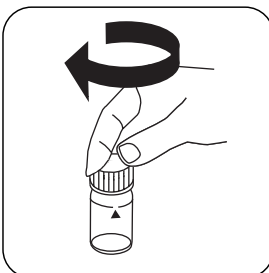
Esecuzione della rilevazione Test acido cianurico con pastiglia

Selezionare il metodo nel dispositivo.

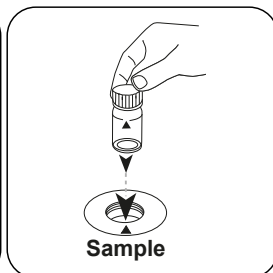
Per questo metodo, non è necessario eseguire una misurazione ZERO ogni volta sui seguenti dispositivi: XD 7000, XD 7500



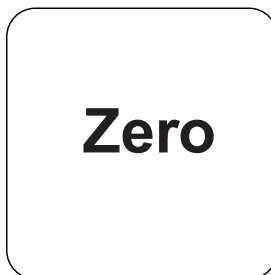
Riempire una cuvetta da 24 mm con **10 mL di campione**.



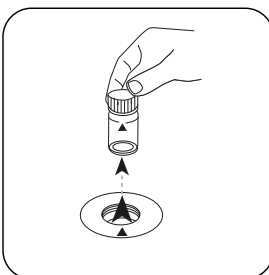
Chiudere la/e cuvetta/e.



Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.

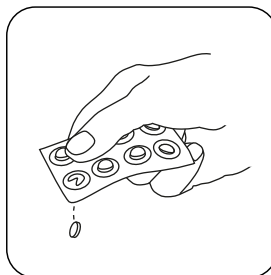


Eeguire il Zero.

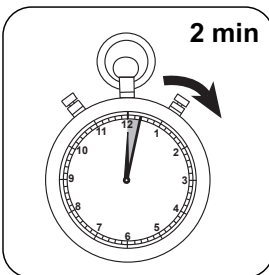


Prelevare la cuvetta dal vano di misurazione.

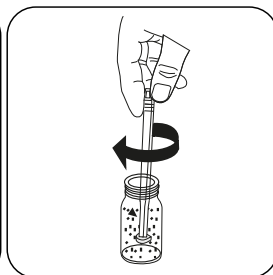
In caso di dispositivi che **non richiedono una misurazione ZERO**, iniziare da qui.



Aggiungere una **pastiglia CyA HR Test**.



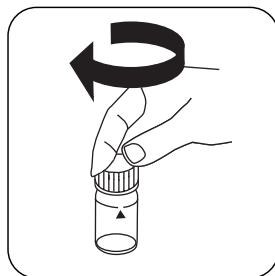
Attendere un **tempo di reazione di 2 minuti/i**.



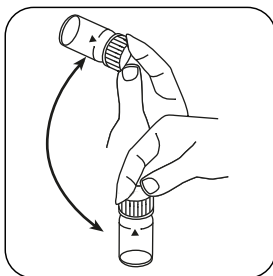
Far sciogliere la/e pastiglia/e mescolando con una barretta di agitazione pulita.



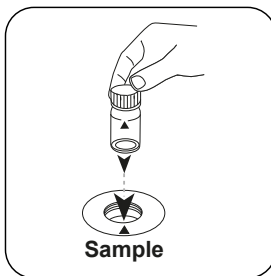
IT



Chiudere la/e cuvetta/e.



Miscelare il contenuto capovolgendo (non agitare).



Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.

Test

Eseguire il test.

Sul display comparire il risultato in mg/L di acido cianurico .



Metodo chimico

Melammina

Interferenze

Interferenze permanenti

1. Le particelle non disciolte possono portare a risultati troppo elevati.

IT

Validazione metodo

Limite di rilevabilità	2.07 mg/L
Limite di quantificazione	6.2 mg/L
Estremità campo di misura	200 mg/L
Sensibilità	77.47 mg/L / Abs
Intervallo di confidenza	4.6 mg/L
Deviazione standard della procedura	4.78 mg/L
Coefficiente di variazione della procedura	4.55 %

**Valore pH T****M330****6.5 - 8.4 pH****PH****Rosso fenolo**

IT

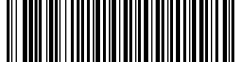
Materiale

Materiale richiesto (in parte facoltativo):

Reagenti	Unità di imballaggio	N. ordine
Fotometro rosso fenolo	Pastiglia / 100	511770BT
Fotometro rosso fenolo	Pastiglia / 250	511771BT
Fotometro rosso fenolo	Pastiglia / 500	511772BT

Note

1. Per la rilevazione fotometrica del valore di pH si devono utilizzare soltanto pastiglie PHENOL RED con etichetta nera contrassegnate con il termine PHOTOMETER.



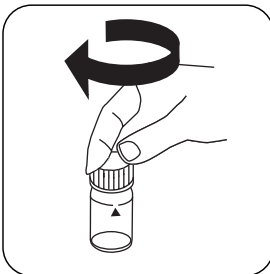
Esecuzione della rilevazione Valore pH con pastiglia

Selezionare il metodo nel dispositivo.

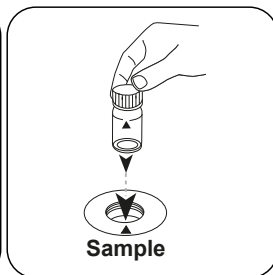
Per questo metodo, non è necessario eseguire una misurazione ZERO ogni volta sui seguenti dispositivi: XD 7000, XD 7500



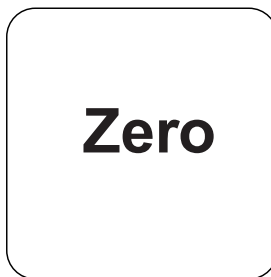
Riempire una cuvetta da 24 mm con **10 mL di campione**.



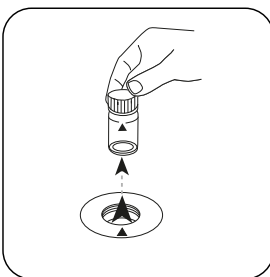
Chiudere la/e cuvetta/e.



Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.

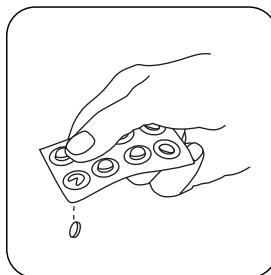


Eseguire il Zero.

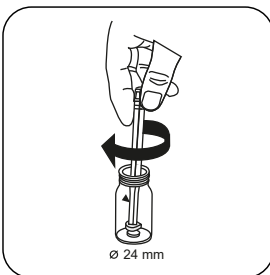


Prelevare la cuvetta dal vano di misurazione.

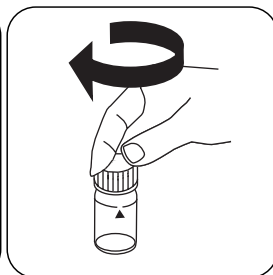
In caso di dispositivi che **non richiedono una misurazione ZERO**, iniziare da qui.



Aggiungere una **pastiglia PHENOL RED PHOTOMETER**.



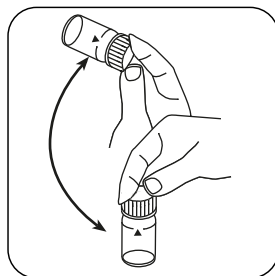
Frantumare la/e pastiglia/e con una leggera rotazione.



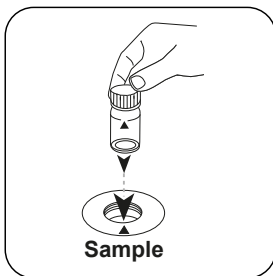
Chiudere la/e cuvetta/e.



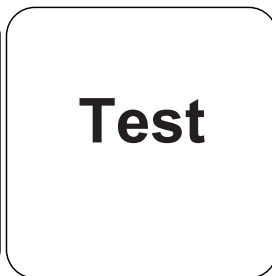
IT



Far sciogliere la/e
pastiglia/e agitando.

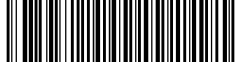


Posizionare la **cuvetta
del campione** nel
vano di misurazione.
Fare attenzione al
posizionamento.



Eseguire il test.

Sul display compare il risultato come valore pH.



Metodo chimico

Rosso fenolo

Appendice

Interferenze

IT

Interferenze permanenti

1. I campioni di acqua con una bassa durezza carbonatica* possono far ottenere valori di pH errati.

* $K_{S4,3} < 0,7 \text{ mmol/l} \triangleq \text{alcalinità totale} < 35 \text{ mg/L CaCO}_3$.

Interferenze escludibili

1. I valori di pH minori di 6,5 e maggiori di 8,4 possono dare risultati entro il range di misura. Si consiglia un test di plausibilità (misuratore di pH).

2. Errore salino:

Con una salinità fino a 2 g/L non è previsto alcun errore salino significativo dovuto alla salinità della pastiglia di reagente. Con salinità maggiori è necessario correggere i valori di misura nel modo seguente:

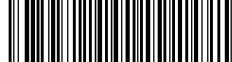
Salinità del campione in g/L	30 (acqua di mare)	60	120	180
Correzione	-0,15 ¹⁾	-0,21 ²⁾	-0,26 ²⁾	-0,29 ²⁾

¹⁾ secondo Kolthoff (1922)

²⁾ secondo Parson e Douglas (1926)

Riferimenti bibliografici

Colorimetric Chemical Analytical Methods, 9th Edition, London

**Valore pH L****M331****6.5 - 8.4 pH****PH****Rosso fenolo**

IT

Materiale

Materiale richiesto (in parte facoltativo):

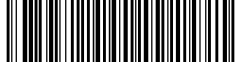
Reagenti	Unità di imballaggio	N. ordine
Soluzione di rosso fenolo	15 mL	471040
Soluzione di rosso fenolo	100 mL	471041
Soluzione di rosso fenolo in confezione da 6	1 pz.	471046

Preparazione

1. Per via della dimensione variabile delle gocce, il risultato della misurazione può presentare divergenze maggiori di quanto avvenga con l'uso delle pastiglie. Utilizzando una pipetta (0,18 ml corrispondono a 6 gocce) si può ridurre al minimo questa divergenza.

Note

1. Dopo l'uso bisogna richiudere immediatamente la boccetta contagocce con il relativo tappo dello stesso colore.
2. Conservare al fresco il reagente a una temperatura compresa tra +6 °C e +10 °C.



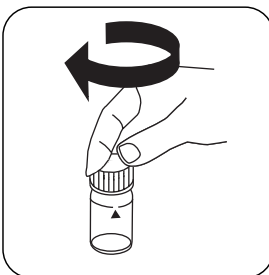
Esecuzione della rilevazione Valore pH con reagente liquido

Selezionare il metodo nel dispositivo.

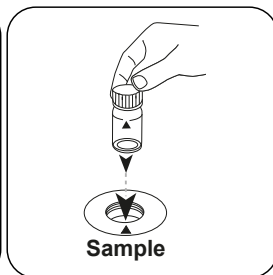
Per questo metodo, non è necessario eseguire una misurazione ZERO ogni volta sui seguenti dispositivi: XD 7000, XD 7500



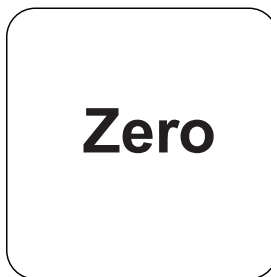
Riempire una cuvetta da 24 mm con **10 mL di campione**.



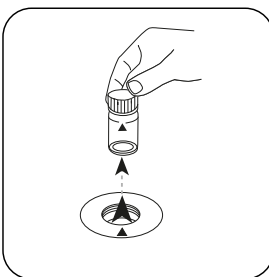
Chiudere la/e cuvetta/e.



Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.

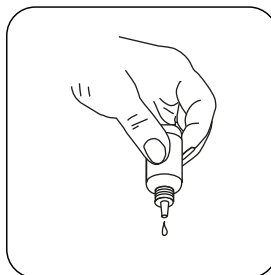


Eseguire il Zero.

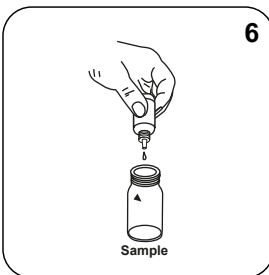


Prelevare la cuvetta dal vano di misurazione.

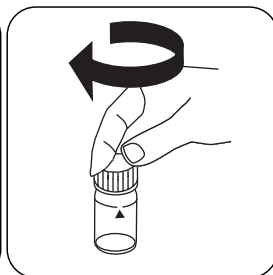
In caso di dispositivi che **non richiedono una misurazione ZERO**, iniziare da qui.



Tenere le boccette contagocce in posizione verticale e introdurre, premendo lentamente, gocce della stessa dimensione nella cuvetta.



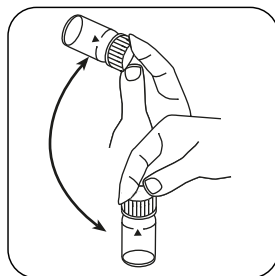
Introdurre **6 gocce di PHENOL Red-Lösung** nella cuvetta del campione.



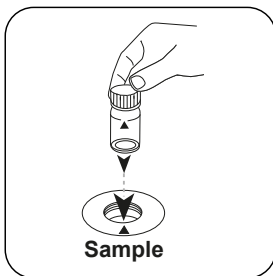
Chiudere la/e cuvetta/e.



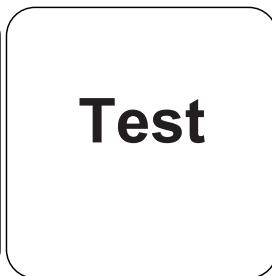
IT



Miscelare il contenuto capovolgendo.

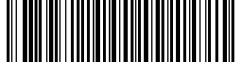


Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



Eseguire il test.

Sul display compare il risultato come valore pH.



Metodo chimico

Rosso fenolo

Appendice

Interferenze

IT

Interferenze escludibili

1. Errore salino: Correzione del valore di misura (valori medi) per i campioni con una salinità di:

2.	Salinità del campione	Correzione
	30 g/L (acqua di mare)	-0,15 ¹⁾
	60 g/L	-0,21 ²⁾
	120 g/L	-0,26 ²⁾
	180 g/L	-0,29 ²⁾
	¹⁾ secondo Kolthoff (1922)	²⁾ secondo Parson e Douglas (1926)

3. Nell'analisi di acqua clorurata, il tenore di cloro residuo può influenzare la reazione cromatica del reagente liquido. Tale interferenza viene evitata immettendo un piccolo cristallo di tiosolfato di sodio ($\text{Na}_2\text{S}_2\text{O}_3 \cdot 5 \text{H}_2\text{O}$) nella soluzione campione prima di aggiungere la soluzione PHENOL RED.

Riferimenti bibliografici

Colorimetric Chemical Analytical Methods, 9th Edition, London

KS4.3 T / 20

Naam van de methode

Meetbereik

Chemische methode



Nummer methode

K_{S4.3} T

0.1 - 4 mmol/l K_{S4.3}

Zuur / Indicator

M20

S:4.3

Uitlezing in MD
100 MD 110 / MD 200

Streepjescode ter identificatie van de methode

Instrumentspecifieke informatie

De test kan op de volgende apparaten worden uitgevoerd. Bovendien worden de vereiste cuvette en het absorptiebereik van de fotometer aangegeven.

Toestellen	Cuvet	λ	Meetbereik
MD 200, MD 600, MD 610, MD 640, MultiDirect, PM 620, PM 630	ø 24 mm	610 nm	0.1 - 4 mmol/l K _{S4.3}
SpectroDirect, XD 7000, XD 7500	ø 24 mm	615 nm	0.1 - 4 mmol/l K _{S4.3}

Reagentia

Benodigd materiaal (deels optioneel):

Titel	Verpakkingseenheid	Bestelnr.
Alka-M-Photometer	Tablet / 100	513210BT
Alka-M-Photometer	Tablet / 250	513211BT

Toepassingsbereik

- Afvalwaterzuivering
- Behandeling drinkwater
- Zuivering vervuild water

Aantekeningen

1. De termen alkaliteit-m, m-waarde, totale alkaliteit en zuurcapaciteit_{K_{S4.3}} zijn identiek.
2. De exacte naleving van het monstervolume van 10 ml is bepalend voor de nauwkeurigheid van het analysesresultaat.

Beknopte naam conform de norm ISO 639-1

Herziene versie

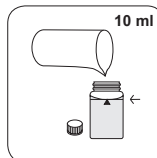
NL Handboek van Methoden 01/20

Uitvoering van de meting

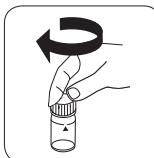
Uitvoering van de bepaling Zuurcapaciteit $K_{s4.3}$ met tablet

De methode in het apparaat selecteren.

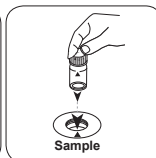
Voor deze methode moet bij de volgende apparaten geen nulmeting worden uitgevoerd:
XD 7000, XD 7500



Spoelbakje van 24 mm met **10 ml staal** vullen.

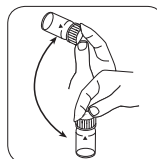


De spoelbakjes afsluiten.

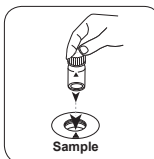


Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.

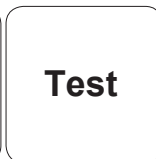
• • •



Tabletten oplossen door om te draaien



Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.



De toets **TEST** (XD: **START**) indrukken.

De display toont het resultaat als Zuurcapaciteit $K_{s4.3}$.

Test

**Chloor T****M100****0.01 - 6.0 mg/L Cl₂ ^{a)}****CL6****DPD**

NL

Reagentia

Benodigd materiaal (deels optioneel):

Reagentia	Verpakkingseenheid	Bestelnr.
DPD Nr. 1	Tablet / 100	511050BT
DPD Nr. 1	Tablet / 250	511051BT
DPD Nr. 1	Tablet / 500	511052BT
DPD Nr. 3	Tablet / 100	511080BT
DPD Nr. 3	Tablet / 250	511081BT
DPD Nr. 3	Tablet / 500	511082BT
DPD Nr. 1 hoog calcium ^{e)}	Tablet / 100	515740BT
DPD Nr. 1 hoog calcium ^{e)}	Tablet / 250	515741BT
DPD Nr. 1 hoog calcium ^{e)}	Tablet / 500	515742BT
DPD Nr. 3 hoog calcium ^{e)}	Tablet / 100	515730BT
DPD Nr. 3 hoog calcium ^{e)}	Tablet / 250	515731BT
DPD Nr. 3 hoog calcium ^{e)}	Tablet / 500	515732BT
DPD Nr. 4	Tablet / 100	511220BT
DPD Nr. 4	Tablet / 250	511221BT
DPD Nr. 4	Tablet / 500	511222BT
DPD No. 3 Evo	Tablet / 100	511420BT
DPD No. 3 Evo	Tablet / 250	511421BT
DPD No. 3 Evo	Tablet / 500	511422BT
DPD Nr.4 Evo	Tablet / 100	511970BT
DPD Nr. 4 Evo	Tablet / 250	511971BT
DPD Nr. 4 Evo	Tablet / 500	511972BT

Beschikbare standaarden

Omschrijving	Verpakkingseenheid	Bestelnr.
ValidCheck Chloor 1,5 mg/l	1 St.	48105510

Bemonstering

1. Tijdens de monstervoorbereiding moet worden vermeden dat het chloor wordt uitgestoten, bijvoorbeeld door pipetteren en schudden.
2. De analyse moet onmiddellijk na de bemonstering worden uitgevoerd.

Voorbereiding

1. Het schoonmaken van de spoelbakjes:
Aangezien veel huishoudelijke reinigingsmiddelen (bijv. afwasmiddelen) minder schadelijke stoffen bevatten, kan de bepaling van chloor leiden tot minder goede resultaten. Om deze meetfout uit te sluiten, moeten de glasapparaten chloorvrij zijn. Hiertoe wordt het glaswerk gedurende één uur onder natriumhypochlorietoplossing (0,1 g/L) bewaard en vervolgens grondig gespoeld met gedeïoniseerd water.
2. Voor de individuele bepaling van vrij chloor en totaal chloor is het zinvol om een aparte set spoelbakjes te gebruiken (zie EN ISO 7393-2, paragraaf 5.3).
3. De DPD-kleurontwikkeling vindt plaats bij een pH-waarde van 6,2 tot 6,5. De reagentia bevatten daarom een buffer voor de aanpassing van de pH-waarde. Sterk alkalisch of zuur water moet echter vóór de analyse in een pH-gebied tussen 6 en 7 (met 0,5 mol/l-zwavelzuur of 1 mol/l-natriumhydroxideoplossing) worden geplaatst.

Aantekeningen

1. EVO-tabletten kunnen worden gebruikt als alternatief voor de overeenkomstige standaardtabletten (bv. DPD nr. 3 EVO in plaats van DPD nr. 3).



Uitvoering van de bepaling vrij chloor met tablet

De methode in het apparaat selecteren.

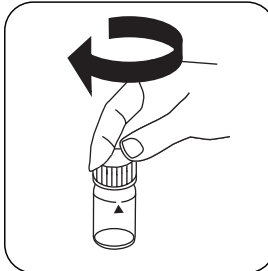
Selecteer bovendien de bepaling: vrij

Voor deze methode hoeft niet elke keer een nulmeting uitgevoerd te worden op de volgende apparaten: XD 7000, XD 7500

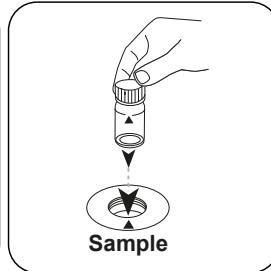
NL



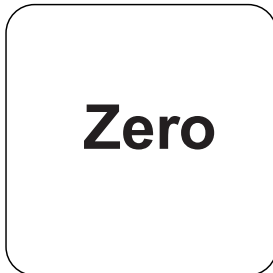
Spoelbakje van 24 mm met **10 mL staal** vullen.



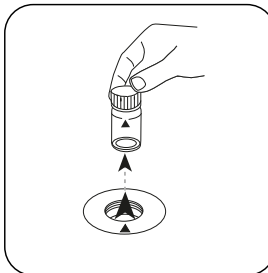
De spoelbakjes afsluiten.



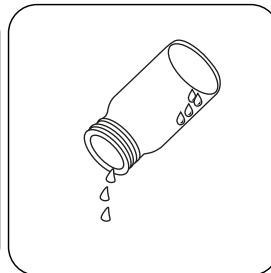
Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.



Nul uitvoeren.

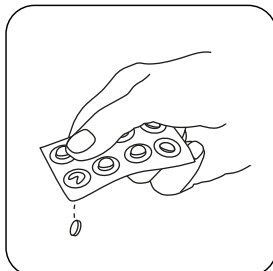


Het spoelbakje uit de meetschacht nemen.

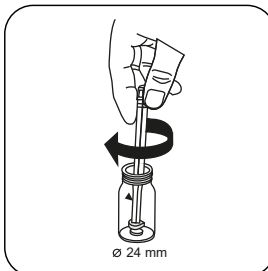


Het spoelbakje tot op enkele druppels ledigen.

Bij apparaten die **geen nulmeting** vereisen, **hier beginnen**.



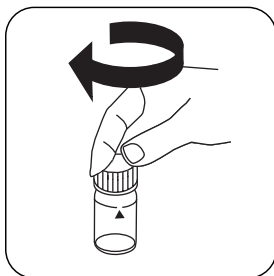
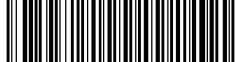
Een **DPD Nr. 1** tablet toevoegen.



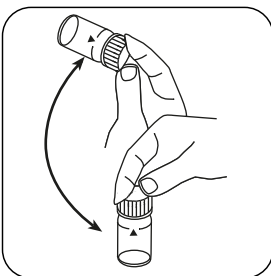
De tabletten onder lichte rotatie verpletteren.



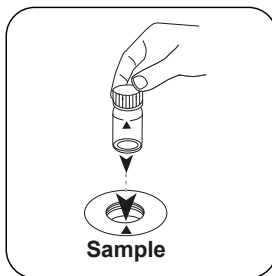
Het spoelbakje tot aan de **markering van 10 mL** met het **staal** vullen.



De spoelbakjes afsluiten.



Tabletten oplossen door om te draaien



Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.

Test

Test uitvoeren.

De display toont het resultaat in mg/L vrij chloor.

Uitvoering van de bepaling totaal chloor met tablet

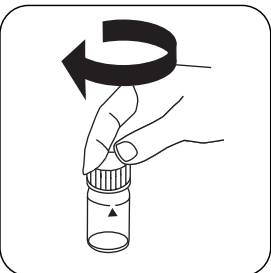
De methode in het apparaat selecteren.

Selecteer bovendien de bepaling: totaal

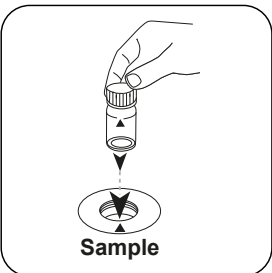
Voor deze methode hoeft niet elke keer een nulmeting uitgevoerd te worden op de volgende apparaten: XD 7000, XD 7500



Spoelbakje van 24 mm met **10 mL staal** vullen.



De spoelbakjes afsluiten.



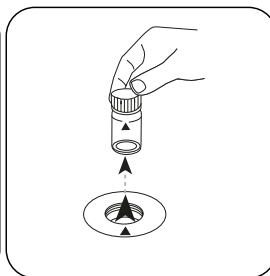
Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.



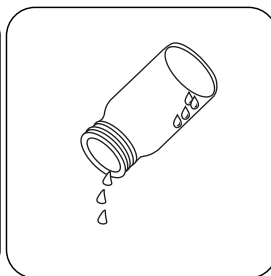
Zero

NL

Nul uitvoeren.

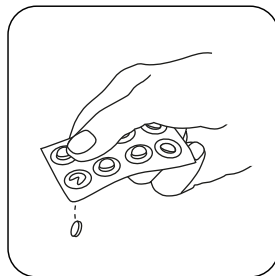


Het spoelbakje uit de meetschacht nemen.

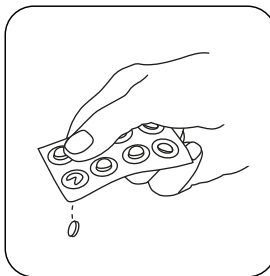


Het spoelbakje tot op enkele druppels ledigen.

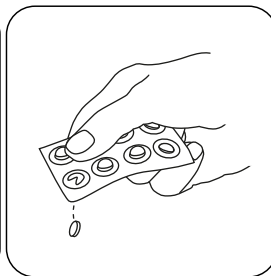
Bij apparaten die **geen nulmeting** vereisen, **hier beginnen**.



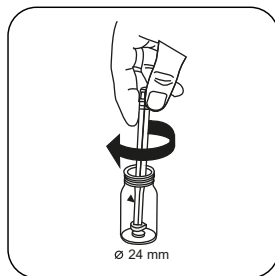
Een DPD Nr. 1 tablet toevoegen.



Een DPD Nr. 3 tablet toevoegen.



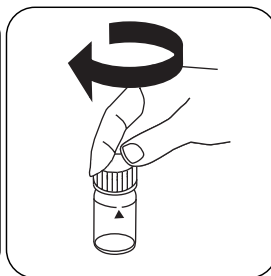
Als alternatief voor DPD nr. 1 en nr. 3 tabletten kan 1 DPD nr. 4 tablet worden toegevoegd.



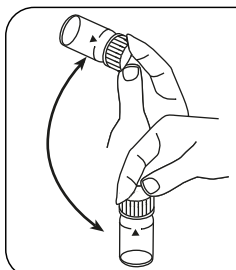
De tabletten onder lichte rotatie verpletteren.



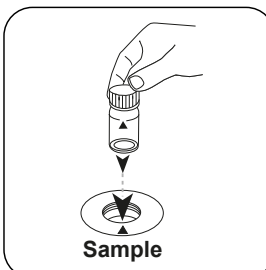
Het spoelbakje tot aan de **markering van 10 mL** met het **staal** vullen.



De spoelbakjes afsluiten.



Tabletten oplossen door om te draaien

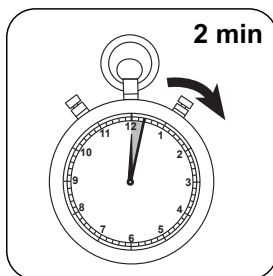


Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.

Test

Test uitvoeren.

NL



De reactietijd van 2 minuten afwachten.

Na afloop van de reactietijd wordt de meting automatisch uitgevoerd.

De display toont het resultaat in mg/L Totaal chloor.

Uitvoering van de bepaling gedifferentieerd chloor met tablet

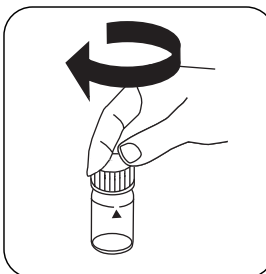
De methode in het apparaat selecteren.

Selecteer bovendien de bepaling: gedifferentieerd

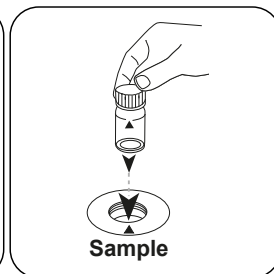
Voor deze methode hoeft niet elke keer een nulmeting uitgevoerd te worden op de volgende apparaten: XD 7000, XD 7500



Spoelbakje van 24 mm met **10 mL staal** vullen.



De spoelbakjes afsluiten.

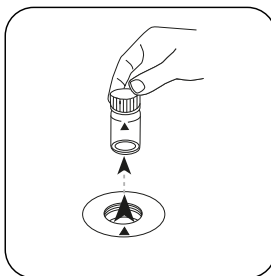


Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.

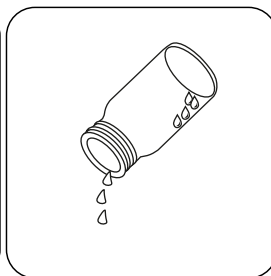


Zero

Nul uitvoeren.

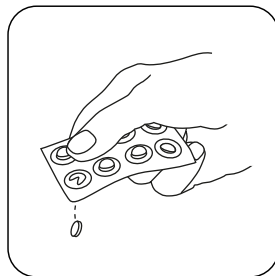


Het spoelbakje uit de meetschacht nemen.

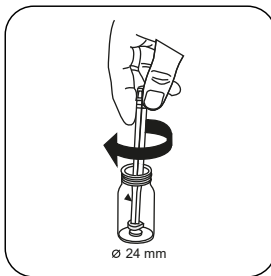


Het spoelbakje tot op enkele druppels ledigen.

Bij apparaten die **geen nulmeting** vereisen, **hier beginnen**.



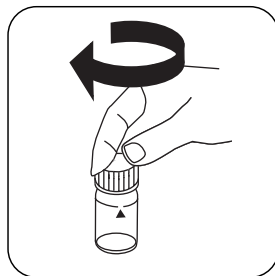
Een DPD Nr. 1 tablet toevoegen.



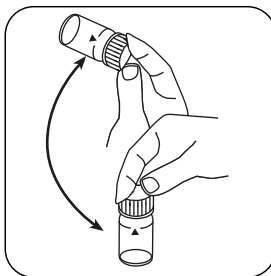
De tabletten onder lichte rotatie verpletteren.



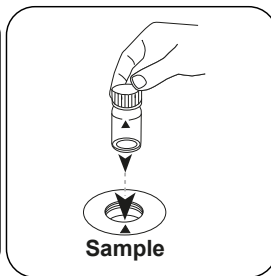
Het spoelbakje tot aan de **markering van 10 mL** met het **staal** vullen.



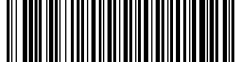
De spoelbakjes afsluiten.



Tabletten oplossen door om te draaien

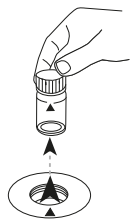


Het **staal spoelbakje** in de meetschacht plaatsen. Op de positionering letten.

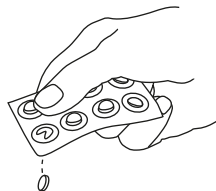


Test

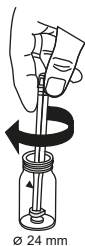
Test uitvoeren.



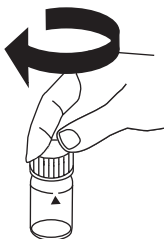
Het spoelbakje uit de meetschacht nemen.



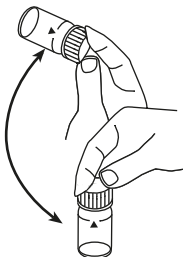
Een DPD Nr. 3 tablet toevoegen.



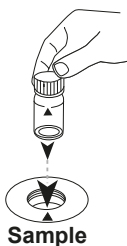
De tabletten onder lichte rotatie verpletteren.



De spoelbakjes afsluiten.



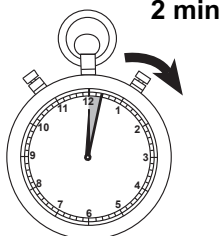
Tabletten oplossen door om te draaien



Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.

Test

Test uitvoeren.



De reactietijd van **2 minuten** afwachten.

Na afloop van de reactietijd wordt de meting automatisch uitgevoerd.

De display toont het resultaat in mg/L vrij chloor, mg/l gebonden chloor, mg/l totaal chloor.



Chemische methode

DPD

Aanhangsel

NL

Verstoringen

Permanente verstoringen

- Alle oxidatiemiddelen in de monsters reageren als chloor, wat tot extra resultaten leidt.

Uit te sluiten verstoringen

- Storingen veroorzaakt door koper en ijzer(III) worden door EDTA geëlimineerd.
- Bij monsters met een hoog calciumgehalte* en/of een hoge geleidbaarheid* kan het gebruik van reagenstabletten leiden tot vertroebeling van het monster en de daarmee samenhangende onjuiste meting. In dit geval zijn de reagenstabletten DPD-nr. 1 High Calcium en het reagenstablet DPD-nr. 3 High Calcium te gebruiken.
*exacte waarden kunnen niet worden gegeven omdat de troebelheidsvorming afhankelijk is van de aard en samenstelling van het monsterwater.
- Concentraties van meer dan 10 mg/L chloor, bij gebruik van tabletten, kunnen leiden tot resultaten binnen het meetbereik tot 0 mg/L. Als de chloorconcentratie te hoog is, moet het monster worden verdund met chloorvrij water. Voeg reagens toe aan 10 ml van het verdunde monster en herhaal de meting (plausibiliteitstest).

Verstoringen	verstoort vanaf
CrO_4^{2-}	0.01
MnO_2	0.01

Conform

EN ISO 7393-2

^{a)} bepaling van de vrije, gebonden, totaal mogelijke | ^{a)} hulpreagens, alternatief voor DPD-nr. 1 / nr. 3 in geval van troebelheid van het monster als gevolg van een hoog calciumionengehalte en/of een hoge geleidbaarheid

**Chloor L****M101****0.02 - 4.0 mg/L Cl₂ ^{a)}****CL6****DPD**

NL

Reagentia

Benodigd materiaal (deels optioneel):

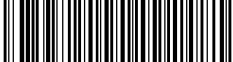
Reagentia	Verpakkingseenheid	Bestelnr.
DPD 1 bufferoplossing, blauw flesje	15 mL	471010
DPD 1-bufferoplossing	100 mL	471011
DPD 1 bufferoplossing in verpakking van 6 stuks	1 St.	471016
DPD 1 reagensoplossing, groen flesje	15 mL	471020
DPD 1-reagensoplossing	100 mL	471021
DPD 1 reagensoplossing in verpakking van 6 stuks	1 St.	471026
DPD 3 oplossing, rood flesje	15 mL	471030
DPD 3 oplossing	100 mL	471031
DPD 3 oplossing in verpakking van 6 stuks	1 St.	471036
DPD reagentia set	1 St.	471056

Beschikbare standaarden

Omschrijving	Verpakkingseenheid	Bestelnr.
ValidCheck Chloor 1,5 mg/l	1 St.	48105510

Bemonstering

1. Tijdens de monstervoorbereiding moet worden vermeden dat het chloor wordt uitgestoten, bijvoorbeeld door pipetteren en schudden.
2. De analyse moet onmiddellijk na de bemonstering worden uitgevoerd.



Voorbereiding

1. Het schoonmaken van de spoelbakjes:
Aangezien veel huishoudelijke reinigingsmiddelen (bijv. afwasmiddelen) minder schadelijke stoffen bevatten, kan de bepaling van chloor leiden tot minder goede resultaten. Om deze meetfout uit te sluiten, moeten de glasapparaten chloorvrij zijn. Hiertoe wordt het glaswerk gedurende één uur onder natriumhypochlorietoplossing (0,1 g/L) bewaard en vervolgens grondig gespoeld met gedeïoniseerd water.
2. Voor de individuele bepaling van vrij chloor en totaal chloor is het zinvol om een aparte set spoelbakjes te gebruiken (zie EN ISO 7393-2, paragraaf 5.3).
3. De DPD-kleurontwikkeling vindt plaats bij een pH-waarde van 6,2 tot 6,5. De reagentia bevatten daarom een buffer voor de aanpassing van de pH-waarde. Sterk alkalisch of zuur water moet echter vóór de analyse in een pH-gebied tussen 6 en 7 (met 0,5 mol/l-zwavelzuur of 1 mol/l-natriumhydroxideoplossing) worden geplaatst.

Aantekeningen

1. Na gebruik moeten de druppelflacons onmiddellijk worden gesloten met de schroefdop van dezelfde kleur.
2. Bewaar het reagens ingesteld op +6 °C tot +10 °C op een koele plaats.



Uitvoering van de bepaling vrij chloor met vloeibaar reagens

De methode in het apparaat selecteren.

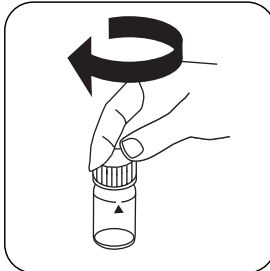
Selecteer bovendien de bepaling: vrij

Voor deze methode hoeft niet elke keer een nulmeting uitgevoerd te worden op de volgende apparaten: XD 7000, XD 7500

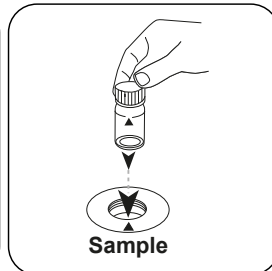
NL



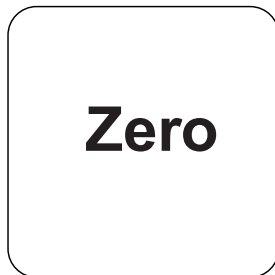
Spoelbakje van 24 mm met **10 mL staal** vullen.



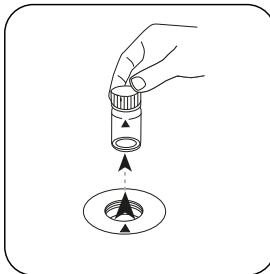
De spoelbakjes afsluiten.



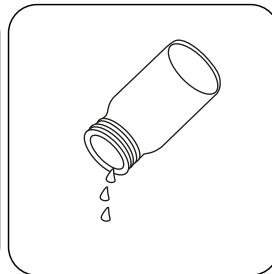
Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.



Nul uitvoeren.

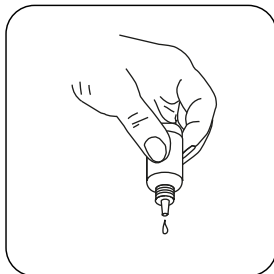


Het spoelbakje uit de meetschacht nemen.

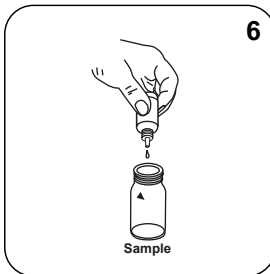


Het spoelbakje ledigen.

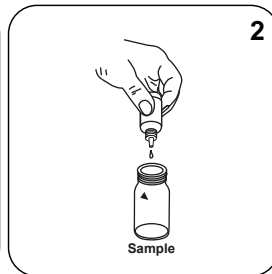
Bij apparaten die **geen nulmeting** vereisen, **hier beginnen**.



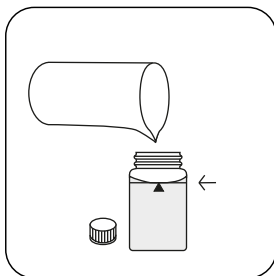
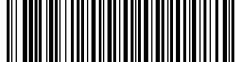
De druppelflessen verticaal houden en even grote druppels toevoegen door langzaam te drukken.



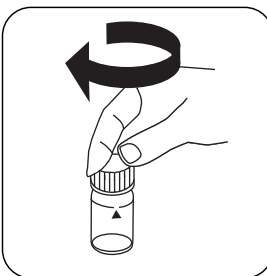
6 druppels DPD 1 bufferoplossing in het staalspoelbakje doen.



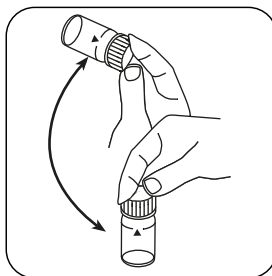
2 druppels DPD 1 reagensoplossing in het staalspoelbakje doen.



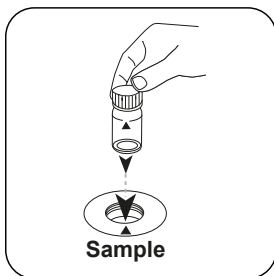
Het spoelbakje tot aan de **markering van 10 mL** met het **staal** vullen.



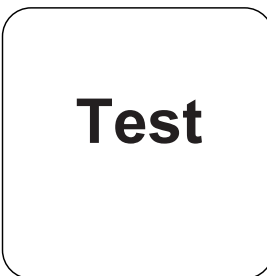
De spoelbakjes afsluiten.



De inhoud mengen door om te draaien.



Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.



Test uitvoeren.

De display toont het resultaat in mg/L vrij chloor.

Uitvoering van de bepaling totaal chloor met vloeibaar reagens

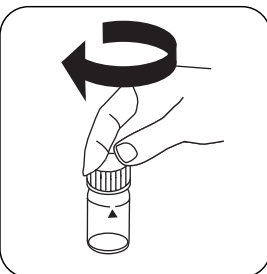
De methode in het apparaat selecteren.

Selecteer bovendien de bepaling: totaal

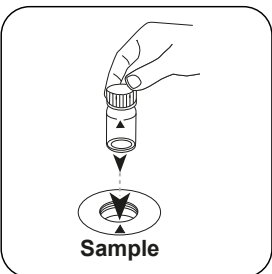
Voor deze methode hoeft niet elke keer een nulmeting uitgevoerd te worden op de volgende apparaten: XD 7000, XD 7500



Spoelbakje van 24 mm met **10 mL staal** vullen.



De spoelbakjes afsluiten.

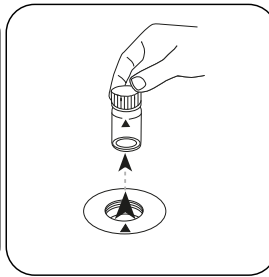


Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.

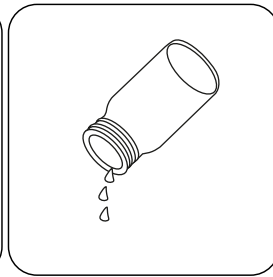


Zero

Nul uitvoeren.

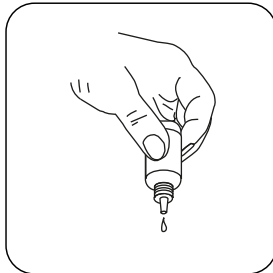


Het spoelbakje uit de meetschacht nemen.

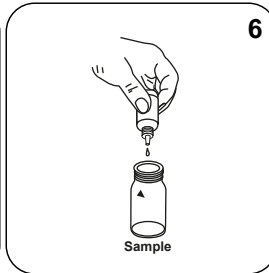


Het spoelbakje ledigen.

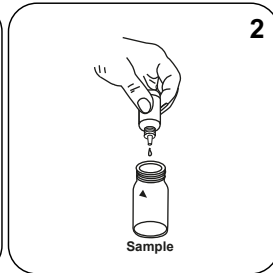
Bij apparaten die **geen nulmeting** vereisen, **hier beginnen**.



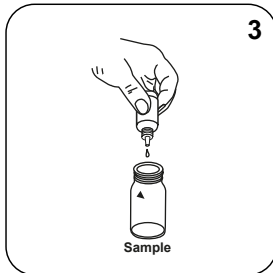
De druppelflessen verticaal houden en even grote druppels toevoegen door langzaam te drukken.



6 druppels DPD
1 bufferoplossing in het staalspoelbakje doen.



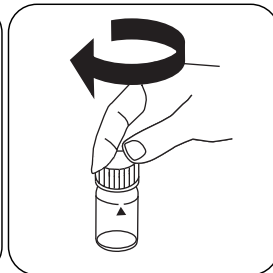
2 druppels DPD
1 reagensoplossing in het staalspoelbakje doen.



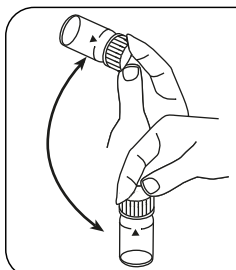
3 druppels DPD
3 oplossing in het staalspoelbakje doen.



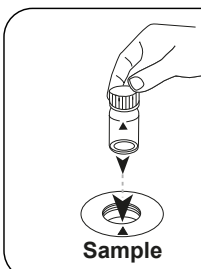
Het spoelbakje tot aan de **markering van 10 mL** met het **staal** vullen.



De spoelbakjes afsluiten.



De inhoud mengen door om te draaien.

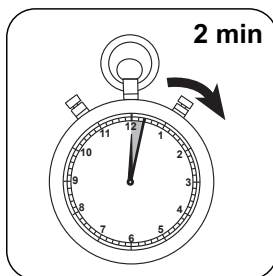


Het **staalspoelbakje** in de meetschacht plaats. Op de positionering letten.

Test

Test uitvoeren.

NL



De reactietijd van 2 minuten afwachten.

Na afloop van de reactietijd wordt de meting automatisch uitgevoerd.

De display toont het resultaat in mg/L Totaal chloor.

Uitvoering van de bepaling gedifferentieerd chloor met vloeibaar reagens

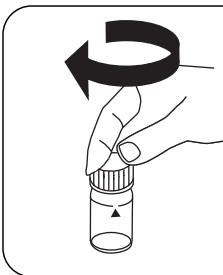
De methode in het apparaat selecteren.

Selecteer bovendien de bepaling: gedifferentieerd

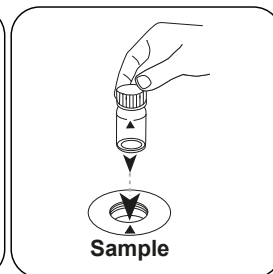
Voor deze methode hoeft niet elke keer een nulmeting uitgevoerd te worden op de volgende apparaten: XD 7000, XD 7500



Spoelbakje van 24 mm met **10 mL staal** vullen.



De spoelbakjes afsluiten.



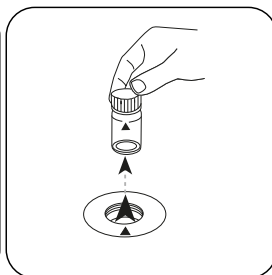
Het **staalspoelbakje** in de meetschacht plaats. Op de positionering letten.



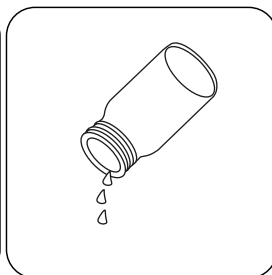
Zero

NL

Nul uitvoeren.

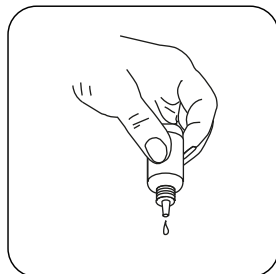


Het spoelbakje uit de meetschacht nemen.

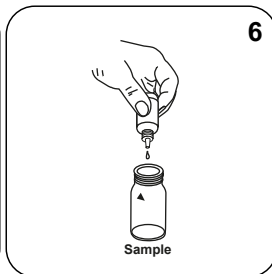


Het spoelbakje ledigen.

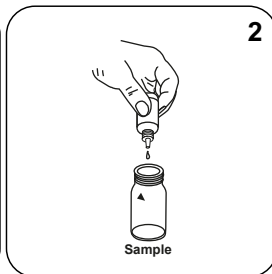
Bij apparaten die **geen nulmeting** vereisen, **hier beginnen**.



De druppelflessen verticaal houden en even grote druppels toevoegen door langzaam te drukken.



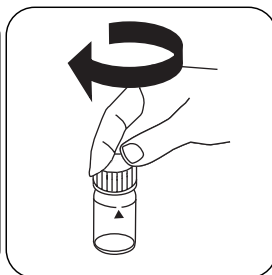
6 druppels DPD
1 bufferoplossing in het staalspoelbakje doen.



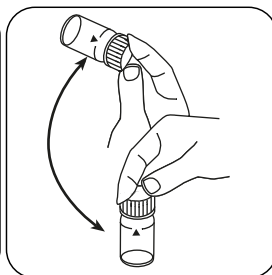
2 druppels DPD
1 reagensoplossing in het staalspoelbakje doen.



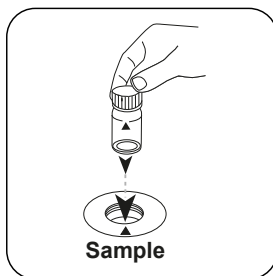
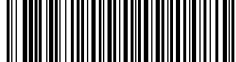
Het spoelbakje tot aan de **markering van 10 mL** met het **staal** vullen.



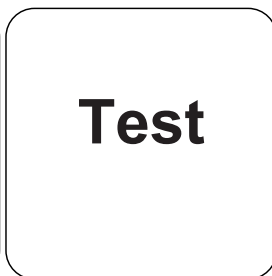
De spoelbakjes afsluiten.



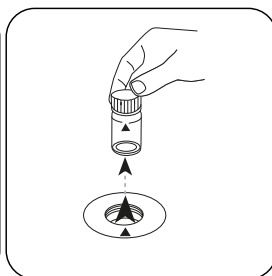
De inhoud mengen door om te draaien.



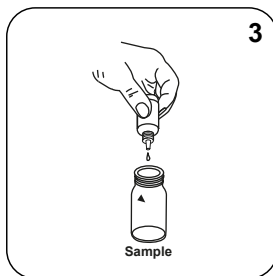
Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.



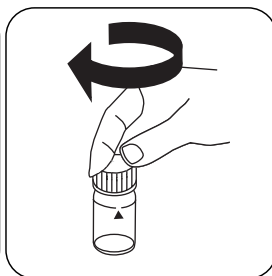
Test uitvoeren.



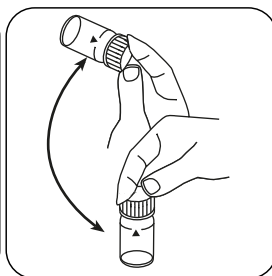
Het spoelbakje uit de meetschacht nemen.



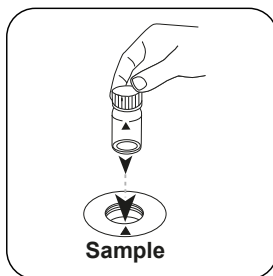
3 druppels DPD
3 oplossing in het staalspoelbakje doen.



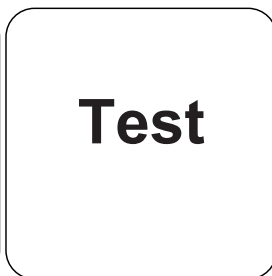
De spoelbakjes afsluiten.



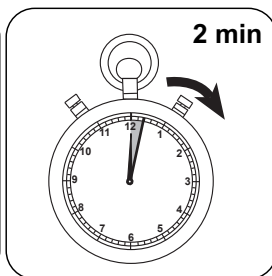
De inhoud mengen door om te draaien.



Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.



Test uitvoeren.



De reactietijd van
2 minuten afwachten.

Na afloop van de reactietijd wordt de meting automatisch uitgevoerd.

De display toont het resultaat in mg/L vrij chloor, mg/l gebonden chloor, mg/l totaal chloor.



Chemische methode

DPD

Aanhangsel

NL

Verstoringen

Permanente verstoringen

- Alle oxidatiemiddelen in de monsters reageren als chloor, wat tot extra resultaten leidt.

Uit te sluiten verstoringen

- Storingen veroorzaakt door koper en ijzer(III) worden door EDTA geëlimineerd.
- Concentraties van meer dan 4 mg/L chloor, bij gebruik van vloeibare reagentia, kunnen leiden tot resultaten binnen het meetbereik tot 0 mg/L. In dit geval moet het monster worden verdund met chloorvrij water. Voeg reagens toe aan 10 ml van het verdunde monster en herhaal de meting (plausibiliteitstest).

Verstoringen	verstoort vanaf
CrO_4^{2-}	0,01
MnO_2	0,01

Conform

EN ISO 7393-2

^{a)} bepaling van de vrije, gebonden, totaal mogelijke

**Chloor HR T****M103****0.1 - 10 mg/L Cl₂ ^{a)}****CL10****DPD**

NL

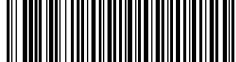
Reagentia

Benodigd materiaal (deels optioneel):

Reagentia	Verpakkingseenheid	Bestelnr.
DPD Nr. 1 HR	Tablet / 100	511500BT
DPD Nr. 1 HR	Tablet / 250	511501BT
DPD Nr. 1 HR	Tablet / 500	511502BT
DPD Nr. 3 HR	Tablet / 100	511590BT
DPD Nr. 3 HR	Tablet / 250	511591BT
DPD Nr. 3 HR	Tablet / 500	511592BT
Set DPD nr. 1 HR/nr. 3 HR #	per 100	517791BT
Set DPD nr. 1 HR/nr. 3 HR #	per 250	517792BT
DPD Nr. 1 hoog calcium ^{e)}	Tablet / 100	515740BT
DPD Nr. 1 hoog calcium ^{e)}	Tablet / 250	515741BT
DPD Nr. 1 hoog calcium ^{e)}	Tablet / 500	515742BT
DPD Nr. 3 hoog calcium ^{e)}	Tablet / 100	515730BT
DPD Nr. 3 hoog calcium ^{e)}	Tablet / 250	515731BT
DPD Nr. 3 hoog calcium ^{e)}	Tablet / 500	515732BT
DPD Nr.3 HR Evo	Tablet / 100	511920BT
DPD Nr. 3 HR Evo	Tablet / 250	511921BT
DPD Nr. 3 HR Evo	Tablet / 500	511922BT

Bemonstering

1. Tijdens de monstervoorbereiding moet worden vermeden dat het chloor wordt uitgestoten, bijvoorbeeld door pipetteren en schudden.
2. De analyse moet onmiddellijk na de bemonstering worden uitgevoerd.



Voorbereiding

1. Het schoonmaken van de spoelbakjes:
Aangezien veel huishoudelijke reinigingsmiddelen (bijv. afwasmiddelen) minder schadelijke stoffen bevatten, kan de bepaling van chloor leiden tot minder goede resultaten. Om deze meetfout uit te sluiten, moeten de glasapparaten chloorvrij zijn. Hiertoe wordt het glaswerk gedurende één uur onder natriumhypochlorietoplossing (0,1 g/L) bewaard en vervolgens grondig gespoeld met gedeïoniseerd water.
2. Voor de individuele bepaling van vrij chloor en totaal chloor is het zinvol om een aparte set spoelbakjes te gebruiken (zie EN ISO 7393-2, paragraaf 5.3).
3. De DPD-kleurontwikkeling vindt plaats bij een pH-waarde van 6,2 tot 6,5. De reagentia bevatten daarom een buffer voor de aanpassing van de pH-waarde. Sterk alkalisch of zuur water moet echter vóór de analyse in een pH-gebied tussen 6 en 7 (met 0,5 mol/L-zwavelzuur of 1 mol/L-natriumhydroxideoplossing) worden geplaatst.

Aantekeningen

1. Evo-tabletten kunnen worden gebruikt als alternatief voor de overeenkomstige standaardtabletten (bv. DPD nr. 3 Evo in plaats van DPD nr. 3).



Uitvoering van de bepaling vrij chloor HR met tablet

De methode in het apparaat selecteren.

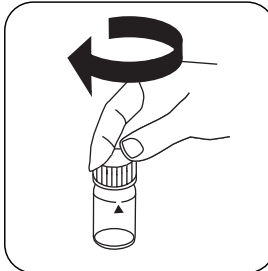
Selecteer bovendien de bepaling: vrij

Voor deze methode hoeft niet elke keer een nulmeting uitgevoerd te worden op de volgende apparaten: XD 7000, XD 7500

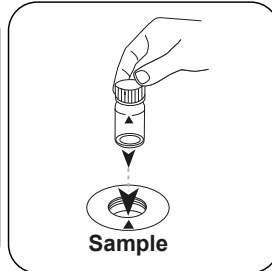
NL



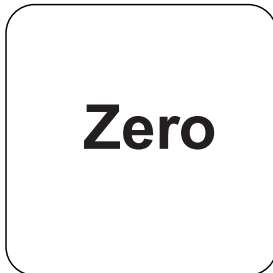
Spoelbakje van 24 mm met **10 mL staal** vullen.



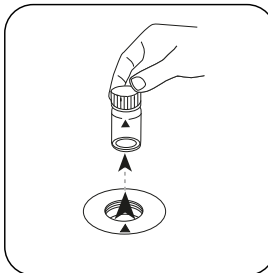
De spoelbakjes afsluiten.



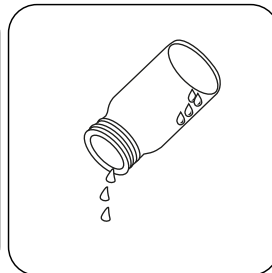
Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.



Nul uitvoeren.

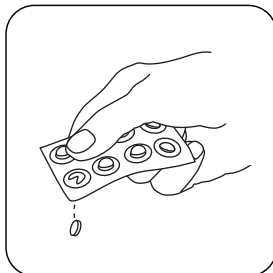


Het spoelbakje uit de meetschacht nemen.

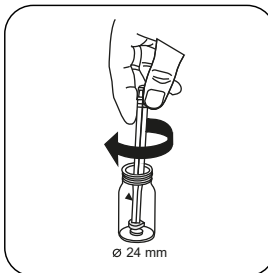


Het spoelbakje tot op enkele druppels ledigen.

Bij apparaten die **geen nulmeting** vereisen, **hier beginnen**.



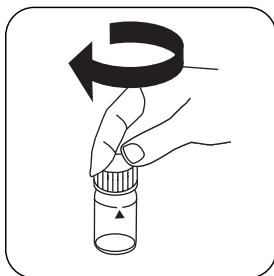
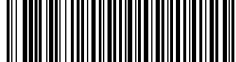
Een **DPD Nr. 1 HR tablet** toevoegen.



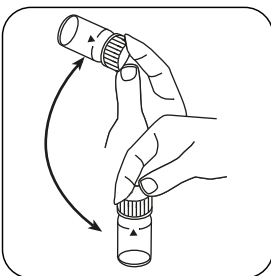
De tabletten onder lichte rotatie verpletteren.



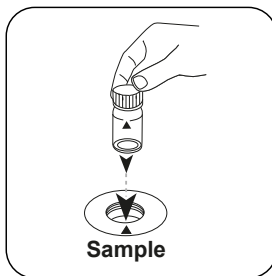
Het spoelbakje tot aan de **markering van 10 mL** met het **staal** vullen.



De spoelbakjes afsluiten.



Tabletten oplossen door om te draaien



Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.

Test

Test uitvoeren.

De display toont het resultaat in mg/L vrij chloor.

Uitvoering van de bepaling totaal chloor HR met tablet

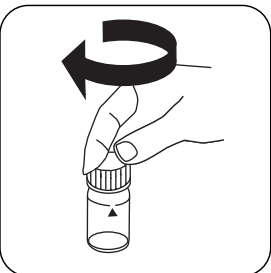
De methode in het apparaat selecteren.

Selecteer bovendien de bepaling: totaal

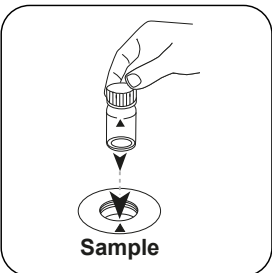
Voor deze methode hoeft niet elke keer een nulmeting uitgevoerd te worden op de volgende apparaten: XD 7000, XD 7500



Spoelbakje van 24 mm met **10 mL** staal vullen.



De spoelbakjes afsluiten.



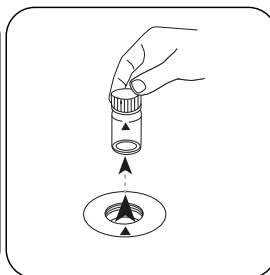
Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.



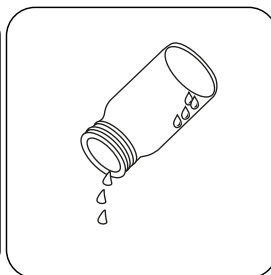
Zero

NL

Nul uitvoeren.

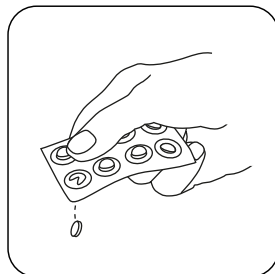


Het spoelbakje uit de meetschacht nemen.

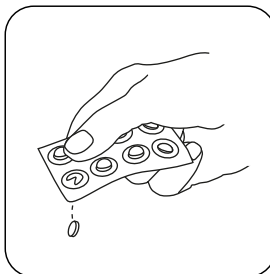


Het spoelbakje tot op enkele druppels ledigen.

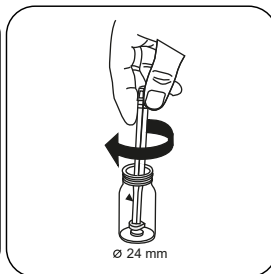
Bij apparaten die **geen nulmeting** vereisen, **hier beginnen**.



Een DPD Nr. 1 HR tablet toevoegen.



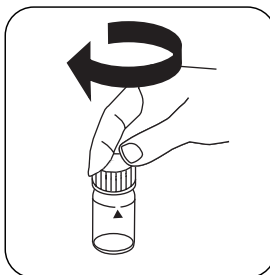
Een DPD Nr. 3 HR tablet toevoegen.



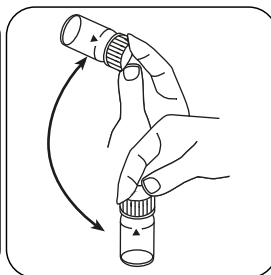
De tabletten onder lichte rotatie verpletteren.



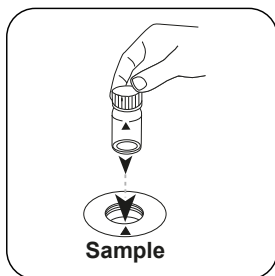
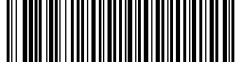
Het spoelbakje tot aan de **markering van 10 mL** met het **staal** vullen.



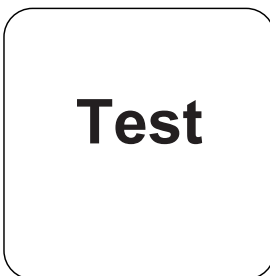
De spoelbakjes afsluiten.



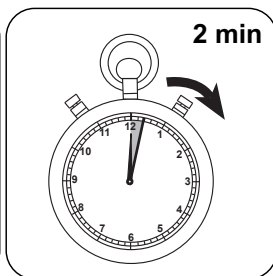
Tabletten oplossen door om te draaien



Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.



Test uitvoeren.



De reactietijd van **2 minuten** afwachten.

Na afloop van de reactietijd wordt de meting automatisch uitgevoerd.

De display toont het resultaat in mg/L Totaal chloor.

Uitvoering van de bepaling gedifferentieerd chloor HR met tablet

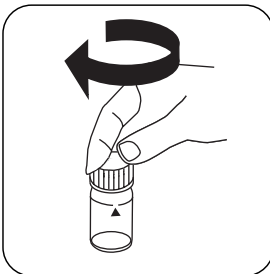
De methode in het apparaat selecteren.

Selecteer bovendien de bepaling: gedifferentieerd

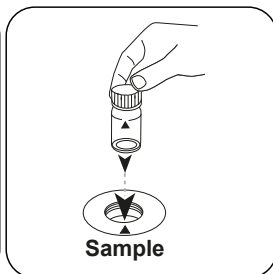
Voor deze methode hoeft niet elke keer een nulmeting uitgevoerd te worden op de volgende apparaten: XD 7000, XD 7500



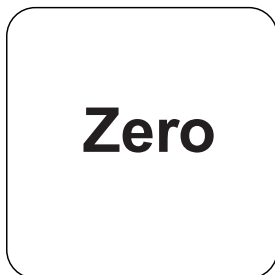
Spoelbakje van 24 mm met **10 mL** staal vullen.



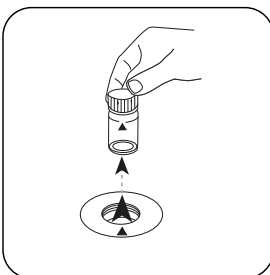
De spoelbakjes afsluiten.



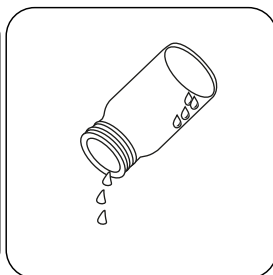
Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.



Nul uitvoeren.



Het spoelbakje uit de meetschacht nemen.

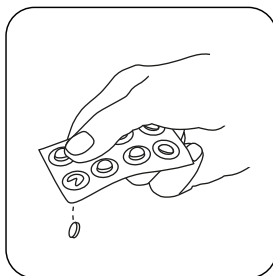


Het spoelbakje tot op enkele druppels ledigen.

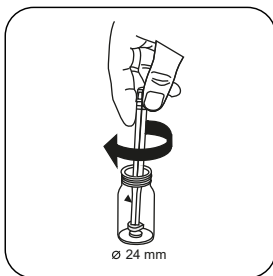
Bij apparaten die **geen nulmeting** vereisen, **hier beginnen**.



NL



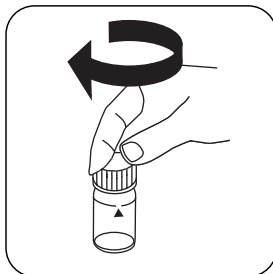
Een DPD Nr. 1 HR tablet toevoegen.



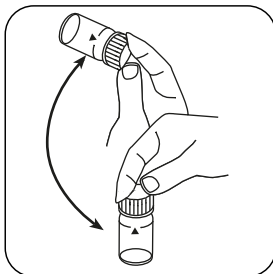
De tabletten onder lichte rotatie verpletteren.



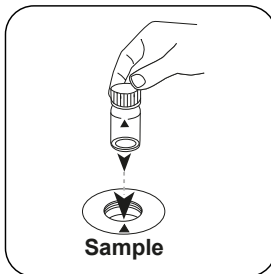
Het spoelbakje tot aan de **markering van 10 mL** met het **staal** vullen.



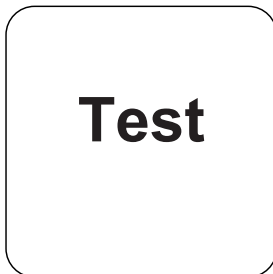
De spoelbakjes afsluiten.



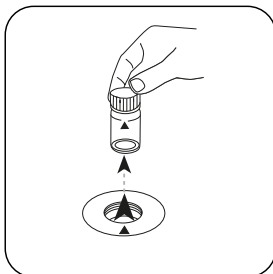
Tabletten oplossen door om te draaien



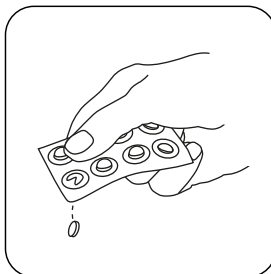
Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.



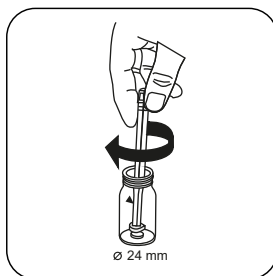
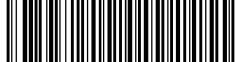
Test uitvoeren.



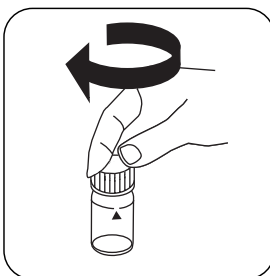
Het spoelbakje uit de meetschacht nemen.



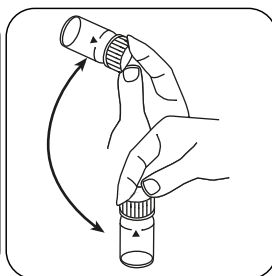
Een DPD Nr. 3 HR tablet toevoegen.



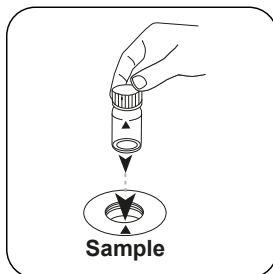
De tabletten onder lichte rotatie verpletteren.



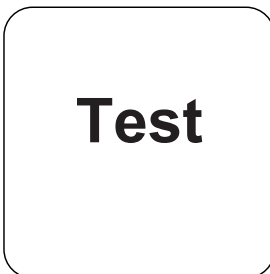
De spoelbakjes afsluiten.



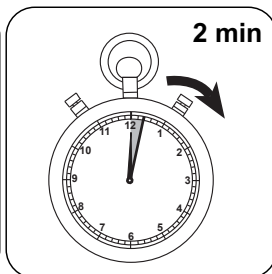
Tabletten oplossen door om te draaien



Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.



Test uitvoeren.



De reactietijd van **2 minuten** afwachten.

Na afloop van de reactietijd wordt de meting automatisch uitgevoerd.

De display toont het resultaat in mg/L vrij chloor, mg/l gebonden chloor, mg/l totaal chloor.



Chemische methode

DPD

Aanhangsel

NL

Verstoringen

Permanente verstoringen

- Alle oxidatiemiddelen in de monsters reageren als chloor, wat tot extra resultaten leidt.

Uit te sluiten verstoringen

- Storingen veroorzaakt door koper en ijzer(III) worden door EDTA geëlimineerd.
- Als de reagenstabletten worden gebruikt voor monsters met een hoog calciumgehalte* en/of een hoge geleidbaarheid*, kan het monster troebel worden en kan de meting onjuist zijn. In dit geval is het DPD-nummer een alternatief. 1 High Calcium en het reagenstablet DPD-nr. 3 High Calcium te gebruiken.

*exacte waarden kunnen niet worden gegeven omdat de troebelheidsvorming afhankelijk is van de aard en samenstelling van het monsterwater.

Conform

EN ISO 7393-2

^{a)} bepaling van de vrije, gebonden, totaal mogelijke | ^{a)} hulpreagens, alternatief voor DPD-nr. 1 / nr. 3 in geval van troebelheid van het monster als gevolg van een hoog calciumionengehalte en/of een hoge geleidbaarheid | * met inbegrip van de mengstaaf

**Chloor PP****M110****0.02 - 2 mg/L Cl₂^{a)}****CL2****DPD**

NL

Reagentia

Benodigd materiaal (deels optioneel):

Reagentia	Verpakkingseenheid	Bestelnr.
Chloor vrij DPD F10	Poeder / 100 St.	530100
Chloor vrij DPD F10	Poeder / 1000 St.	530103
Chloor totaal DPD F10	Poeder / 100 St.	530120
Chloor totaal DPD F10	Poeder / 1000 St.	530123

Beschikbare standaarden

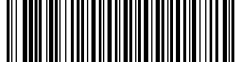
Omschrijving	Verpakkingseenheid	Bestelnr.
ValidCheck Chloor 1,5 mg/l	1 St.	48105510

Bemonstering

1. Tijdens de monstervoorbereiding moet worden vermeden dat het chloor wordt uitgestoten, bijvoorbeeld door pipetteren en schudden.
2. De analyse moet onmiddellijk na de bemonstering worden uitgevoerd.

Voorbereiding

1. Het schoonmaken van de spoelbakjes:
Aangezien veel huishoudelijke reinigingsmiddelen (bijv. afwasmiddelen) minder schadelijke stoffen bevatten, kan de bepaling van chloor leiden tot minder goede resultaten. Om deze meetfout uit te sluiten, moeten de glasapparaten chloorvrij zijn. Hiertoe wordt het glaswerk gedurende één uur onder natriumhypochlorietoplossing (0,1 g/L) bewaard en vervolgens grondig gespoeld met gedeïoniseerd water.
2. Voor de individuele bepaling van vrij chloor en totaal chloor is het zinvol om een aparte set spoelbakjes te gebruiken (zie EN ISO 7393-2, paragraaf 5.3).
3. De DPD-kleurontwikkeling vindt plaats bij een pH-waarde van 6,2 tot 6,5. De reagentia bevatten daarom een buffer voor de aanpassing van de pH-waarde. Sterk alkalisch of zuur water moet echter vóór de analyse in een pH-gebied tussen 6 en 7 (met 0,5 mol/l-zwavelzuur of 1 mol/l-natriumhydroxideoplossing) worden geplaatst.



Uitvoering van de bepaling vrij chloor met poederpakjes

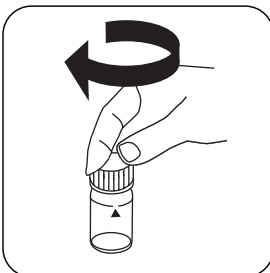
De methode in het apparaat selecteren.

Selecteer bovendien de bepaling: vrij

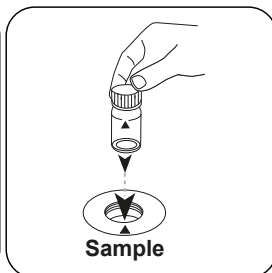
Voor deze methode hoeft niet elke keer een nulmeting uitgevoerd te worden op de volgende apparaten: XD 7000, XD 7500



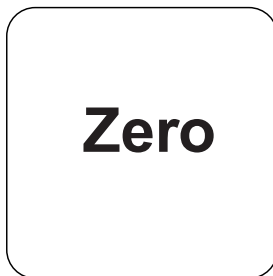
Spoelbakje van 24 mm met **10 mL staal** vullen.



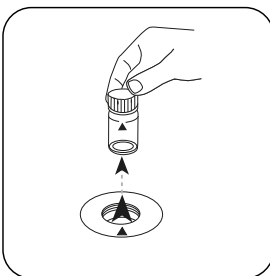
De spoelbakjes afsluiten.



Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.

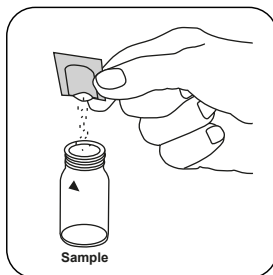


Nul uitvoeren.

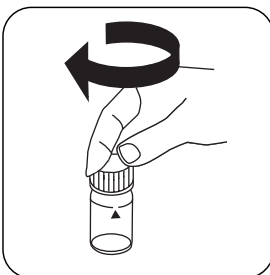


Het spoelbakje uit de meetschacht nemen.

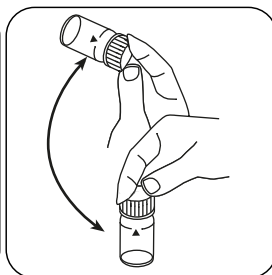
Bij apparaten die **geen nulmeting** vereisen, **hier beginnen**.



Een **Chloor FREE-DPD/ F10 poederpakje** toevoegen.



De spoelbakjes afsluiten.

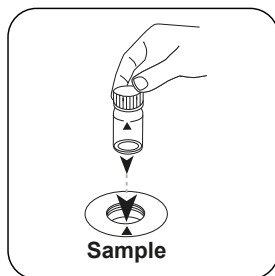


De inhoud mengen door om te draaien (20 sec.).

NL



NL



Test

Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.

De display toont het resultaat in mg/L vrij chloor.

Uitvoering van de bepaling totaal chloor met poederpakjes

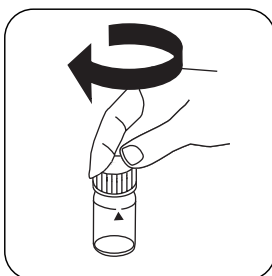
De methode in het apparaat selecteren.

Selecteer bovendien de bepaling: totaal

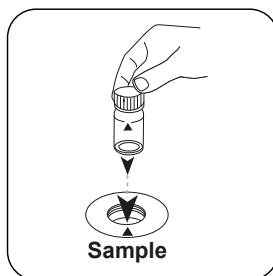
Voor deze methode hoeft niet elke keer een nulmeting uitgevoerd te worden op de volgende apparaten: XD 7000, XD 7500



Spoelbakje van 24 mm met **10 mL staal** vullen.



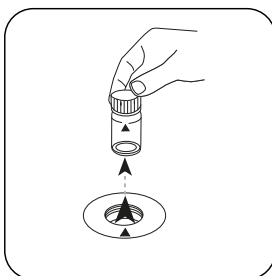
De spoelbakjes afsluiten.



Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.

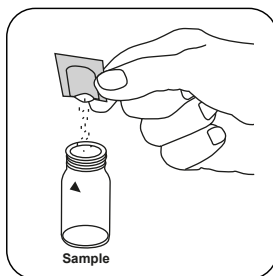
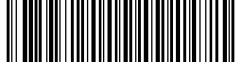
Zero

Nul uitvoeren.

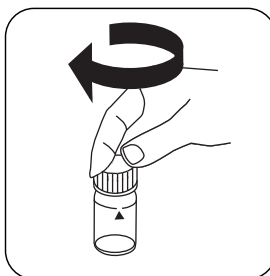


Het spoelbakje uit de meetschacht nemen.

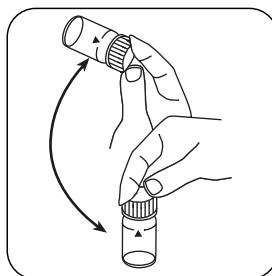
Bij apparaten die **geen nulmeting** vereisen, **hier beginnen**.



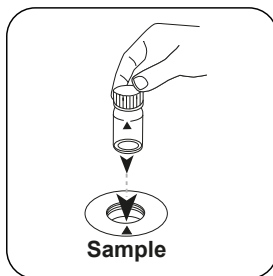
Een **Chloor TOTAL-DPD/ F10 poederpakje** toevoegen.



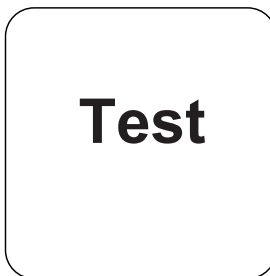
De spoelbakjes afsluiten.



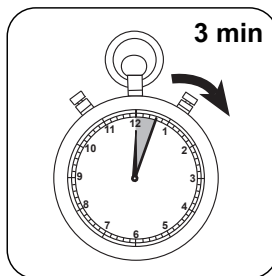
De inhoud mengen door om te draaien (20 sec.).



Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.



Test uitvoeren.



De reactietijd van **3 minuten** afwachten.

Na afloop van de reactietijd wordt de meting automatisch uitgevoerd.

De display toont het resultaat in mg/L Totaal chloor.

Uitvoering van de bepaling gedifferentieerd chloor met poederpakjes

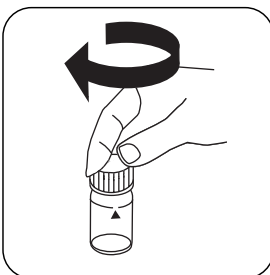
De methode in het apparaat selecteren.

Selecteer bovendien de bepaling: gedifferentieerd

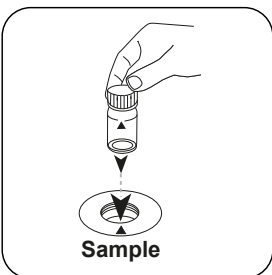
Voor deze methode hoeft niet elke keer een nulmeting uitgevoerd te worden op de volgende apparaten: XD 7000, XD 7500



Spoelbakje van 24 mm met **10 mL staal** vullen.



De spoelbakjes afsluiten.

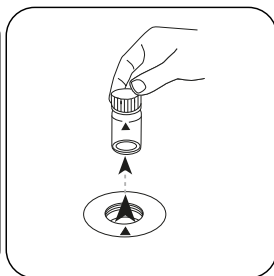


Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.



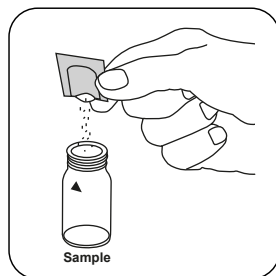
Zero

Nul uitvoeren.

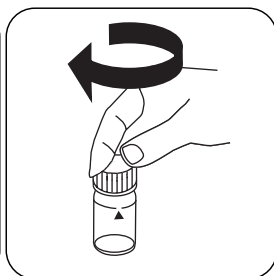


Het spoelbakje uit de meetschacht nemen.

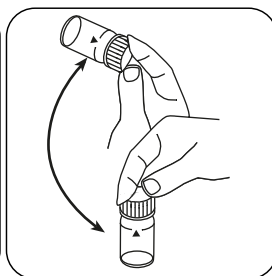
Bij apparaten die **geen nulmeting** vereisen, **hier beginnen**.



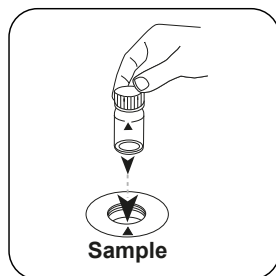
Een **Chloor FREE-DPD/ F10 poederpakje** toevoegen.



De spoelbakjes afsluiten.



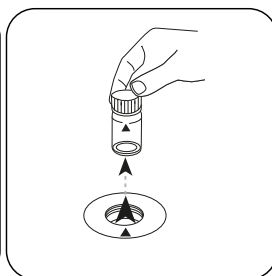
De inhoud mengen door om te draaien (20 sec.).



Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.

Test

Test uitvoeren.



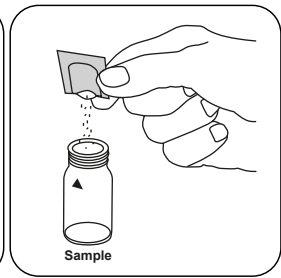
Het spoelbakje uit de meetschacht nemen.



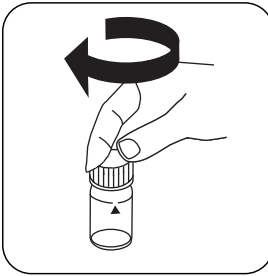
Het spoelbakje en het deksel van het spoelbakje grondig reinigen.



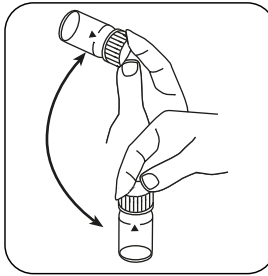
Spoelbakje van 24 mm met **10 mL staal** vullen.



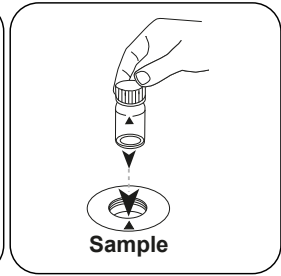
Een **TOTAAL-DPD/ F10 poederpakje** toevoegen.



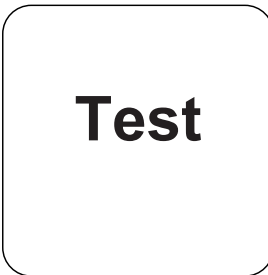
De spoelbakjes afsluiten.



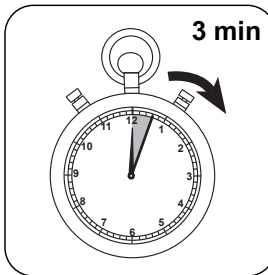
De inhoud mengen door om te draaien (20 sec.).



Het **staal spoelbakje** in de meetschacht plaatsen. Op de positionering letten.



Test uitvoeren.



De reactietijd van **3 minuten** afwachten.

Na afloop van de reactietijd wordt de meting automatisch uitgevoerd.

De display toont het resultaat in mg/L vrij chloor, mg/l gebonden chloor, mg/l totaal chloor.



Chemische methode

DPD

Aanhangsel

NL

Verstoringsen

Permanente verstoringen

- Alle oxidatiemiddelen in de monsters reageren als chloor, wat tot extra resultaten leidt.

Uit te sluiten verstoringen

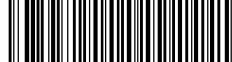
- Storingen veroorzaakt door koper en ijzer(III) worden door EDTA geëlimineerd.
- Concentraties van meer dan 2 mg/L chloor, bij gebruik van Powder Packs, kunnen leiden tot resultaten binnen het meetbereik tot 0 mg/L. In dit geval moet het monster worden verdund met chloorvrij water. Voeg reagens toe aan 10 ml van het verdunde monster en herhaal de meting (plausibiliteitstest).

Verstoringsen	verstoort vanaf
CrO_4^{2-}	0,01
MnO_2	0,01

Conform

EN ISO 7393-2

^{a)} bepaling van de vrije, gebonden, totaal mogelijke

**Chloor HR 2 PP****M112-2****0.1 - 10 mg/L Cl₂****DPD**

NL

Reagentia

Benodigd materiaal (deels optioneel):

Reagentia	Verpakkingseenheid	Bestelnr.
VARIO Chloor vrij DPD F25-100	Poeder / 100 St.	530110
VARIO Chloor totaal DPD F25-100	Poeder / 100 St.	530130
Chloor vrij DPD F10	Poeder / 100 St.	530100
Chloor totaal DPD F10	Poeder / 100 St.	530120

Bemonstering

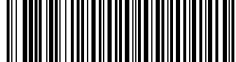
1. Tijdens de monstervoorbereiding moet worden vermeden dat het chloor wordt uitgestoten, bijvoorbeeld door pipetteren en schudden.
2. De analyse moet onmiddellijk na de bemonstering worden uitgevoerd.

Voorbereiding

1. Het schoonmaken van de spoelbakjes:
Aangezien veel huishoudelijke reinigingsmiddelen (bijv. afwasmiddelen) minder schadelijke stoffen bevatten, kan de bepaling van chloor leiden tot minder goede resultaten. Om deze meetfout uit te sluiten, moeten de glasapparaten chloorvrij zijn. Hiertoe wordt het glaswerk gedurende één uur onder natriumhypochlorietoplossing (0,1 g/L) bewaard en vervolgens grondig gespoeld met gedeïoniseerd water.
2. Voor de individuele bepaling van vrij chloor en totaal chloor is het zinvol om een aparte set spoelbakjes te gebruiken (zie EN ISO 7393-2, paragraaf 5.3).
3. De DPD-kleurentwikkeling vindt plaats bij een pH-waarde van 6,2 tot 6,5. De reagentia bevatten daarom een buffer voor de aanpassing van de pH-waarde. Sterk alkalisch of zuur water moet echter vóór de analyse in een pH-gebied tussen 6 en 7 (met 0,5 mol/l-zwavelzuur of 1 mol/l-natriumhydroxideoplossing) worden geplaatst.

Aantekeningen

1. Om de test in de MD50/150 uit te voeren, wordt een cuvet van 24 mm Ø gebruikt in plaats van de multicuvette.

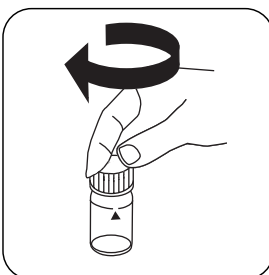


Uitvoering van de bepaling vrij chloor HR 2, met poederpakjes (MD50/MD150)

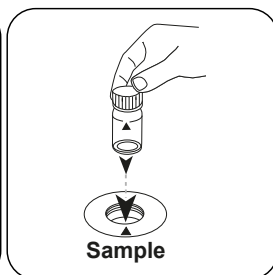
De methode in het apparaat selecteren.



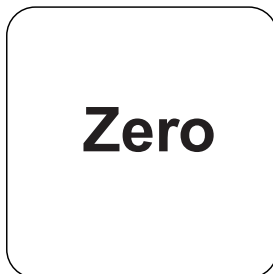
Spoelbakje van 24 mm met **10 mL staal** vullen.



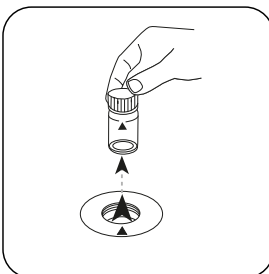
De spoelbakjes afsluiten.



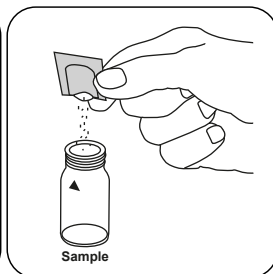
Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.



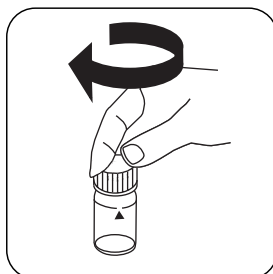
Nul uitvoeren.



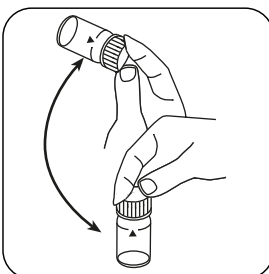
Het spoelbakje uit de meetschacht nemen.



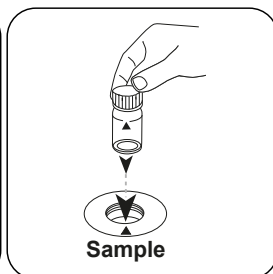
Een **1 Vario Chlorine Free / F25** of **2 Chlorine Total / F10** poederpakje toevoegen.



De spoelbakjes afsluiten.

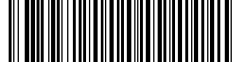


De inhoud mengen door om te draaien (20 sec.).



Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.

NL



Test

NL

Test uitvoeren.

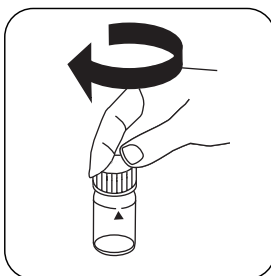
De display toont het resultaat in mg/L chloor.

Uitvoering van de bepaling totaal chloor HR 2, met poederpakjes (MD50/MD150)

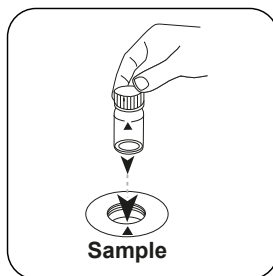
De methode in het apparaat selecteren.



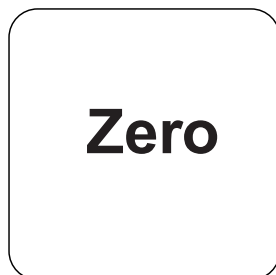
Spoelbakje van 24 mm met **10 mL staal** vullen.



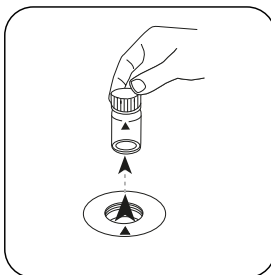
De spoelbakjes afsluiten.



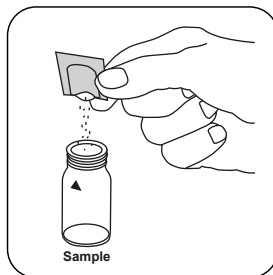
Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.



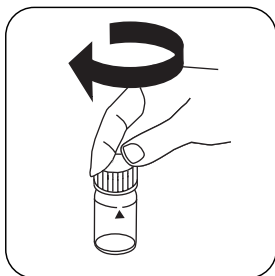
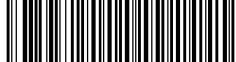
Nul uitvoeren.



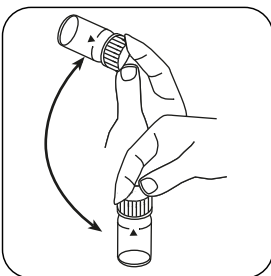
Het spoelbakje uit de meetschacht nemen.



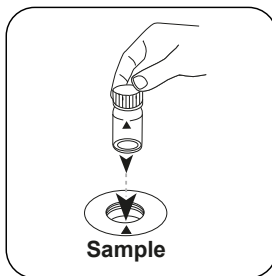
Een **1 Vario Chlorine Free / F25** of **2 Chlorine Total / F10** poederpakje toevoegen.



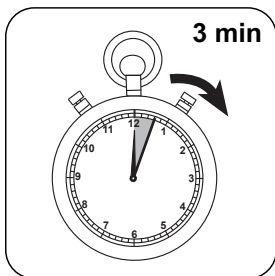
De spoelbakjes afsluiten.



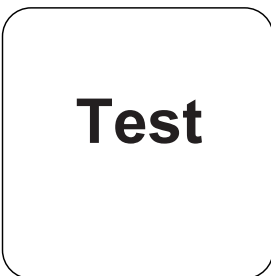
De inhoud mengen door om te draaien (20 sec.).



Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.

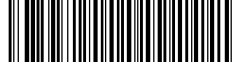


De reactietijd van **3 minuten** afwachten.



Test uitvoeren.

De display toont het resultaat in mg/L chloor.



Chemische methode

DPD

Aanhangsel

NL

Verstorenngen

Permanente verstorenngen

- Alle oxidatiemiddelen in de monsters reageren als chloor, wat tot extra resultaten leidt.

Uit te sluiten verstorenngen

- Storingen veroorzaakt door koper en ijzer(III) worden door EDTA geëlimineerd.
- Concentraties van meer dan 10 mg/L chloor, bij gebruik van Powder Packs, kunnen leiden tot resultaten binnen het meetbereik tot 0 mg/L. In dit geval moet het monster worden verdund met chloorvrij water. Voeg reagens toe aan 5 ml van het verdunde monster en herhaal de meting (plausibiliteitstest).

Conform

EN ISO 7393-2

**CyA HR T****M161****10 - 200 mg/L CyA****CyAH****Melamine**

NL

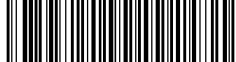
Reagentia

Benodigd materiaal (deels optioneel):

Reagentia	Verpakkingseenheid	Bestelnr.
CyA HR-test	Tablet / 100	511430BT
CyA HR-test	Tablet / 250	511431BT

Aantekeningen

1. Cyanuurzuur veroorzaakt een zeer fijn verdeelde troebelheid met een melkachtig uiterlijk. Individuele deeltjes zijn niet te wijten aan de aanwezigheid van cyanuurzuur.
2. Na toevoeging van de CyA-HR-Test-tablet lost deze automatisch binnen twee minuten op.



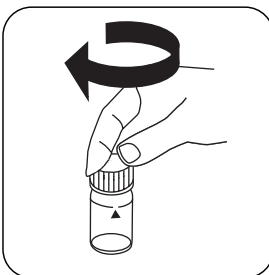
Uitvoering van de bepaling Cyanuurzuurtest met tablet

De methode in het apparaat selecteren.

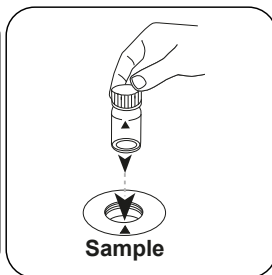
Voor deze methode hoeft niet elke keer een nulmeting uitgevoerd te worden op de volgende apparaten: XD 7000, XD 7500



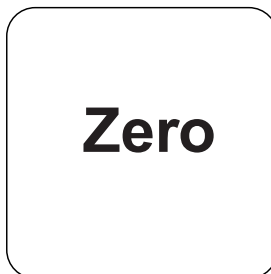
Spoelbakje van 24 mm met **10 mL staal** vullen.



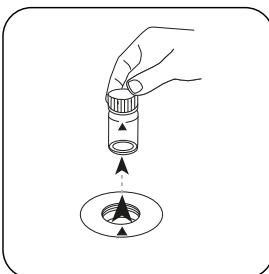
De spoelbakjes afsluiten.



Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.

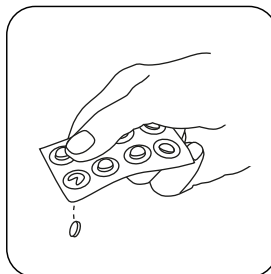


Nul uitvoeren.

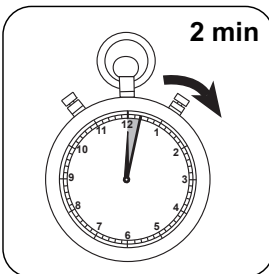


Het spoelbakje uit de meetschacht nemen.

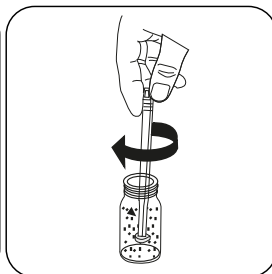
Bij apparaten die **geen nulmeting** vereisen, **hier beginnen**.



Een **CyA HR Test tablet** toevoegen.



De reactietijd van **2 minuten** afwachten.

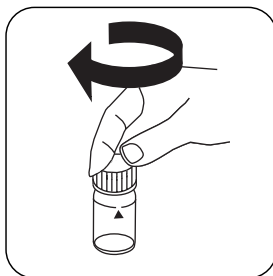


Eventuele tabletresten onder lichte rotatie verpletteren.

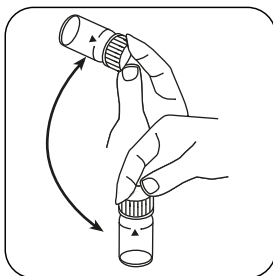
NL



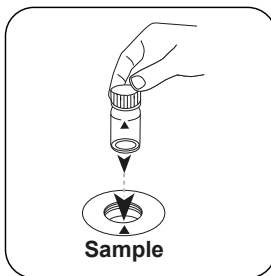
NL



De spoelbakjes afsluiten.



De inhoud mengen door om te draaien (niet schudden).



Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.

Test

Test uitvoeren.

De display toont het resultaat in mg/L Cyanuurzuur.



Chemische methode

Melamine

Verstorengen

Permanente verstorengen

1. Onopgeloste deeltjes kunnen tot meerdere resultaten leiden.

NL

Validatie van de methodes

Aantoonbaarheidsgrens	2.07 mg/L
Bepaalbaarheidsgrens	6.2 mg/L
Einde meetbereik	200 mg/L
Gevoeligheid	77.47 mg/L / Abs
Betrouwbaarheidsgrenzen	4.6 mg/L
Standaardafwijking procedure	4.78 mg/L
Variatiecoefficient procedure	4.55 %



pH-waarde T

M330

6.5 - 8.4 pH

PH

Fenolrood

NL

Reagentia

Benodigd materiaal (deels optioneel):

Reagentia	Verpakkingseenheid	Bestelnr.
Fenolrood fotometer	Tablet / 100	511770BT
Fenolrood fotometer	Tablet / 250	511771BT
Fenolrood fotometer	Tablet / 500	511772BT

Bemonstering

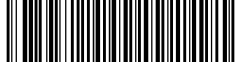
zoutgehalte van het monster (in g/L)	30 (zeewater)	60	120	180
Correctie	-0,15 ¹⁾	-0,21 ²⁾	-0,26 ²⁾	-0,29 ²⁾

¹⁾ na Kolthoff (1922)

²⁾ na Parson en Douglas (1926)

Aantekeningen

1. Voor de fotometrische pH-bepaling mogen alleen PHENOL RED-tabletten met een zwarte foliedruk en de term PHOTOMETER worden gebruikt.



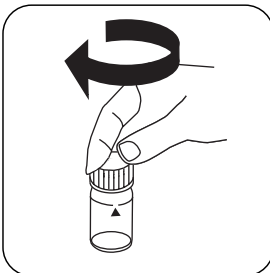
Uitvoering van de bepaling pH-waarde met tablet

De methode in het apparaat selecteren.

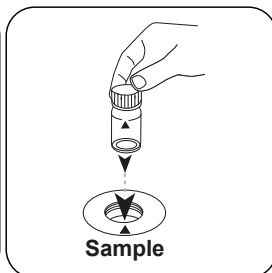
Voor deze methode hoeft niet elke keer een nulmeting uitgevoerd te worden op de volgende apparaten: XD 7000, XD 7500



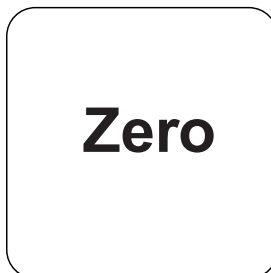
Spoelbakje van 24 mm met **10 mL staal** vullen.



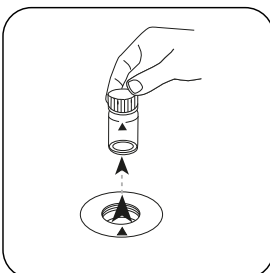
De spoelbakjes afsluiten.



Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.

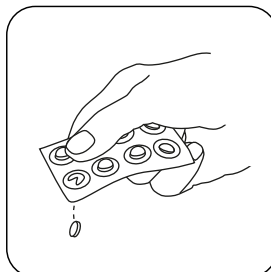


Nul uitvoeren.

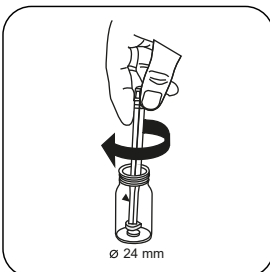


Het spoelbakje uit de meetschacht nemen.

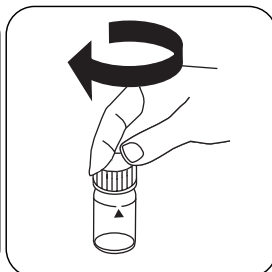
Bij apparaten die **geen nulmeting** vereisen, **hier beginnen**.



Een **FENOLROOD FOTOMETER tablet** toevoegen.

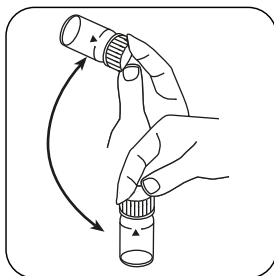


De tabletten onder lichte rotatie verpletteren.



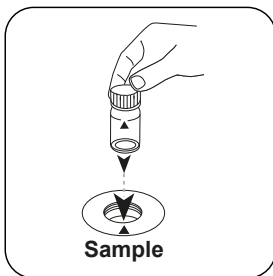
De spoelbakjes afsluiten.

NL

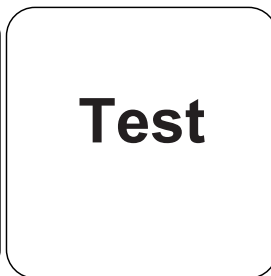


NL

Tabletten oplossen door om te draaien

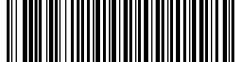


Het **staalpoelbakje** in de meetschacht plaatsen. Op de positionering letten.



Test uitvoeren.

De display toont het resultaat als pH-waarde.



Chemische methode

Fenolrood

Aanhangsel

Verstorengen

NL

Permanente verstorengen

1. Watermonsters met een lage carbonaathardheid* kunnen leiden tot onjuiste pH-waarden.

* $_{\text{KS4,3}} < 0,7 \text{ mmol/l} \triangleq \text{Totale alkaliteit} < 35 \text{ mg/L CaCO}_3$.

Uit te sluiten verstorengen

1. pH-waarden onder 6,5 en boven 8,4 kunnen leiden tot resultaten binnen het meetbereik. Een plausibiliteitstest (pH-meter) wordt aanbevolen.
2. Zoutgebrek:
Voor zoutgehalten tot 2 g/L kan geen significante zoutfout worden verwacht als gevolg van het zoutgehalte van het reagenstablet. Indien het zoutgehalte hoger is, worden de gemeten waarden als volgt gecorrigeerd:

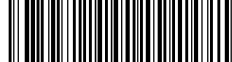
zoutgehalte van het monster (in g/L)	30 (zeewater)	60	120	180
Correctie	-0,15 ¹⁾	-0,21 ²⁾	-0,26 ²⁾	-0,29 ²⁾

¹⁾ na Kolthoff (1922)

²⁾ na Parson en Douglas (1926)

Literatuurverwijzing

Colorimetric Chemical Analytical Methods, 9th Edition, London



pH-waarde L

M331

6.5 - 8.4 pH

PH

Fenolrood

NL

Reagentia

Benodigd materiaal (deels optioneel):

Reagentia	Verpakkingseenheid	Bestelnr.
Fenolrood oplossing	15 mL	471040
Fenolrood oplossing	100 mL	471041
Fenolrood oplossing in verpakking van 6 stuks	1 St.	471046

Bemonstering

Zoutgehalte van het monster	Correctie
30 g/L (zeewater)	-0,15 ¹⁾
60 g/L	-0,21 ²⁾
120 g/L	-0,26 ²⁾
180 g/L	-0,29 ²⁾

¹⁾ na Kolthoff (1922)

²⁾ na Parson en Douglas (1926)

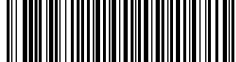
Bij het testen van gechloreerd water kan het aanwezige chloorgehalte de kleurreactie van het vloeibare reagens beïnvloeden. Dit wordt voorkomen door een klein kristal natriumthiosulfaat ($\text{Na}_2\text{S}_2\text{O}_3 \cdot 5 \text{H}_2\text{O}$) aan de monsteroplossing toe te voegen voordat de PHENOL RED-oplossing wordt toegevoegd

Voorbereiding

- Door de verschillende druppelgroottes kan het meetresultaat grotere afwijkingen vertonen dan bij gebruik van tabletten.
Bij gebruik van een pipet (0,18 ml komt overeen met 6 druppels) kan deze afwijking worden geminimaliseerd.

Aantekeningen

- Na gebruik moet de druppelfles meteen onmiddellijk worden gesloten met de schroefdop van dezelfde kleur.
- Bewaar het reagens bij +6 °C tot +10 °C op een koele plaats.



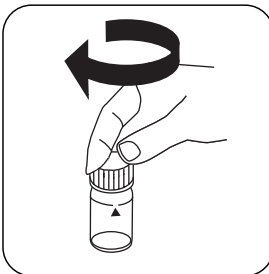
Uitvoering van de bepaling pH-waarde met vloeibaar reagens

De methode in het apparaat selecteren.

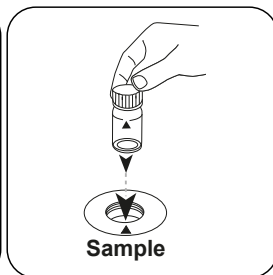
Voor deze methode hoeft niet elke keer een nulmeting uitgevoerd te worden op de volgende apparaten: XD 7000, XD 7500



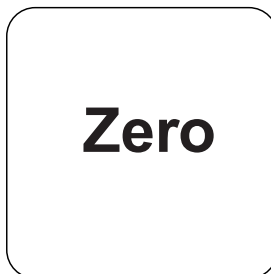
Spoelbakje van 24 mm met **10 mL staal** vullen.



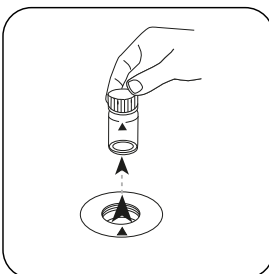
De spoelbakjes afsluiten.



Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.

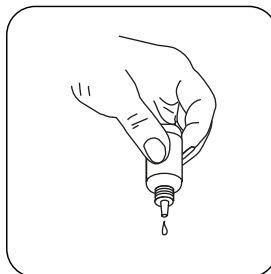


Nul uitvoeren.

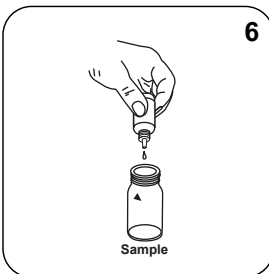


Het spoelbakje uit de meetschacht nemen.

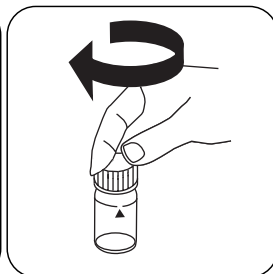
Bij apparaten die **geen nulmeting** vereisen, **hier beginnen**.



De druppelflessen verticaal houden en even grote druppels toevoegen door langzaam te drukken.

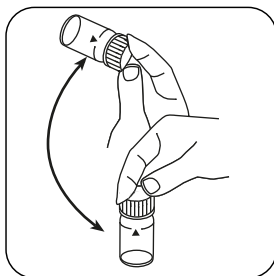
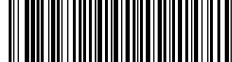


6 druppels FENOLROOD-oplossing in het staalspoelbakje doen.

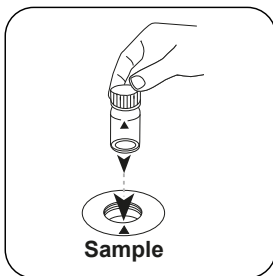


De spoelbakjes afsluiten.

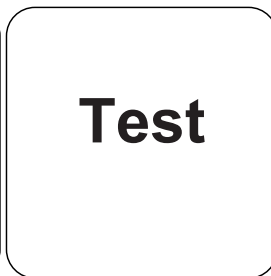
NL



De inhoud mengen door om te draaien.



Het **staalpoelbakje** in de meetschacht plaatsen. Op de positionering letten.

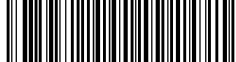


Test

Test uitvoeren.

De display toont het resultaat als pH-waarde.

NL



Chemische methode

Fenolrood

Aanhangsel

Verstorengen

NL

Uit te sluiten verstorengen

1. Zoutgebrek: correctie van de gemeten waarde (gemiddelde waarden) voor monsters met een zoutgehalte van:

2. Zoutgehalte van het monster	Correctie
30 g/L (zeewater)	-0,15 ¹⁾
60 g/L	-0,21 ²⁾
120 g/L	-0,26 ²⁾
180 g/L	-0,29 ²⁾
¹⁾ na Kolthoff (1922)	²⁾ na Parson en Douglas (1926)

3. Bij het testen van gechloreerd water kan het aanwezige chloorgehalte de kleurreactie van het vloeibare reagens beïnvloeden. Dit wordt voorkomen door een klein kristal natriumthiosulfaat ($\text{Na}_2\text{S}_2\text{O}_3 \cdot 5 \text{H}_2\text{O}$) aan de monsteroplossing toe te voegen voordat de PHENOL RED-oplossing wordt toegevoegd.

Literatuurverwijzing

Colorimetric Chemical Analytical Methods, 9th Edition, London

KS4.3 T / 20



Yöntem Adı

Yöntemleri numarası

Yöntemi tanımak için barkod

Ölçüm aralığı

Ekrandaki: MD 100 MD 110 / MD 200

Kimyasal Metod

Asit / Gösterge

$K_{S4.3} T$
 0.1 - 4 mmol/l $K_{S4.3}$

20
 S:4.3

Enstrümana özel bilgi

Test, aşağıdaki cihazlarda gerçekleştirilebilir. Ek olarak, gerekli küvet ve fotometrenin enilim aralığı belirtilmiştir.

Cihazlar	Küvet	λ	Ölçüm Aralığı
MD 200, MD 600, MD 610, MD 640, MultiDirect, PM 620, PM 630	ø 24 mm	610 nm	0.1 - 4 mmol/l $K_{S4.3}$
SpectroDirect, XD 7000, XD 7500	ø 24 mm	615 nm	0.1 - 4 mmol/l $K_{S4.3}$

Malzeme

Gerekli materyal (kısmen isteğe bağlı):

Başlık	Paketleme Birimi	Ürün No
Alka-M-Photometer	Tablet / 100	513210BT
Alka-M-Photometer	Tablet / 250	513211BT

Uygulama Listesi

- Atık Su Arıtma
- İçme Suyu Arıtma
- Ham Su Arıtma

Notlar

- Alkalite-m, m değeri, toplam alkalite ve asit kapasitesi $K_{S4.3}$ kavramları ayrıdır.
- 10 ml'lik numune hacmine tam riayet edilmesi, analiz sonucunun doğruluğu bakımından önemlidir.

Dil kodları ISO 639-1

Revizyon durumu

TR Metotlar Kılavuzu 01/20

Testin uygulanması
Tespitin uygulanması Tabletli asit kapasitesi $K_{s4.3}$

Cihazda metot seçin.

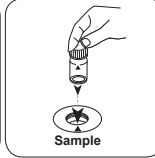
Bu metot için şu cihazlarda ZERO ölçümü yapılması gerekmez: XD 7000, XD 7500



24 mm'lik küveti **10 ml numune** ile doldurun.

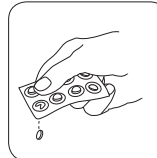


Küveti(küvetleri) kapatın.

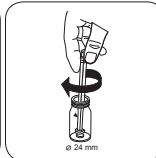


Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.

• • •



ALKA-M-PHOTOMETER tablet ilave edin.



Tableti(tabletleri) hafifçe döndürerek ezin.



Küveti(küvetleri) kapatın.

**Klor T****M100****0.01 - 6.0 mg/L Cl₂ ^{a)}****CL6****DPD****Malzeme**

TR

Gerekli materyal (kısmen isteğe bağlı):

Ayıracılar	Paketleme Birimi	Ürün No
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 ^{e)}	Tablet / 100	515740BT
DPD No. 1 High Calcium ^{e)}	Tablet / 250	515741BT
DPD No. 1 High Calcium ^{e)}	Tablet / 500	515742BT
DPD No. 3 High Calcium ^{e)}	Tablet / 100	515730BT
DPD No. 3 High Calcium ^{e)}	Tablet / 250	515731BT
DPD No. 3 High Calcium ^{e)}	Tablet / 500	515732BT
DPD No. 4	Tablet / 100	511220BT
DPD No. 4	Tablet / 250	511221BT
DPD No. 4	Tablet / 500	511222BT
DPD No. 3 Evo	Tablet / 100	511420BT
DPD No. 3 Evo	Tablet / 250	511421BT
DPD No. 3 Evo	Tablet / 500	511422BT
DPD No.4 Evo	Tablet / 100	511970BT
DPD No. 4 Evo	Tablet / 250	511971BT
DPD No. 4 Evo	Tablet / 500	511972BT

Padrões disponíveis

Başlık	Paketleme Birimi	Ürün No
ValidCheck Klor 1,5 mg/l	1 adetler	48105510

Numune Alma

1. Numune ön hazırlığı esnasında ör. pipetleme ve çalkalama ile klorun gazlaşması önlenmelidir.
2. Analiz numune alımından hemen sonra yapılmalıdır.

Hazırlık

1. Küvetlerin temizlenmesi:
Birçok ev tipi temizleyici (ör. bulaşık deterjanı) azaltıcı maddeler içerdiğinden klor tespitinde ehemmiyetsiz miktarda bulgulara ulaşılabilir. Bu ölçüm hatasına ihtimal vermemek için cam aletler klordan etkilenmeyecek şekilde olmalıdır. Bunun için cam aletler bir saatliğine sodyum hipoklorit çözeltisinde (0,1 g/L) muhafaza edilir ve sonrasında demineralize su ile iyice yıkanır.
2. Arındırılmış klor ve toplam klorun münferit tespitini yapabilmek adına her biri için ayrı bir küvet seti kullanmak mantıklı olacaktır (bk. EN ISO 7393-2, par. 5.3).
3. DPD renk oluşumu 6,2 ila 6,5 pH değerinde gerçekleşir. Bu nedenle ayıraçlar, pH değeri ayarı için bir tampon çözeltisi içerir. Yine de analizden önce aşırı alkali veya asidik sular 6 ve 7 arasında bir pH aralığına getirilmelidir (0,5 mol/l sülfürik asit veya. 1 mol/l sodyum hidroksit su ile çözünmüş hali ile).

Notlar

1. EVO tabletleri, karşılık gelen standart tablete alternatif olarak kullanılabilir (ör. DPD No. 3 yerine DPD No. 3 EVO).



Tespitin uygulanması Tabletle birlikte serbest klor

Cihazda metot seçin.

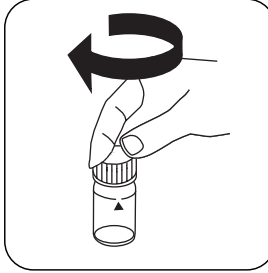
Buna ek olarak tespiti seçin: serbest

Bu yöntem için, aşağıdaki cihazlarda her seferinde SIFIR ölçümünün yapılması gerekmez: XD 7000, XD 7500

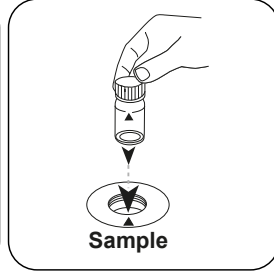
TR



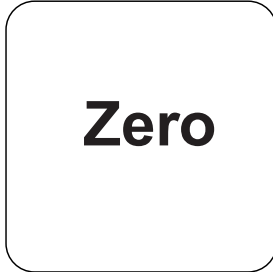
24 mm'lik küveti **10 mL numune** ile doldurun.



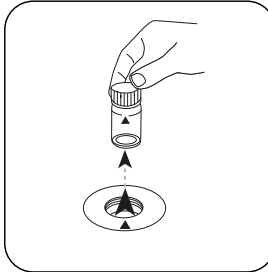
Küveti(küvetleri) kapatın.



Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.



Sıfır ayarı yapın.

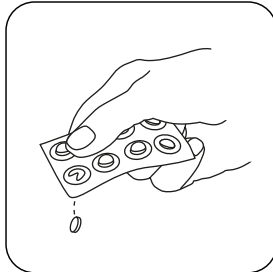


Küveti ölçüm haznesinden alın.

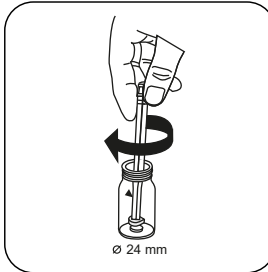


Küveti birkaç damla kalacak kadar boşaltın.

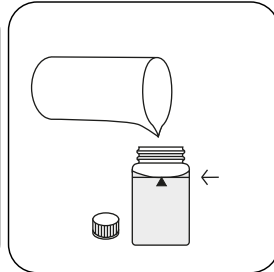
ZERO ölçümü gerektirmeyen cihazlarda buradan başlayın.



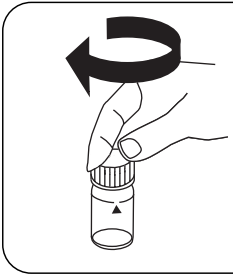
DPD No. 1 tablet ilave edin.



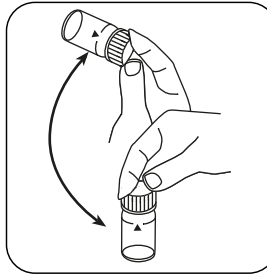
Tableti(tabletleri) hafifçe döndürerek ezin.



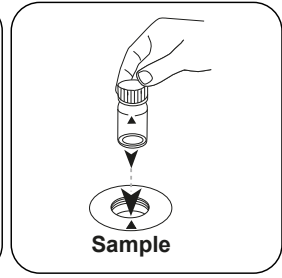
Küveti **10 mL işaretine** kadar **numune** ile doldurun.



Küveti(küvetleri) kapatın.



Tableti(tabletleri) sallayarak
çözdürün.



Numune küvetini ölçüm
haznesine koyun. Doğru
konumlandırılmasına dikkat
edin.

TR

Test

Test gerçekleştirin.

Ekranda sonuç mg/L serbest klor cinsinden belirir.

Tespitin uygulanması Tabletle birlikte toplam klor

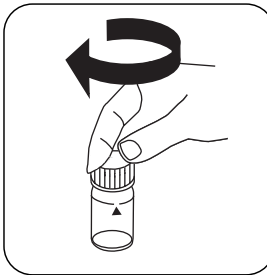
Cihazda metot seçin.

Buna ek olarak tespiti seçin: toplam

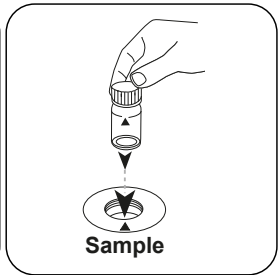
Bu yöntem için, aşağıdaki cihazlarda her seferinde SIFIR ölçümünün yapılması
gerekmez: XD 7000, XD 7500



24 mm'lik küveti **10 mL**
numune ile doldurun.



Küveti(küvetleri) kapatın.

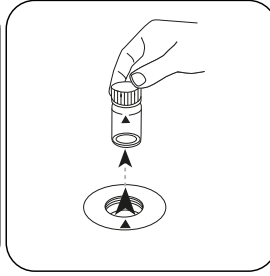


Numune küvetini ölçüm
haznesine koyun. Doğru
konumlandırılmasına dikkat
edin.

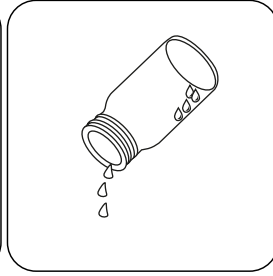


Zero

Sıfır ayarı yapın.

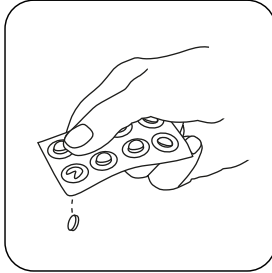


Küveti ölçüm haznesinden alın.

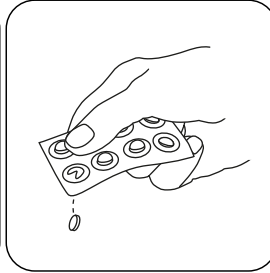


Küveti birkaç damla kalacak kadar boşaltın.

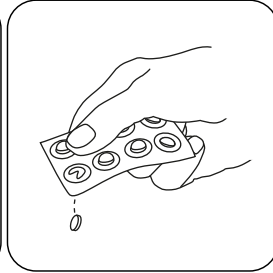
ZERO ölçümü gerektirmeyen cihazlarda buradan başlayın.



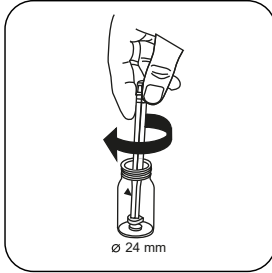
DPD No. 1 tablet ilave edin.



DPD No. 3 tablet ilave edin.



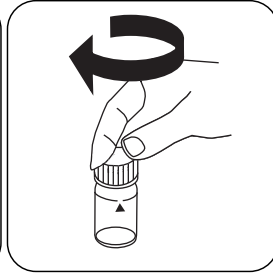
DPD No 1 ve No. 3 tablet alternatif olarak, 1 DPD No 4 tablet eklenebilir.



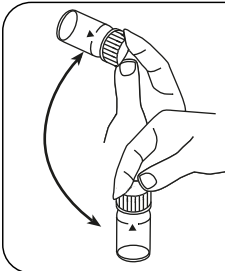
Tableti(tabletleri) hafifçe döndürerek ezin.



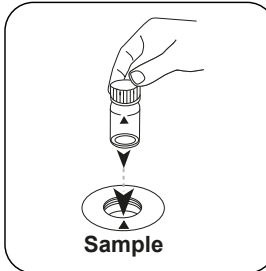
Küveti **10 mL işaretine** kadar **numune** ile doldurun.



Küveti(küvetleri) kapatın.



Tableti(tabletleri) sallayarak
çözdürün.

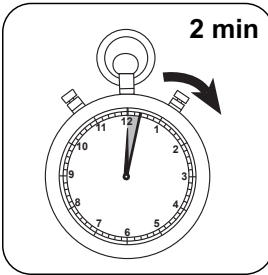


Numune küvetini ölçüm
haznesine koyun. Doğru
konumlandırılmasına dikkat
edin.

Test

Test gerçekleştirin.

TR



2 dakika tepkime süresi
bekleyin.

Tepkime süresinin sona ermesinden sonra ölçüm otomatik gerçekleşir.

Ekranda sonuç mg/L toplam klor cinsinden belirir.

Tespitin uygulanması Tabletle birlikte ayrılmış klor

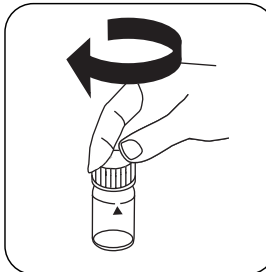
Cihazda metot seçin.

Buna ek olarak tespiti seçin: ayrılmış

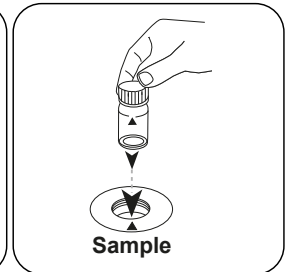
Bu yöntem için, aşağıdaki cihazlarda her seferinde SIFIR ölçümünün yapılması
gerekmez: XD 7000, XD 7500



24 mm'lik küveti **10 mL**
numune ile doldurun.



Küveti(küvetleri) kapatın.

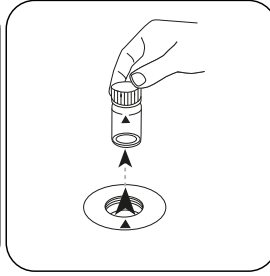


Numune küvetini ölçüm
haznesine koyun. Doğru
konumlandırılmasına dikkat
edin.

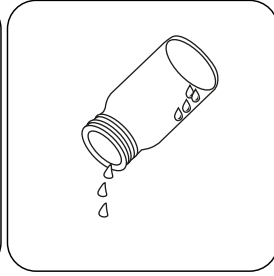


Zero

Sıfır ayarı yapın.

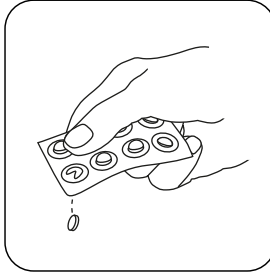


Küveti ölçüm haznesinden alın.

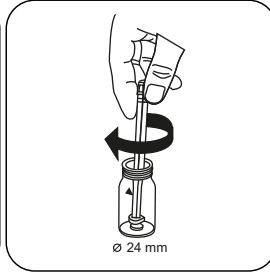


Küveti birkaç damla kalacak kadar boşaltın.

ZERO ölçümü gerektirmeyen cihazlarda buradan başlayın.



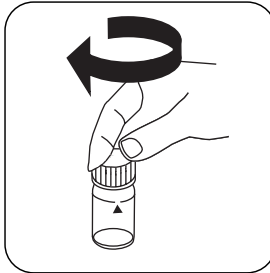
DPD No. 1 tablet ilave edin.



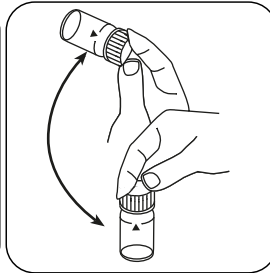
Tableti(tabletleri) hafifçe döndürerek ezin.



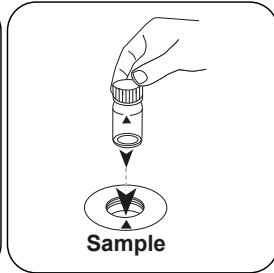
Küveti **10 mL işaretine** kadar **numune** ile doldurun.



Küveti(küvetleri) kapatın.



Tableti(tabletleri) sallayarak çözdürün.

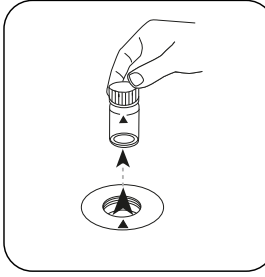


Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.

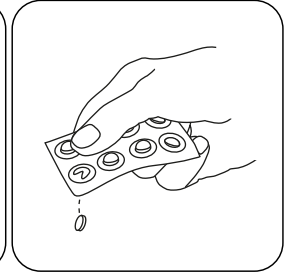


Test

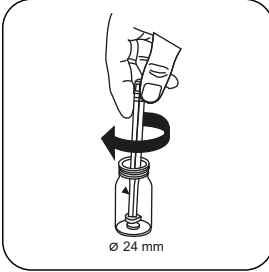
Test gerçekleştirin.



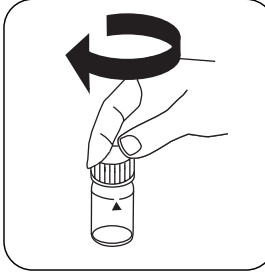
Küveti ölçüm haznesinden alın.



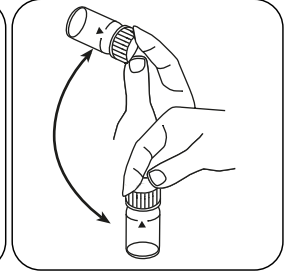
DPD No. 3 tablet ilave edin.



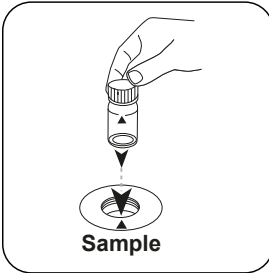
Tableti(tabletleri) hafifçe döndürerek ezin.



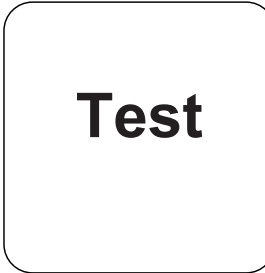
Küveti(küvetleri) kapatın.



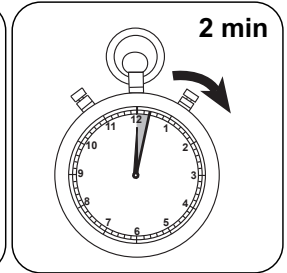
Tableti(tabletleri) sallayarak çözdüren.



Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.



Test gerçekleştirin.



2 dakika tepkime süresi bekleyin.

Tepkime süresinin sona ermesinden sonra ölçüm otomatik gerçekleşir.

Ekranda sonuç mg/L serbest klor; bağlı klor; toplam klor cinsinden belirir.



Kimyasal Metod

DPD

Apandis

TR

Girişim Metni

Kalıcı Girişimler

- Numunelerde bulunan tüm oksidasyon malzemeleri tıpkı klor gibi tepkime verir ve bu da fazla miktarda bulguya sebep olur.

Giderilebilir Girişimler

- Bakır ve demir (III) kaynaklı bozukluklar EDTA ile giderilmelidir.
- Yüksek kalsiyum içerikli* ve/veya yüksek geçirgen* numunelerde, ayıraç tabletlerinin kullanılması durumunda numunenin bulanıklaşması ve dolayısıyla buna bağlı hatalı ölçüm meydana gelebilir. Bu durumda alternatif olarak DPD no. 1 High Calcium ve DPD no. 3 High Calcium ayıraç tableti kullanılmalıdır.
*Bulanıklık oluşumu numune suyunun türüne ve birleşimine bağlı olduğundan tam değerler belirtilememektedir.
- Tablet kullanımlarında 10 mg/L klorun üstünde olan konsantrasyonlar ölçüm aralığının içinde 0 mg/L'ye varan sonuçlara sebep olabilir. Çok yüksek klor konsantrasyonu varsa numune klor içermeyen su ile seyreltilmelidir. Seyreltilen numunenin 10 ml'sine ayıraç katılır ve ölçüm tekrarlanır (uygunluk testi).

Karışmalar	itibaren / [mg/L]
CrO_4^{2-}	0.01
MnO_2	0.01

Uygunluk

EN ISO 7393-2

^{a)} Serbest, bağlı ve toplam değerlerin belirlenmesi | ^{a)} alternatif reaktif, yüksek kalsiyum konsantrasyonu ve/veya yüksek iletkenlik nedeniyle su numunesinde bulanıklık oluşması durumunda DPD No.1/No.3 yerine kullanılır

**Klor L****M101****0.02 - 4.0 mg/L Cl₂ ^{a)}****CL6****DPD****Malzeme**

TR

Gerekli materyal (kısmen isteğe bağlı):

Ayırıcılar	Paketleme Birimi	Ürün No
DPD 1 Tampon çözelti, mavi şişe	15 mL	471010
DPD 1 tampon çözelti	100 mL	471011
DPD 1 6'lı pakette tampon çözelti	1 adetler	471016
DPD 1 Ayırıcı çözeltisi, yeşil şişe	15 mL	471020
DPD 1 ayırıcı çözeltisi	100 mL	471021
DPD 1 6'lı pakette ayırıcı çözeltisi	1 adetler	471026
DPD 3 Çözelti, kırmızı şişe	15 mL	471030
DPD 3 çözelti	100 mL	471031
DPD 3 6'lı pakette çözelti	1 adetler	471036
DPD ayırıcı seti	1 adetler	471056

Padrões disponíveis

Başlık	Paketleme Birimi	Ürün No
ValidCheck Klor 1,5 mg/l	1 adetler	48105510

Numune Alma

- Numune ön hazırlığı esnasında ör. pipetleme ve çalkalama ile klorun gazlaşması önlenmelidir.
- Analiz numune alımından hemen sonra yapılmalıdır.

Hazırlık

1. Küvetlerin temizlenmesi:
Birçok ev tipi temizleyici (ör. bulaşık deterjanı) azaltıcı maddeler içerdiğinden klor tespitinde ehemmiyetsiz miktarda bulgulara ulaşılabilir. Bu ölçüm hatasına ihtimal vermemek için cam aletler klordan etkilenmeyecek şekilde olmalıdır. Bunun için cam aletler bir saatliğine sodyum hipoklorit çözeltisinde (0,1 g/L) muhafaza edilir ve sonrasında demineralize su ile iyice yıkanır.
2. Arındırılmış klor ve toplam klorun münferit tespitini yapabilmek adına her biri için ayrı bir küvet seti kullanmak mantıklı olacaktır (bk. EN ISO 7393-2, par. 5.3).
3. DPD renk oluşumu 6,2 ila 6,5 pH değerinde gerçekleşir. Bu nedenle ayıraçlar, pH değeri ayarı için bir tampon çözeltisi içerir. Yine de analizden önce aşırı alkali veya asidik sular 6 ve 7 arasında bir pH aralığına getirilmelidir (0,5 mol/l sülfürik asit veya 1 mol/l sodyum hidroksitin su ile çözünmüş hali ile).

TR

Notlar

1. Kullandıktan sonra damla şişeleri aynı renkteki kilittli kapak ile derhal kapatılmalıdır.
2. Ayıraç seti +6 °C ila +10 °C'de soğuk depolanmalıdır.



Tespitin uygulanması Klor, sıvı reaktifle birlikte serbest

Cihazda metot seçin.

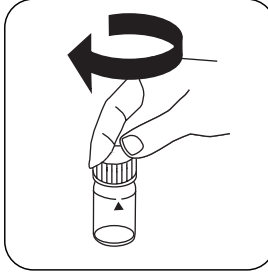
Buna ek olarak tespiti seçin: serbest

Bu yöntem için, aşağıdaki cihazlarda her seferinde SIFIR ölçümünün yapılması gerekmez: XD 7000, XD 7500

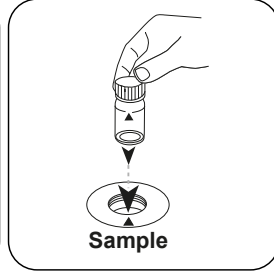
TR



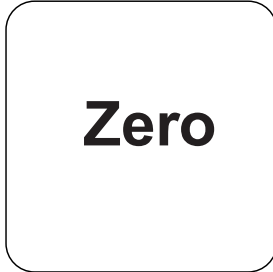
24 mm'lik küveti **10 mL numune** ile doldurun.



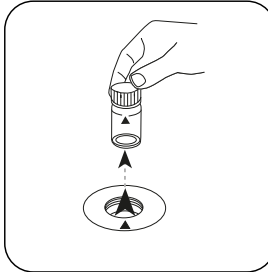
Küveti(küvetleri) kapatın.



Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.



Sıfır ayarı yapın.

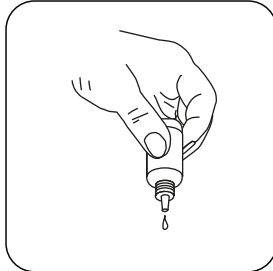


Küveti ölçüm haznesinden alın.

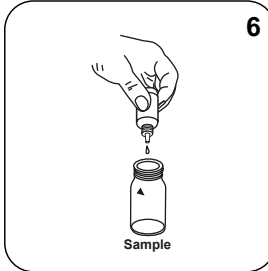


Küveti boşaltın.

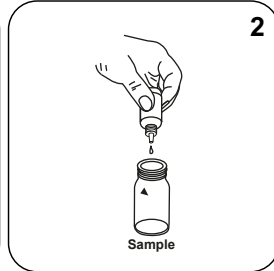
ZERO ölçümü gerektirmeyen cihazlarda buradan başlayın.



Damla şişelerini dik tutun ve yavaşça pompalayarak aynı büyüklükte damlalar ilave edin.



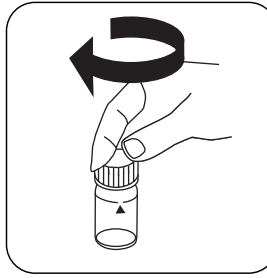
Numune küvetine 6 damla DPD 1 Buffer Solution ilave edin.



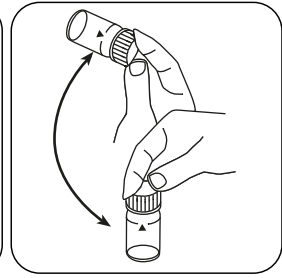
Numune küvetine 2 damla DPD 1 Reagent Solution ilave edin.



Küveti **10 mL işaretine** kadar **numune** ile doldurun.

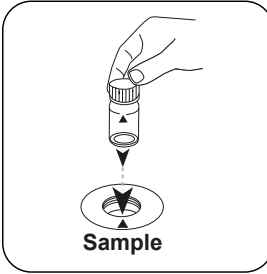


Küveti(küvetleri) kapatın.

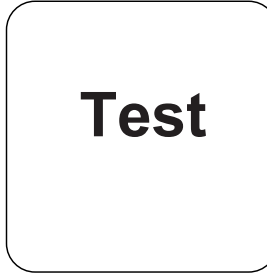


Sallayarak içeriği karıştırın.

TR



Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.



Test gerçekleştirin.

Ekranda sonuç mg/L serbest klor cinsinden belirir.

Tespitin uygulanması Klor, sıvı reaktifle birlikte toplam

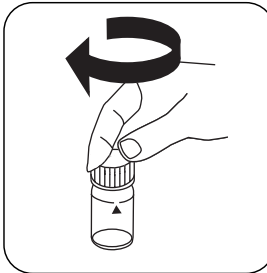
Cihazda metot seçin.

Buna ek olarak tespiti seçin: toplam

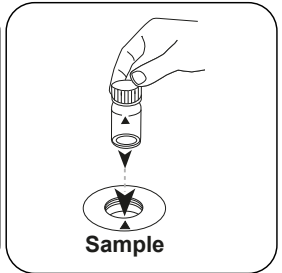
Bu yöntem için, aşağıdaki cihazlarda her seferinde SIFIR ölçümünün yapılması gerekmez: XD 7000, XD 7500



24 mm'lik küveti **10 mL numune** ile doldurun.



Küveti(küvetleri) kapatın.

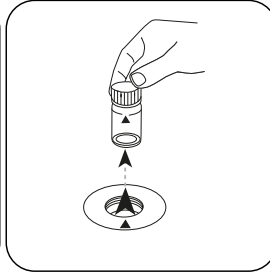


Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.

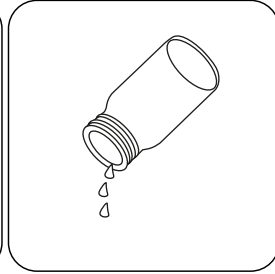


Zero

Sıfır ayarı yapın.

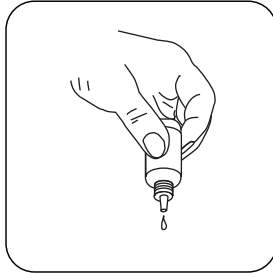


Küveti ölçüm haznesinden alın.

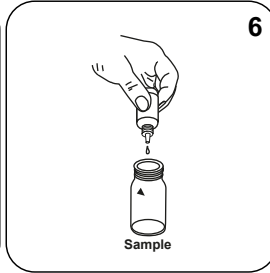


Küveti boşaltın.

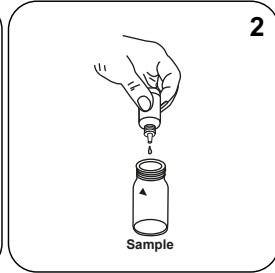
ZERO ölçümü gerektirmeyen cihazlarda buradan başlayın.



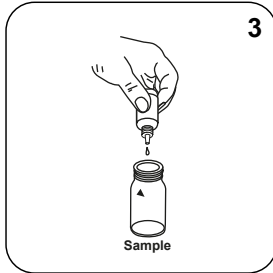
Damla şişelerini dik tutun ve yavaşça pompalayarak aynı büyüklükte damlalar ilave edin.



Numune küvetine 6 damla DPD 1 Buffer Solution ilave edin.



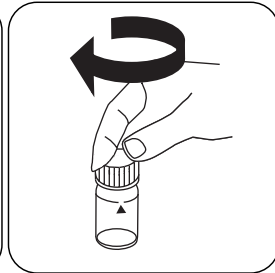
Numune küvetine 2 damla DPD 1 Reagent Solution ilave edin.



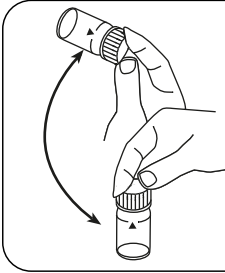
Numune küvetine 3 damla DPD 3 Solution ilave edin.



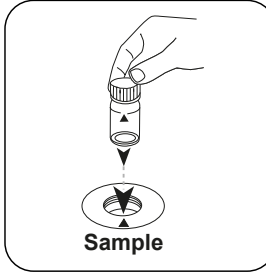
Küveti **10 mL işaretine** kadar **numune** ile doldurun.



Küveti(küvetleri) kapatın.



Sallayarak içeriği karıştırın.

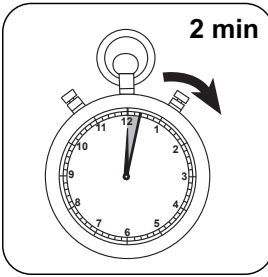


Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.

Test

Test gerçekleştirin.

TR



2 dakika tepkime süresi bekleyin.

Tepkime süresinin sona ermesinden sonra ölçüm otomatik gerçekleşir.

Ekranda sonuç mg/L toplam klor cinsinden belirir.

Tespitin uygulanması Klor, sıvı reaktifle birlikte ayrılaştırılmış

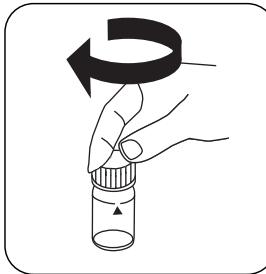
Cihazda metot seçin.

Buna ek olarak tespiti seçin: ayrılmış

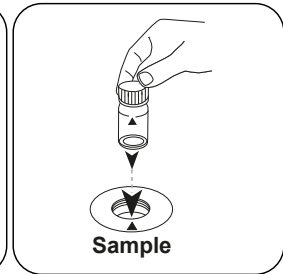
Bu yöntem için, aşağıdaki cihazlarda her seferinde SIFIR ölçümünün yapılması gerekmez: XD 7000, XD 7500



24 mm'lik küveti **10 mL numune** ile doldurun.



Küveti(küvetleri) kapatın.

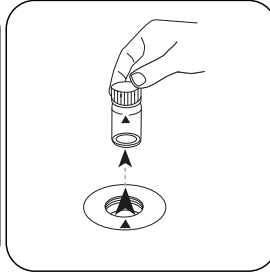


Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.

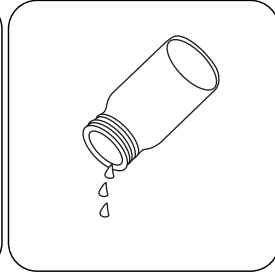


Zero

Sıfır ayarı yapın.

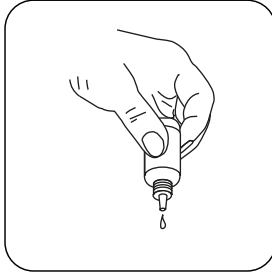


Küveti ölçüm haznesinden alın.

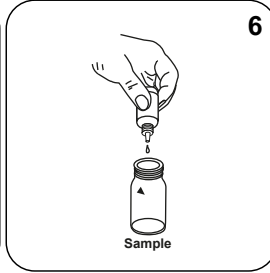


Küveti boşaltın.

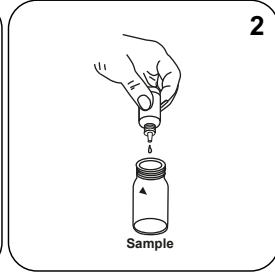
ZERO ölçümü gerektirmeyen cihazlarda buradan başlayın.



Damla şişelerini dik tutun ve yavaşça pompalayarak aynı büyüklükte damlalar ilave edin.



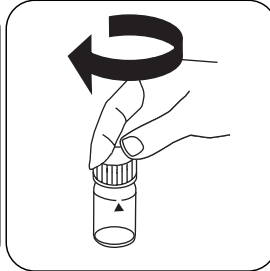
Numune küvetine 6 damla DPD 1 Buffer Solution ilave edin.



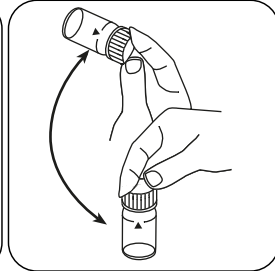
Numune küvetine 2 damla DPD 1 Reagent Solution ilave edin.



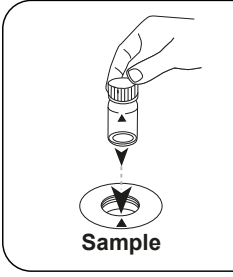
Küveti **10 mL işaretine** kadar **numune** ile doldurun.



Küveti(küvetleri) kapatın.



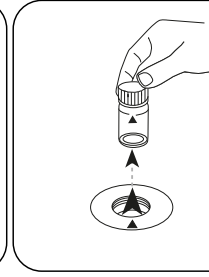
Sallayarak içeriği karıştırın.



Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.

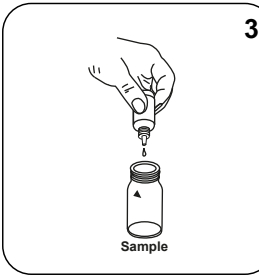
Test

Test gerçekleştirin.



Küveti ölçüm haznesinden alın.

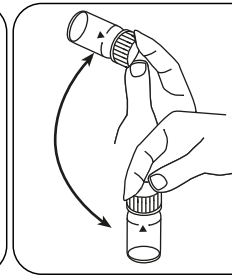
TR



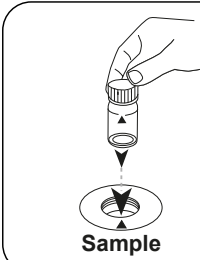
Numune küvetine
3 damla DPD 3 Solution
ilave edin.



Küveti(küvetleri) kapatın.



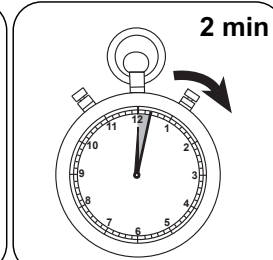
Sallayarak içeriği karıştırın.



Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.

Test

Test gerçekleştirin.



2 dakika tepkime süresi
bekleyin.

Tepkime süresinin sona ermesinden sonra ölçüm otomatik gerçekleşir.

Ekranda sonuç mg/L serbest klor; bağlı klor; toplam klor cinsinden belirir.



Kimyasal Metod

DPD

Apandis

TR

Girişim Metni

Kalıcı Girişimler

- Numunelerde bulunan tüm oksidasyon malzemeleri tıpkı klor gibi tepkime verir ve bu da fazla miktarda bulguya sebep olur.

Giderilebilir Girişimler

- Bakır ve demir (III) kaynaklı bozukluklar EDTA ile giderilmelidir.
- Sıvı ayırıcıların kullanımında 4 mg/L klor üzerindeki konsantrasyonlar ölçüm aralığı içinde 0 mg/L'ye varan sonuçlara neden olabilir. Bu durumda numune klordan arındırılmış su ile seyreltilmelidir. Seyreltilen numunenin 10 ml'sine ayırıcı katılır ve ölçüm tekrarlanır (uygunluk testi).

Karışmalar	itibaren / [mg/L]
CrO_4^{2-}	0,01
MnO_2	0,01

Uygunluk

EN ISO 7393-2

^{a)} Serbest, bağlı ve toplam değerin belirlenmesi

**Klor HR T****M103****0.1 - 10 mg/L Cl₂^{a)}****CL10****DPD****Malzeme**

Gerekli materyal (kısmen isteğe bağlı):

Ayırıcılar	Paketleme Birimi	Ürün No
DPD No. 1 HR	Tablet / 100	511500BT
DPD No. 1 HR	Tablet / 250	511501BT
DPD No. 1 HR	Tablet / 500	511502BT
DPD No. 3 HR	Tablet / 100	511590BT
DPD No. 3 HR	Tablet / 250	511591BT
DPD No. 3 HR	Tablet / 500	511592BT
Set DPD No. 1 HR/No. 3 HR #	her bir 100	517791BT
Set DPD No. 1 HR/No. 3 HR #	her bir 250	517792BT
DPD No. 1 High Calcium ^{a)}	Tablet / 100	515740BT
DPD No. 1 High Calcium ^{a)}	Tablet / 250	515741BT
DPD No. 1 High Calcium ^{a)}	Tablet / 500	515742BT
DPD No. 3 High Calcium ^{a)}	Tablet / 100	515730BT
DPD No. 3 High Calcium ^{a)}	Tablet / 250	515731BT
DPD No. 3 High Calcium ^{a)}	Tablet / 500	515732BT
DPD No.3 HR Evo	Tablet / 100	511920BT
DPD No. 3 HR Evo	Tablet / 250	511921BT
DPD No. 3 HR Evo	Tablet / 500	511922BT

Numune Alma

1. Numune ön hazırlığı esnasında ör. pipetleme ve çalkalama ile klorun gazlaşması önlenmelidir.
2. Analiz numune alımından hemen sonra yapılmalıdır.

Hazırlık

1. Küvetlerin temizlenmesi:
Birçok ev tipi temizleyici (ör. bulaşık deterjanı) azaltıcı maddeler içerdiğinden klor tespitinde ehemmiyetsiz miktarda bulgulara ulaşılabilir. Bu ölçüm hatasına ihtimal vermemek için cam aletler klordan etkilenmeyecek şekilde olmalıdır. Bunun için cam aletler bir saatliğine sodyum hipoklorit çözeltisinde (0,1 g/L) muhafaza edilir ve sonrasında demineralize su ile iyice yıkanır.
2. Arındırılmış klor ve toplam klorun münferit tespitini yapabilmek adına her biri için ayrı bir küvet seti kullanmak mantıklı olacaktır (bk. EN ISO 7393-2, par. 5.3).
3. DPD renk oluşumu 6,2 ila 6,5 pH değerinde gerçekleşir. Bu nedenle ayıraçlar, pH değeri ayarı için bir tampon çözeltisi içerir. Yine de analizden önce aşırı alkali veya asidik sular 6 ve 7 arasında bir pH aralığına getirilmelidir (0,5 mol/L sülfürik asit veya. 1 mol/L sodyum hidroksit su ile çözünmüş hali ile).

TR

Notlar

1. Evo tabletleri, karşılık gelen standart tablete alternatif olarak kullanılabilir (ör. DPD No. 3 yerine DPD No. 3 Evo).



Tespitin uygulanması Tabletle birlikte serbest klor HR

Cihazda metot seçin.

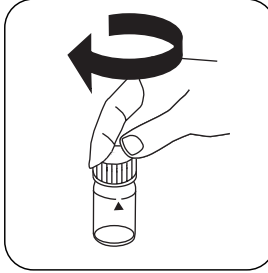
Buna ek olarak tespiti seçin: serbest

Bu yöntem için, aşağıdaki cihazlarda her seferinde SIFIR ölçümünün yapılması gerekmez: XD 7000, XD 7500

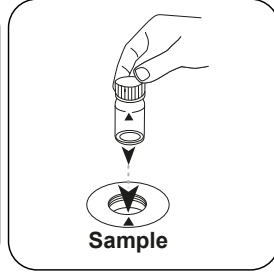
TR



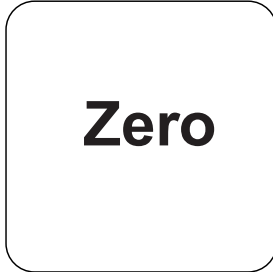
24 mm'lik küveti **10 mL numune** ile doldurun.



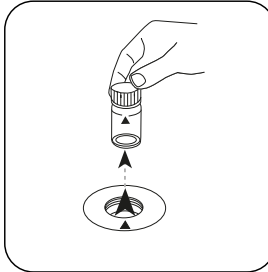
Küveti(küvetleri) kapatın.



Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.



Sıfır ayarı yapın.

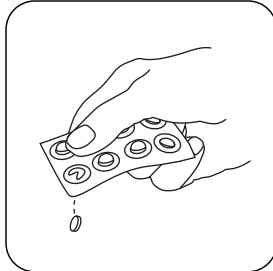


Küveti ölçüm haznesinden alın.

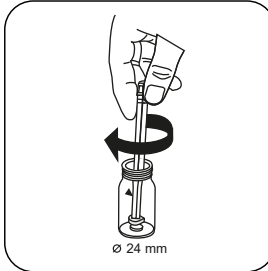


Küveti birkaç damla kalacak kadar boşaltın.

ZERO ölçümü gerektirmeyen cihazlarda buradan başlayın.



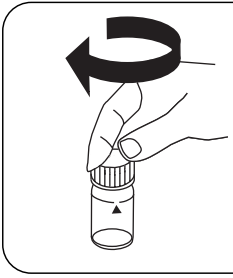
DPD No. 1 HR tablet ilave edin.



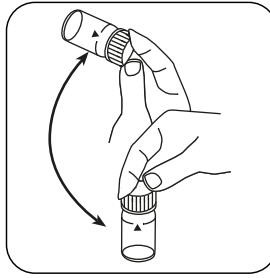
Tableti(tabletleri) hafifçe döndürerek ezin.



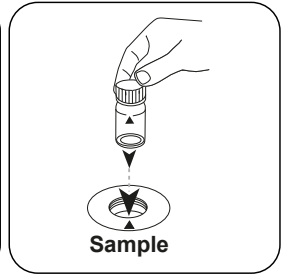
Küveti **10 mL işaretine** kadar **numune** ile doldurun.



Küveti(küvetleri) kapatın.



Tableti(tabletleri) sallayarak
çözdürün.



Numune küvetini ölçüm
haznesine koyun. Doğru
konumlandırılmasına dikkat
edin.

TR

Test

Test gerçekleştirin.

Ekranda sonuç mg/L serbest klor cinsinden belirir.

Tespitin uygulanması Tabletle birlikte toplam klor HR

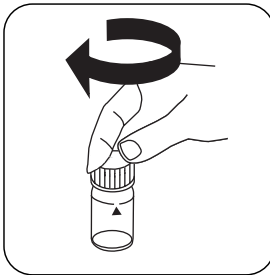
Cihazda metot seçin.

Buna ek olarak tespiti seçin: toplam

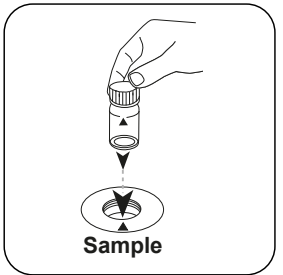
Bu yöntem için, aşağıdaki cihazlarda her seferinde SIFIR ölçümünün yapılması
gerekmez: XD 7000, XD 7500



24 mm'lik küveti **10 mL**
numune ile doldurun.



Küveti(küvetleri) kapatın.

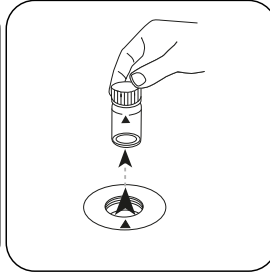


Numune küvetini ölçüm
haznesine koyun. Doğru
konumlandırılmasına dikkat
edin.

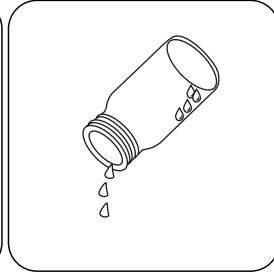


Zero

Sıfır ayarı yapın.

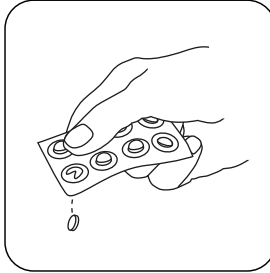


Küveti ölçüm haznesinden alın.

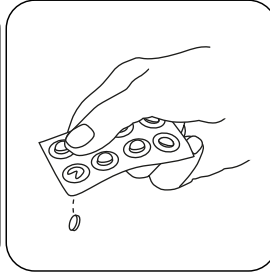


Küveti birkaç damla kalacak kadar boşaltın.

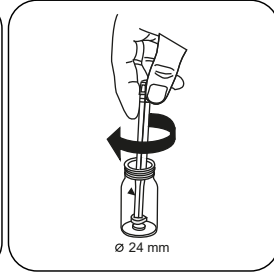
ZERO ölçümü gerektirmeyen cihazlarda buradan başlayın.



DPD No. 1 HR tablet ilave edin.



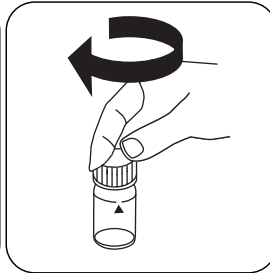
DPD No. 3 HR tablet ilave edin.



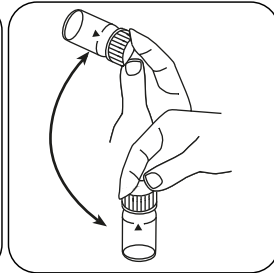
Tableti(tabletleri) hafifçe döndürerek ezin.



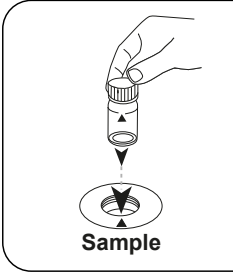
Küveti **10 mL işaretine** kadar **numune** ile doldurun.



Küveti(küvetleri) kapatın.



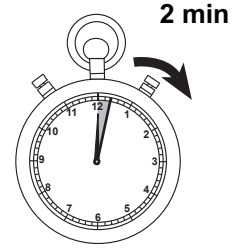
Tableti(tabletleri) sallayarak çözdüren.



Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.

Test

Test gerçekleştirin.



2 dakika tepkime süresi bekleyin.

Tepkime süresinin sona ermesinden sonra ölçüm otomatik gerçekleşir.

Ekranda sonuç mg/L toplam klor cinsinden belirir.

Tespitin uygulanması Tabletle birlikte ayrılmış klor HR

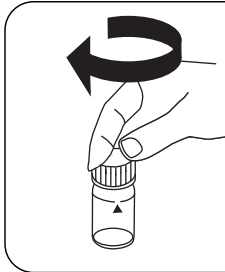
Cihazda metot seçin.

Buna ek olarak tespiti seçin: ayrılmış

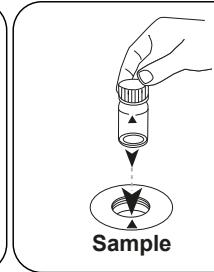
Bu yöntem için, aşağıdaki cihazlarda her seferinde SIFIR ölçümünün yapılması gerekmez: XD 7000, XD 7500



24 mm'lik küveti **10 mL numune** ile doldurun.



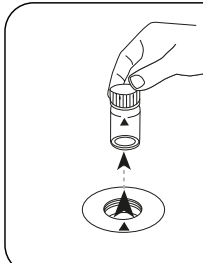
Küveti(küvetleri) kapatın.



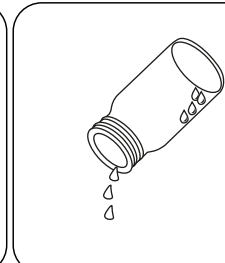
Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.

Zero

Sıfır ayarı yapın.



Küveti ölçüm haznesinden alın.



Küveti birkaç damla kalacak kadar boşaltın.



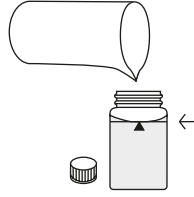
ZERO ölçümü gerektirmeyen cihazlarda buradan başlayın.



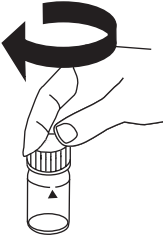
DPD No. 1 HR tablet ilave edin.



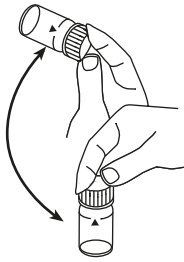
Tableti(tabletleri) hafifçe döndürerek ezin.



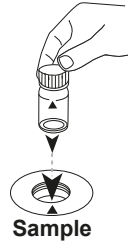
Küveti **10 mL işaretine** kadar **numune** ile doldurun.



Küveti(küvetleri) kapatın.



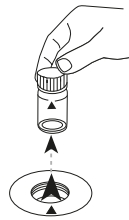
Tableti(tabletleri) sallayarak çözdürün.



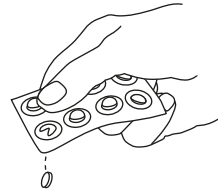
Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.

Test

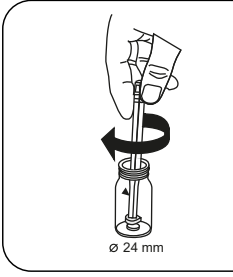
Test gerçekleştirin.



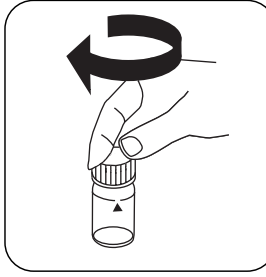
Küveti ölçüm haznesinden alın.



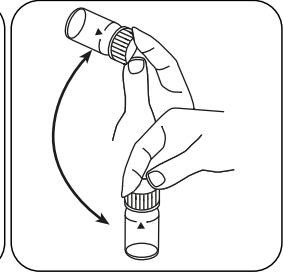
DPD No. 3 HR tablet ilave edin.



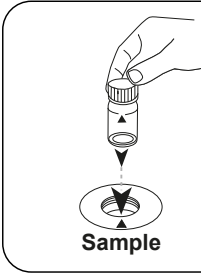
Tableti(tabletleri) hafifçe döndürerek ezin.



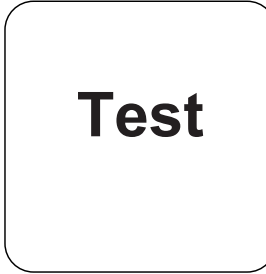
Küveti(küvetleri) kapatın.



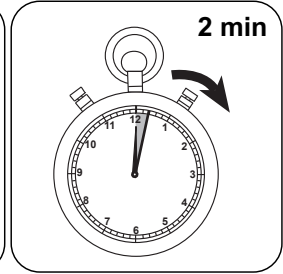
Tableti(tabletleri) sallayarak çözündürün.



Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.



Test gerçekleştirin.



2 dakika tepkime süresi bekleyin.

Tepkime süresinin sona ermesinden sonra ölçüm otomatik gerçekleşir.

Ekranda sonuç mg/L serbest klor; bağlı klor; toplam klor cinsinden belirir.

TR



Kimyasal Metod

DPD

Apandis

TR

Girişim Metni

Kalıcı Girişimler

- Numunelerde bulunan tüm oksidasyon malzemeleri tıpkı klor gibi tepkime verir ve bu da fazla miktarda bulguya sebep olur.

Giderilebilir Girişimler

- Bakır ve demir (III) kaynaklı bozukluklar EDTA ile giderilmelidir.
- Yüksek kalsiyum içerikli* ve/veya yüksek geçirgen* numunelerde, ayıraç tabletlerinin kullanılması durumunda numunenin bulanıklaşması ve dolayısıyla buna bağlı hatalı ölçüm meydana gelebilir. Bu durumda alternatif olarak DPD no. 1 High Calcium ve DPD no. 3 High Calcium ayıraç tableti kullanılmalıdır.
*Bulanıklık oluşumu numune suyunun türüne ve birleşimine bağlı olduğundan tam değerler belirtilememektedir.

Uygunluk

EN ISO 7393-2

^{a)} Serbest, bağlı ve toplam değerin belirlenmesi | ^{a)} alternatif reaktif, yüksek kalsiyum konsantrasyonu ve/veya yüksek iletkenlik nedeniyle su numunesinde bulanıklık oluşması durumunda DPD No.1/No.3 yerine kullanılır | * karıştırma çubuğu dahil

**Klor PP****M110****0.02 - 2 mg/L Cl₂ ^{a)}****CL2****DPD****Malzeme**

Gerekli materyal (kısmen isteğe bağlı):

Ayırıcılar	Paketleme Birimi	Ürün No
Serbest klor DPD F10	Toz / 100 adetler	530100
Serbest klor DPD F10	Toz / 1000 adetler	530103
Toplam klor DPD F10	Toz / 100 adetler	530120
Toplam klor DPD F10	Toz / 1000 adetler	530123

Padrões disponíveis

Başlık	Paketleme Birimi	Ürün No
ValidCheck Klor 1,5 mg/l	1 adetler	48105510

Numune Alma

1. Numune ön hazırlığı esnasında ör. pipetleme ve çalkalama ile klorun gazlaşması önlenmelidir.
2. Analiz numune alımından hemen sonra yapılmalıdır.

Hazırlık

1. Küvetlerin temizlenmesi:
Birçok ev tipi temizleyici (ör. bulaşık deterjanı) azaltıcı maddeler içerdiğinden klor tespitinde ehemmiyetsiz miktarda bulgulara ulaşılabilir. Bu ölçüm hatasına ihtimal vermemek için cam aletler klordan etkilenmeyecek şekilde olmalıdır. Bunun için cam aletler bir saatliğine sodyum hipoklorit çözeltisinde (0,1 g/L) muhafaza edilir ve sonrasında demineralize su ile iyice yıkanır.
2. Arındırılmış klor ve toplam klorun münferit tespitini yapabilmek adına her biri için ayrı bir küvet seti kullanmak mantıklı olacaktır (bk. EN ISO 7393-2, par. 5.3).
3. DPD renk oluşumu 6,2 ila 6,5 pH değerinde gerçekleşir. Bu nedenle ayırıcılar, pH değeri ayarı için bir tampon çözeltisi içerir. Yine de analizden önce aşırı alkali veya asidik sular 6 ve 7 arasında bir pH aralığına getirilmelidir (0,5 mol/l sülfürik asit veya 1 mol/l sodyum hidroksit su ile çözünmüş hali ile).

Tespitin uygulanması toz poşetleriyle birlikte serbest klor

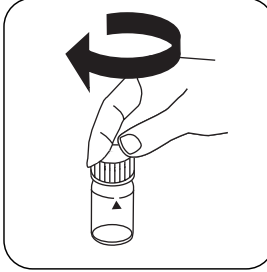
Cihazda metot seçin.

Buna ek olarak tespiti seçin: serbest

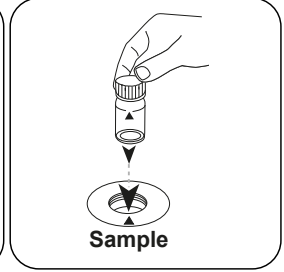
Bu yöntem için, aşağıdaki cihazlarda her seferinde SIFIR ölçümünün yapılması gerekmez: XD 7000, XD 7500



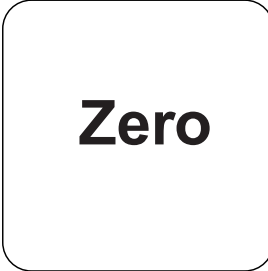
24 mm'lik küveti **10 mL numune** ile doldurun.



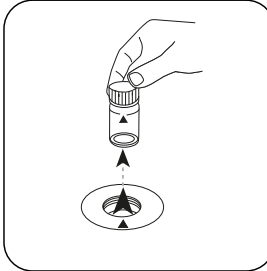
Küveti(küvetleri) kapatın.



Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.

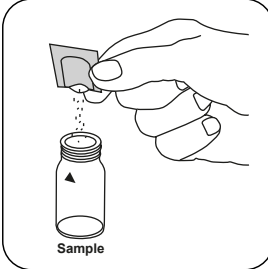


Sıfır ayarı yapın.

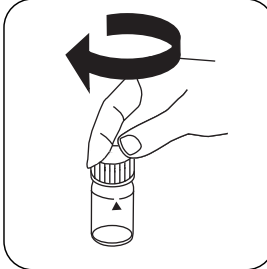


Küveti ölçüm haznesinden alın.

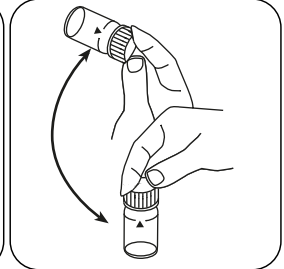
ZERO ölçümü gerektirmeyen cihazlarda buradan başlayın.



Chlorine FREE-DPD/ F10 toz paketi ilave edin.



Küveti(küvetleri) kapatın.

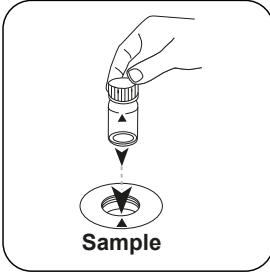


Sallayarak içeriği karıştırın (20 sec.).

TR



TR



Test

Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.

Test gerçekleştirin.

Ekranda sonuç mg/L serbest klor cinsinden belirir.

Tespitin uygulanması toz poşetleriyle birlikte toplam klor

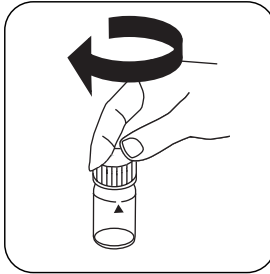
Cihazda metot seçin.

Buna ek olarak tespiti seçin: toplam

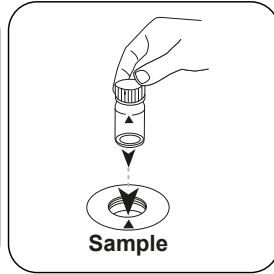
Bu yöntem için, aşağıdaki cihazlarda her seferinde SIFIR ölçümünün yapılması gerekmez: XD 7000, XD 7500



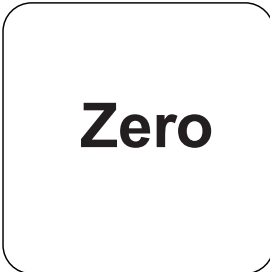
24 mm'lik küveti **10 mL numune** ile doldurun.



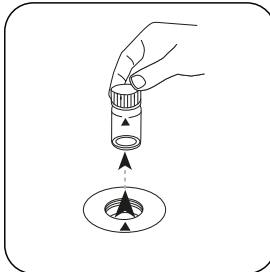
Küveti(küvetleri) kapatın.



Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.

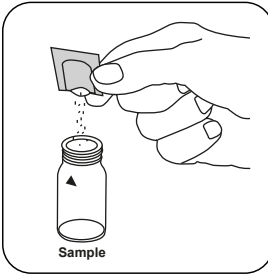


Sıfır uyarı yapın.

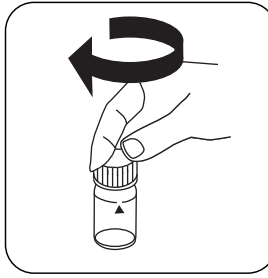


Küveti ölçüm haznesinden alın.

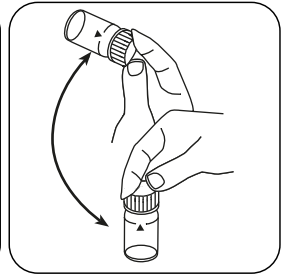
ZERO ölçümü gerektirmeyen cihazlarda buradan başlayın.



**Chlorine TOTAL-DPD/
F10 toz paketi** ilave edin.

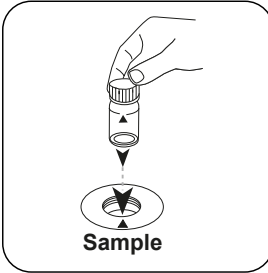


Küveti(küvetleri) kapatın.

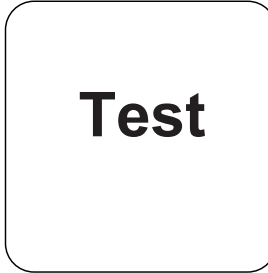


Sallayarak içeriği karıştırın
(20 sec.).

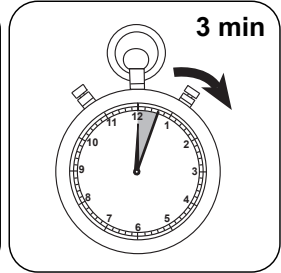
TR



Numune küvetini ölçüm
haznesine koyun. Doğru
konumlandırılmasına dikkat
edin.



Test gerçekleştirin.



3 dakika tepkime süresi
bekleyin.

Tepkime süresinin sona ermesinden sonra ölçüm otomatik gerçekleşir.

Ekranda sonuç mg/L toplam klor cinsinden belirir.

Tespitin uygulanması toz poşetleriyle birlikte ayrılmış klor

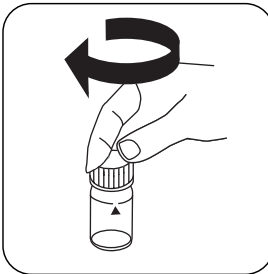
Cihazda metot seçin.

Buna ek olarak tespiti seçin: ayrılmış

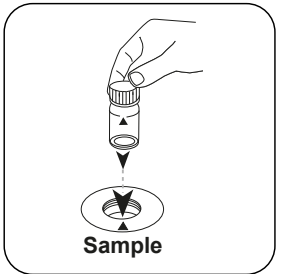
Bu yöntem için, aşağıdaki cihazlarda her seferinde SIFIR ölçümünün yapılması
gerekmez: XD 7000, XD 7500



24 mm'lik küveti **10 mL**
numune ile doldurun.



Küveti(küvetleri) kapatın.

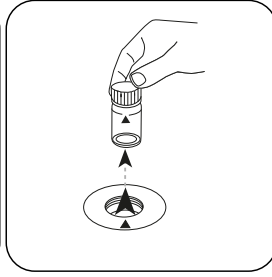


Numune küvetini ölçüm
haznesine koyun. Doğru
konumlandırılmasına dikkat
edin.



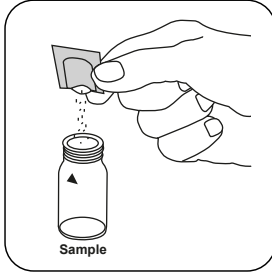
Zero

Sıfır ayarı yapın.

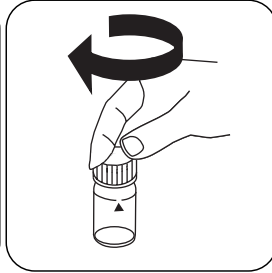


Küveti ölçüm haznesinden alın.

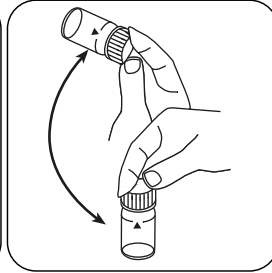
ZERO ölçümü gerektirmeyen cihazlarda buradan başlayın.



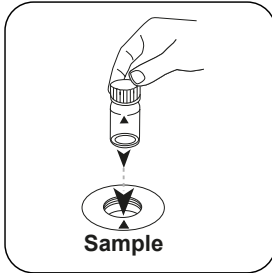
**Chlorine FREE-DPD/
F10 toz paketi** ilave edin.



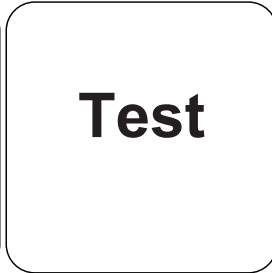
Küveti(küvetleri) kapatın.



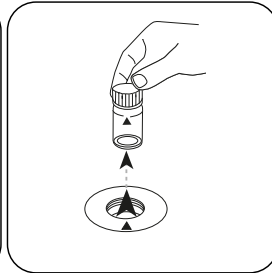
Sallayarak içeriği karıştırın
(20 sec.).



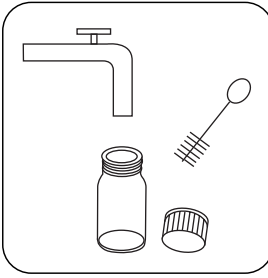
Numune küvetini ölçüm
haznesine koyun. Doğru
konumlandırılmasına dikkat
edin.



Test gerçekleştirin.



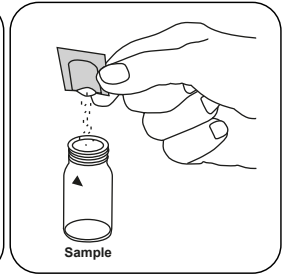
Küveti ölçüm haznesinden
alın.



Küveti ve küvet kapağını iyice temizleyin.

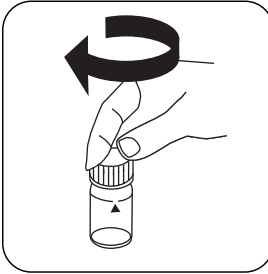


24 mm'lik küveti **10 mL numune** ile doldurun.

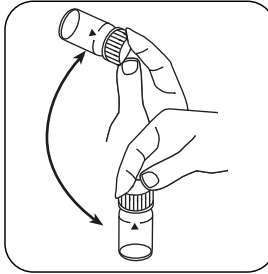


TOTAL-DPD/ F10 toz paketi ilave edin.

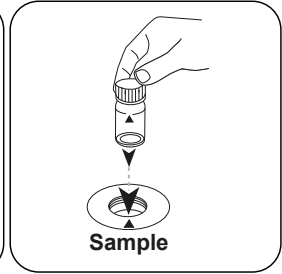
TR



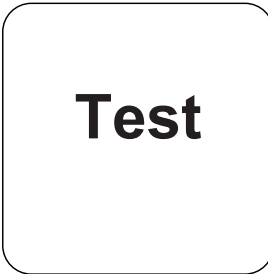
Küveti(küvetleri) kapatın.



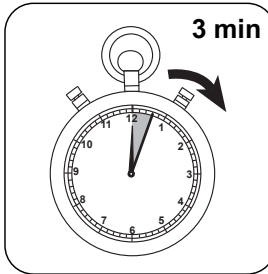
Sallayarak içeriği karıştırın (20 sec.).



Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.



Test gerçekleştirin.



3 dakika tepkime süresi bekleyin.

Tepkime süresinin sona ermesinden sonra ölçüm otomatik gerçekleşir. Ekranda sonuç mg/L serbest klor; bağlı klor; toplam klor cinsinden belirir.



Kimyasal Metod

DPD

Apandis

TR

Girişim Metni

Kalıcı Girişimler

- Numunelerde bulunan tüm oksidasyon malzemeleri tıpkı klor gibi tepkime verir ve bu da fazla miktarda bulguya sebep olur.

Giderilebilir Girişimler

- Bakır ve demir (III) kaynaklı bozukluklar EDTA ile giderilmelidir.
- 2 mg/L klor üzerindeki konsantrasyonlar, toz paketleri kullanılması durumunda ölçüm aralığı içinde 0 mg/L'ye varan sonuçlara neden olabilir. Bu durumda numune klordan arındırılmış su ile seyreltilmelidir. Seyreltilen numunenin 10 ml'sine ayıraç katılır ve ölçüm tekrarlanır (uygunluk testi).

Karışmalar	itibaren / [mg/L]
CrO_4^{2-}	0,01
MnO_2	0,01

Uygunluk

EN ISO 7393-2

^{a)} Serbest, bağlı ve toplam değerin belirlenmesi



Klor HR 2 PP

M112-2

0.1 - 10 mg/L Cl₂

DPD

Malzeme

Gerekli materyal (kısmen isteğe bağlı):

Ayırıcılar	Paketleme Birimi	Ürün No
VARIO Serbest klor DPD F25-100	Toz / 100 adetler	530110
VARIO Toplam klor DPD F25-100	Toz / 100 adetler	530130
Serbest klor DPD F10	Toz / 100 adetler	530100
Toplam klor DPD F10	Toz / 100 adetler	530120

Numune Alma

1. Numune ön hazırlığı esnasında ör. pipetleme ve çalkalama ile klorun gazlaşması önlenmelidir.
2. Analiz numune alımından hemen sonra yapılmalıdır.

Hazırlık

1. Küvetlerin temizlenmesi:
Birçok ev tipi temizleyici (ör. bulaşık deterjanı) azaltıcı maddeler içerdiğinden klor tespitinde ehemmiyetsiz miktarda bulgulara ulaşılabilir. Bu ölçüm hatasına ihtimal vermemek için cam aletler klordan etkilenmeyecek şekilde olmalıdır. Bunun için cam aletler bir saatliğine sodyum hipoklorit çözeltisinde (0,1 g/L) muhafaza edilir ve sonrasında demineralize su ile iyice yıkanır.
2. Arındırılmış klor ve toplam klorun münferit tespitini yapabilmek adına her biri için ayrı bir küvet seti kullanmak mantıklı olacaktır (bk. EN ISO 7393-2, par. 5.3).
3. DPD renk oluşumu 6,2 ila 6,5 pH değerinde gerçekleşir. Bu nedenle ayırıcılar, pH değeri ayarı için bir tampon çözeltisi içerir. Yine de analizden önce aşırı alkali veya asidik sular 6 ve 7 arasında bir pH aralığına getirilmelidir (0,5 mol/l sülfürik asit veya. 1 mol/l sodyum hidroksit'in su ile çözünmüş hali ile).

Notlar

1. MD50/150'de testi gerçekleştirmek için multiküvet yerine 24 mm'lik Ø bir küvet kullanılır.

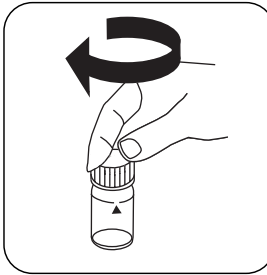


Tespitin uygulanması toz poşetleriyle birlikte serbest klor HR 2 (MD50/MD150)

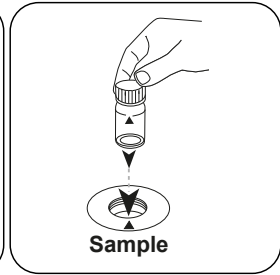
Cihazda metot seçin.



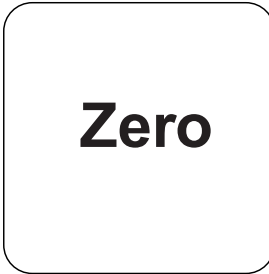
24 mm'lik küveti **10 mL numune** ile doldurun.



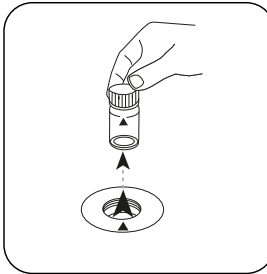
Küveti(küvetleri) kapatın.



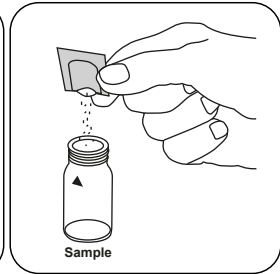
Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.



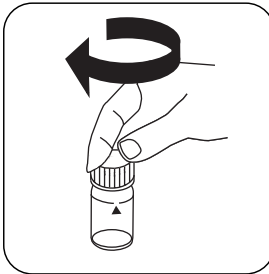
Sıfır ayarı yapın.



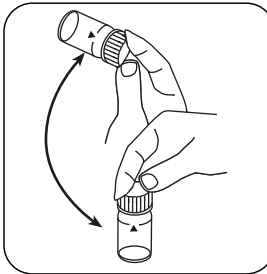
Küveti ölçüm haznesinden alın.



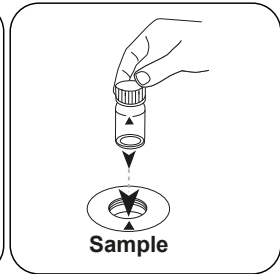
1 Vario Chlorine Free / F25 veya 2 Chlorine Total / F10 toz paketi ilave edin.



Küveti(küvetleri) kapatın.



Sallayarak içeriği karıştırın (20 sec.).



Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.

TR



Test

TR

Test gerçekleştirin.

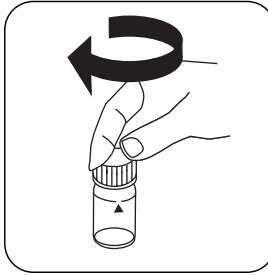
Ekranda sonuç mg/L klor cinsinden belirir.

Tespitin uygulanması toz poşetleriyle birlikte toplam klor HR 2 (MD50/MD150)

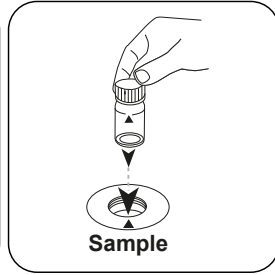
Cihazda metot seçin.



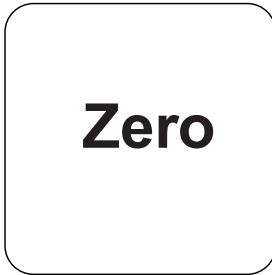
24 mm'lik küveti **10 mL numune** ile doldurun.



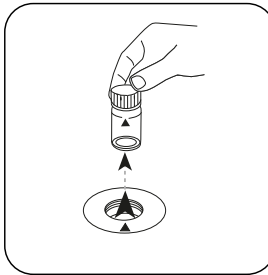
Küveti(küvetleri) kapatın.



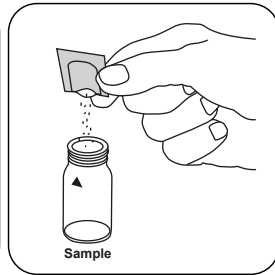
Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.



Sıfır ayarı yapın.

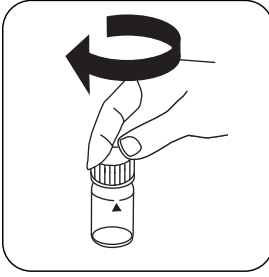


Küveti ölçüm haznesinden alın.

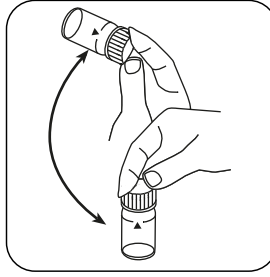


1 Vario Chlorine Free / F25 veya 2 Chlorine Total / F10 toz paketi ilave edin.

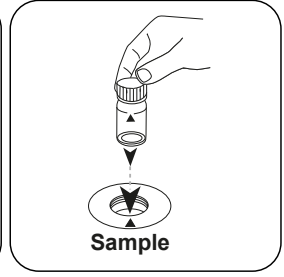
Zero



Küveti(küvetleri) kapatın.

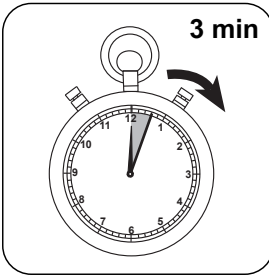


Sallayarak içeriği karıştırın
(20 sec.).

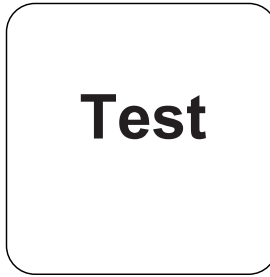


Numune küvetini ölçüm
haznesine koyun. Doğru
konumlandırılmasına dikkat
edin.

TR



3 dakika tepkime süresi
bekleyin.



Test gerçekleştirin.

Ekranda sonuç mg/L klor cinsinden belirir.



Kimyasal Metod

DPD

Apandis

TR

Girişim Metni

Kalıcı Girişimler

- Numunelerde bulunan tüm oksidasyon malzemeleri tıpkı klor gibi tepkime verir ve bu da fazla miktarda bulguya sebep olur.

Giderilebilir Girişimler

- Bakır ve demir (III) kaynaklı bozukluklar EDTA ile giderilmelidir.
- 10 mg/L klor üzerindeki konsantrasyonlar, toz paketleri kullanılması durumunda ölçüm aralığı içinde 0 mg/L'ye varan sonuçlara neden olabilir. Bu durumda numune klordan arındırılmış su ile seyreltilmelidir. Seyreltilen numunenin 5 ml'sine ayıraç katılır ve ölçüm tekrarlanır (uygunluk testi).

Uygunluk

EN ISO 7393-2



CyA HR T

M161

10 - 200 mg/L CyA

CyAH

Melamin

Malzeme

Gerekli materyal (kısmen isteğe bağlı):

Ayırıcılar	Paketleme Birimi	Ürün No
CyA HR-Test-100	Tablet / 100	511430BT
CyA HR-Test-250	Tablet / 250	511431BT

Notlar

1. Siyanür asidi, sütümsü bir görünüm ile çok ince dağılmış bir bulanıklığa neden olur. Münferit partiküller siyanür asidi mevcut olması durumuna bağlanamaz.
2. CyA-HR-Test tabletinin eklenmesinden sonra, iki dakika içinde bağımsız olarak çözülür.

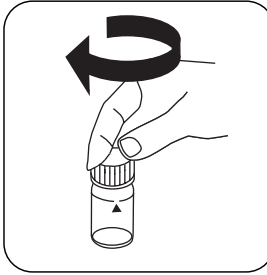
Tespitin uygulanması Tabletli siyanür asidi testi

Cihazda metot seçin.

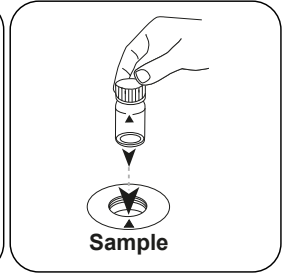
Bu yöntem için, aşağıdaki cihazlarda her seferinde SIFIR ölçümünün yapılması gerekmez: XD 7000, XD 7500



24 mm'lik küveti **10 mL numune** ile doldurun.



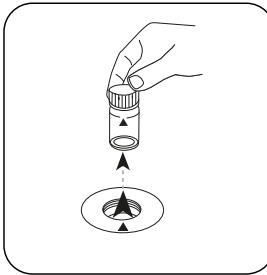
Küveti(küvetleri) kapatın.



Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.

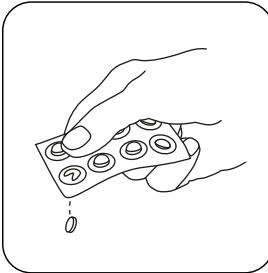


Sıfır ayarı yapın.

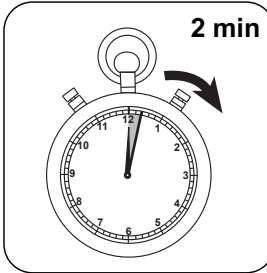


Küveti ölçüm haznesinden alın.

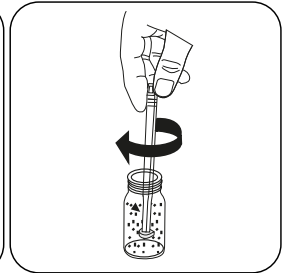
ZERO ölçümü gerektirmeyen cihazlarda buradan başlayın.



CyA HR Test tablet ilave edin.

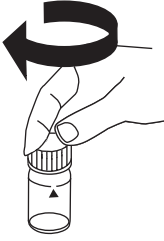


2 dakika tepkime süresi bekleyin.

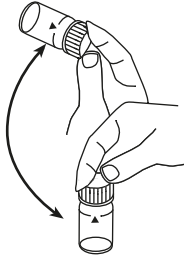


Tableti(tabletleri) temiz bir karıştırma çubuğu ile karıştırarak çözün.

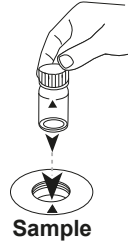
TR



Küveti(küvetleri) kapatın.



Sallayarak içeriği karıştırın
(değil sallamak).



Numune küvetini ölçüm
haznesine koyun. Doğru
konumlandırılmasına dikkat
edin.

Test

Test gerçekleştirin.

Ekranda sonuç mg/L Siyanürik asit cinsinden belirir.

Kimyasal Metod

Melamin

Girişim Metni

Kalıcı Girişimler

1. Çözünmemiş partiküller fazla miktarda bulgulara neden olabilir.

TR

Yöntem Doğrulama

Algılama Limiti	2.07 mg/L
Belirleme Limiti	6.2 mg/L
Ölçüm Aralığı Sonu	200 mg/L
Hassasiyet	77.47 mg/L / Abs
Güven Aralığı	4.6 mg/L
Standart Sapma	4.78 mg/L
Varyasyon Katsayısı	4.55 %



pH değeri T

M330

6.5 - 8.4 pH

PH

Fenol Kırmızısı

Malzeme

TR

Gerekli materyal (kısmen isteğe bağlı):

Ayırıcılar	Paketleme Birimi	Ürün No
Fenol kırmızısı fotometre	Tablet / 100	511770BT
Fenol kırmızısı fotometre	Tablet / 250	511771BT
Fenol kırmızısı fotometre	Tablet / 500	511772BT

Notlar

1. Fotometrik pH değeri tespiti için yalnızca FOTOMETRE kavramı ile işaretlenmiş siyah folyo baskılı PHENOL RED tabletler kullanılmalıdır.

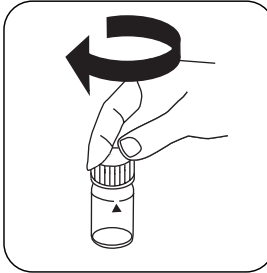
Tespitin uygulanması Tabletli pH değeri

Cihazda metot seçin.

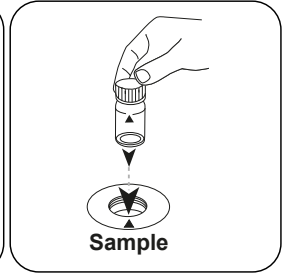
Bu yöntem için, aşağıdaki cihazlarda her seferinde SIFIR ölçümünün yapılması gerekmez: XD 7000, XD 7500



24 mm'lik küveti **10 mL numune** ile doldurun.



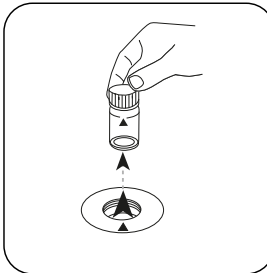
Küveti(küvetleri) kapatın.



Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.

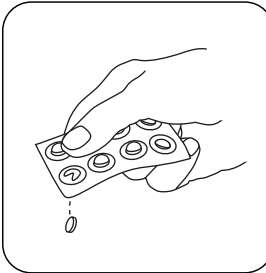


Sıfır ayarı yapın.

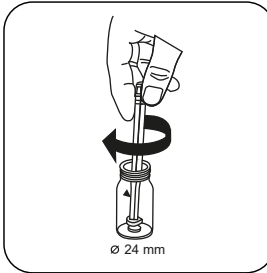


Küveti ölçüm haznesinden alın.

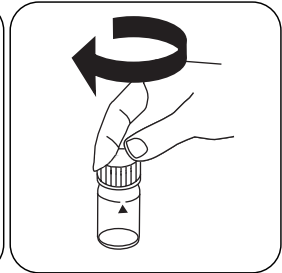
ZERO ölçümü gerektirmeyen cihazlarda buradan başlayın.



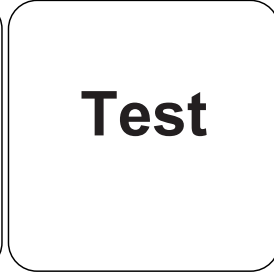
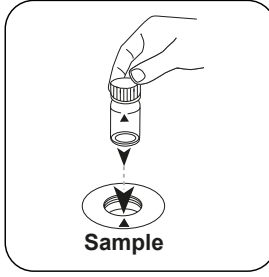
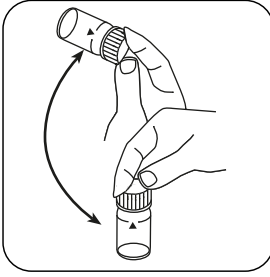
**PHENOL RED
PHOTOMETER tablet**
ilave edin.



Tableti(tabletleri) hafifçe döndürerek ezin.



Küveti(küvetleri) kapatın.



Test

TR

Tableti(tabletleri) sallayarak
çözdürün.

Numune küvetini ölçüm
haznesine koyun. Doğru
konumlandırılmasına dikkat
edin.

Test gerçekleştirin.

Ekranda sonuç pH değeri olarak belirir.

Kimyasal Metod

Fenol Kırmızısı

Apandis

Girişim Metni

TR

Kalıcı Girişimler

1. Su numuneleri düşük karbon sertlik derecesi* ile hatalı pH değerleri oluşabilir.
*K_{S4,3} < 0,7 mmol/l $\pm$ toplam alkalite < 35 mg/L CaCO₃.

Giderilebilir Girişimler

1. 6,5 altındaki ve 8,4 üzerindeki pH değerleri ölçüm aralığı içinde sonuçlara neden olabilir. Uygunluk testi (pH metre) önerilir.
2. Tuz hatası:
2 g/L'ye kadar tuz içeriklerinde ayıraç tabletlerin tuz içeriği nedeniyle kayda değer tuz hatası beklenmemelidir. Yüksek tuz içeriklerinde ölçüm değerleri şu şekilde düzeltilmelidir:

Numunenin tuz içeriği, g/L cinsinden	30 (deniz suyu)	60	120	180
Düzeltilme	-0,15 ¹⁾	-0,21 ²⁾	-0,26 ²⁾	-0,29 ²⁾

¹⁾ Kolthoff'a göre (1922)

²⁾ Parson ve Douglas'a göre (1926)

Bibliyografi

Colorimetric Chemical Analytical Methods, 9th Edition, London



pH değeri L

M331

6.5 - 8.4 pH

PH

Fenol Kırmızısı

Malzeme

TR

Gerekli materyal (kısmen isteğe bağlı):

Ayırıcılar	Paketleme Birimi	Ürün No
Fenol kırmızısı çözelti	15 mL	471040
Fenol kırmızısı çözelti	100 mL	471041
6'lı pakette fenol kırmızısı çözeltisi	1 adetler	471046

Hazırlık

- Farklı damla büyüklükleri nedeniyle ölçüm sonucu tablet kullanımından daha büyük sapmalara neden olabilir.
Bir pipet kullanılması durumunda (0,18 ml, 6 damla) bu sapma minimize edilebilir.

Notlar

- Kullandıktan sonra damla şişesi aynı renkteki kilitli kapak ile derhal kapatılmalıdır.
- Ayırıcı +6 °C ila +10 °C'de soğuk depolanmalıdır.



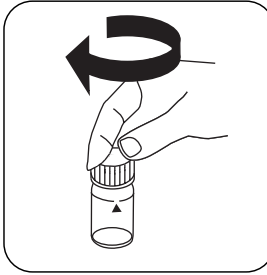
Tespitin uygulanması Sıvı ayıraçlı pH değeri

Cihazda metot seçin.

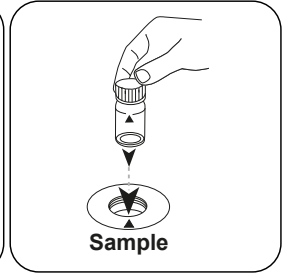
Bu yöntem için, aşağıdaki cihazlarda her seferinde SIFIR ölçümünün yapılması gerekmez: XD 7000, XD 7500



24 mm'lik küveti **10 mL numune** ile doldurun.



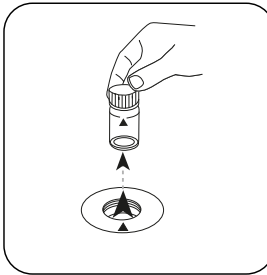
Küveti(küvetleri) kapatın.



Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.

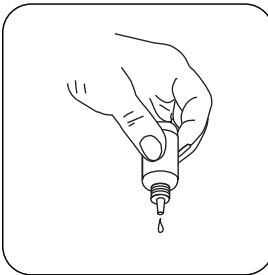


Sıfır ayarı yapın.

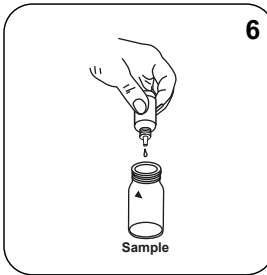


Küveti ölçüm haznesinden alın.

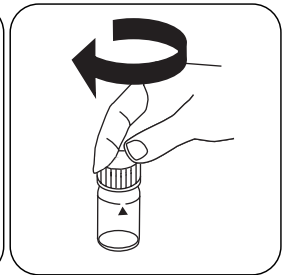
ZERO ölçümü gerektirmeyen cihazlarda buradan başlayın.



Damla şişelerini dik tutun ve yavaşça pompalayarak aynı büyüklükte damlalar ilave edin.

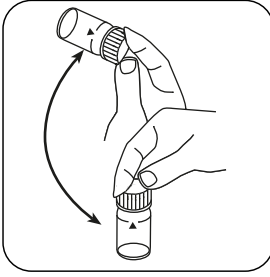


Numune küvetine 6 damla PHENOL Red-Lösung ilave edin.

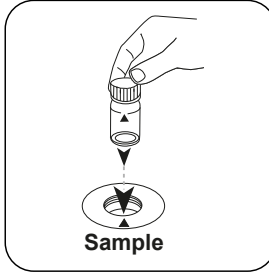


Küveti(küvetleri) kapatın.

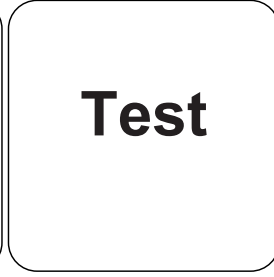
TR



Sallayarak içeriği karıştırın.



Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.



Test

Test gerçekleştirin.

Ekranda sonuç pH değeri olarak belirir.

TR

Kimyasal Metod

Fenol Kırmızısı

Apandis

Girişim Metni

TR

Giderilebilir Girişimler

1. Tuz hatası: Ölçüm değerinin (ortalama değerler) tuz içerikli numuneler için düzeltilmesi:

2.	Numunenin tuz içeriği	Düzeltilme
	30 g/L (deniz suyu)	-0,15 ¹⁾
	60 g/L	-0,21 ²⁾
	120 g/L	-0,26 ²⁾
	180 g/L	-0,29 ²⁾
	¹⁾ Kolthoff'a göre (1922)	²⁾ Parson ve Douglas'a göre (1926)

3. Klorlu suda yapılan incelemede mevcut artık klor içeriği sıvı ayırıcın renk tepkimesini etkileyebilir. Bu ise PHENOL RED çözeltisi karıştırılmadan önce küçük bir kristal sodyum tiyosülfat ($\text{Na}_2\text{S}_2\text{O}_3 \cdot 5 \text{H}_2\text{O}$) numune çözeltisine eklenerek önlenir.

Bibliyografi

Colorimetric Chemical Analytical Methods, 9th Edition, London

KS4.3 T / 20

Штрих-код для распознавания метода

Номер метода

Название метода

Диапазон измерений

Химический метод

KS_{4.3} T

0.1 - 4 mmol/l K_{4.3}

Кислота / индикатор

M20

S:4.3

Отображение на дисплее в MD 100 MD 110 / MD 200

Специфическая информация об инструменте

Тест может быть выполнен на следующих устройствах. Кроме того, указывается требуемая кювета и диапазон поглощения фотометра.

Приборы	Кювета	λ	Диапазон измерений
MD 200, MD 600, MD 610, MD 640, MultiDirect, PM 620, PM 630	ø 24 mm	610 nm	0.1 - 4 mmol/l K _{4.3}
SpectroDirect, XD 7000, XD 7500	ø 24 mm	615 nm	0.1 - 4 mmol/l K _{4.3}

Материал

Необходимый материал (частично необязательный):

Заголовок	Упаковочная единица	Номер заказа
Alka-M-Photometer	Таблетка / 100	513210BT
Alka-M-Photometer	Таблетка / 250	513211BT

Область применения

- Обработка сточных вод
- Подготовка питьевой воды
- Обработка сырой воды

Примечания

1. Термины Щелочность M, m-значение, общая калийность и кислотная сила K_{4.3} идентичны.
2. Точное соблюдение объема пробы в 10 мл имеет решающее значение для точности результатов анализа.

Сокращенное обозначение языка в соответствии с ISO 639-1

Статус редакции

RU

Методическое руководство

01/20

RU

Выполнение измерения

Выполнение определения Кислотная сила $K_{s4.3}$ с таблеткой

Выберите метод в устройстве.

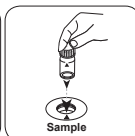
Для этого метода измерения нуля не требуется для следующих устройств: XD 7000, XD 7500



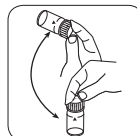
24-Наполните ковевту -мм 10 пробой мл.



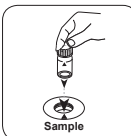
Закройте ковевту(ы).



Поместите ковевту для проб в измерительную шахту. Обращайте внимание на позиционирование.



Растворите таблетку (таблетки) покачиванием.



Поместите ковевту для проб в измерительную шахту. Обращайте внимание на позиционирование.



Нажмите клавишу TEST (XD: СТАРТ).

Test

На дисплее отображается результат в виде Кислотная сила $K_{s4.3}$.

**Хлор Т****М100****0.01 - 6.0 mg/L Cl₂ ^{a)}****CL6****DPD**

RU

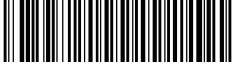
Материал

Необходимый материал (частично необязательный):

Реактивы	Упаковочная единица	Номер заказа
DPD №1	Таблетка / 100	511050BT
DPD № 1	Таблетка / 250	511051BT
DPD № 1	Таблетка / 500	511052BT
DPD № 3	Таблетка / 100	511080BT
DPD № 3	Таблетка / 250	511081BT
DPD № 3	Таблетка / 500	511082BT
DPD № 1 Кальций высокий ^{e)}	Таблетка / 100	515740BT
DPD № 1 Кальций высокий ^{e)}	Таблетка / 250	515741BT
DPD № 1 Кальций высокий ^{e)}	Таблетка / 500	515742BT
DPD № 3 Кальций высокий ^{e)}	Таблетка / 100	515730BT
DPD № 3 Кальций высокий ^{e)}	Таблетка / 250	515731BT
DPD № 3 Кальций высокий ^{e)}	Таблетка / 500	515732BT
DPD № 4	Таблетка / 100	511220BT
DPD № 4	Таблетка / 250	511221BT
DPD № 4	Таблетка / 500	511222BT
DPD № 3 Evo	Таблетка / 100	511420BT
DPD № 3 Evo	Таблетка / 250	511421BT
DPD № 3 Evo	Таблетка / 500	511422BT
DPD №4 Evo	Таблетка / 100	511970BT
DPD № 4 Evo	Таблетка / 250	511971BT
DPD № 4 Evo	Таблетка / 500	511972BT

Доступные стандарты

Заголовок	Упаковочная единица	Номер заказа
ValidCheck Хлор 1,5 мг/л	1 шт.	48105510



Отбор проб

1. Во время подготовки пробы необходимо избегать выделения хлора, например, из-за пипетирования и встряхивания.
2. Анализ должен проводиться сразу же после отбора проб.

Подготовка

1. Чистка кювет:
Поскольку многие бытовые чистящие средства (например, средства для мытья посуды) содержат восстановительные вещества, при определении хлора возможно получение пониженных результатов. Чтобы исключить эту погрешность измерения, стеклянные приборы не должны потреблять хлор. Для этого стеклотара хранится в течение часа под раствором гипохлорита натрия (0,1 г/л), а затем тщательно промывается полностью деминерализованной водой (полностью обессоленной водой).
2. Для индивидуального определения свободного хлора и общего хлора имеет смысл использовать отдельный набор кювет (см. EN ISO 7393-2, п. 5.3).
3. Развитие цвета DPD происходит при уровне pH от 6,2 до 6,5. Поэтому реагенты содержат буфер для регулировки уровня pH. Однако сильно щелочные или кислые воды должны быть приведены в диапазон pH от 6 до 7 (с 0,5 моль/л серной кислоты или 1 моль/л раствора гидроксида натрия) перед анализом.

Примечания

1. Таблетки EVO могут использоваться в качестве альтернативы соответствующим стандартным таблеткам (например, DPD № 3 EVO вместо DPD № 3).



Выполнение определения Свободный хлор, с использованием таблетки

Выберите метод в устройстве.

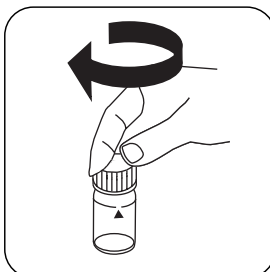
Также выберите определение: свободного.

Для этого метода необязательно проводить измерение НУЛЯ каждый раз на следующих устройствах: XD 7000, XD 7500

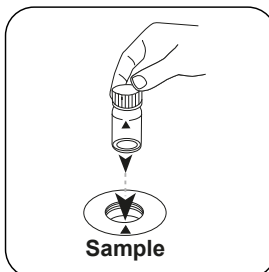
RU



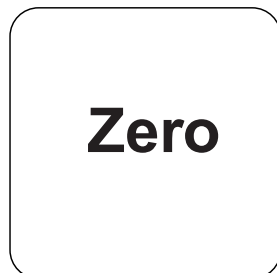
24-Наполните кювету -мм
10 пробой мл.



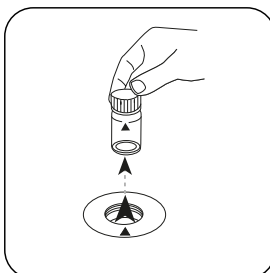
Закройте кювету(ы).



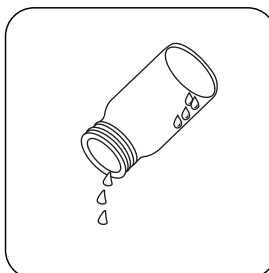
Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.



Выполнить нулевой.

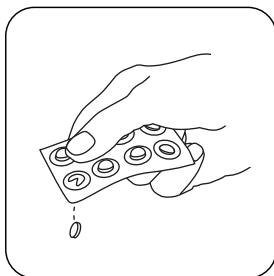
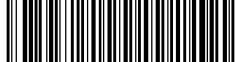


Извлеките кювету из измерительной шахты.

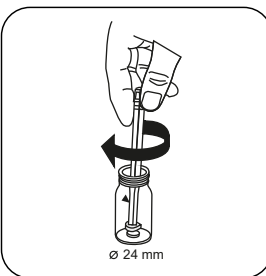


Опорожните кювету до нескольких капель.

Для приборов, для которых не требуется **измерение нулевого значения**, начните отсюда.



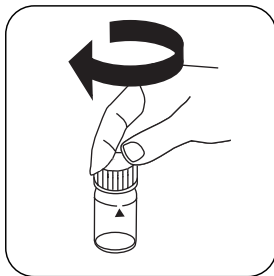
Добавить **таблетку DPD No. 1**.



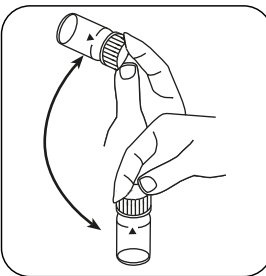
Раздавите таблетку (таблетки) легким вращением.



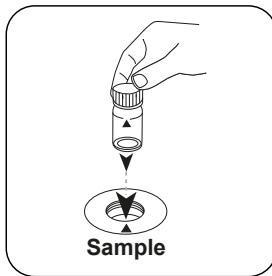
Наполните кювету **пробой** до **отметки 10 мл**.



Закройте кювету(ы).



Растворите таблетку (таблетки) покачиванием.



Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.

Test

Проведите тест.

На дисплее отображается результат в мг/л Свободный хлор.

Выполнение определения Общй Хлор с использованием таблетки

Выберите метод в устройстве.

Также выберите определение: общего.

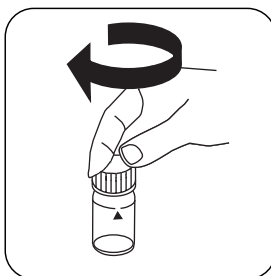
Для этого метода необязательно проводить измерение НУЛЯ каждый раз на следующих устройствах: XD 7000, XD 7500



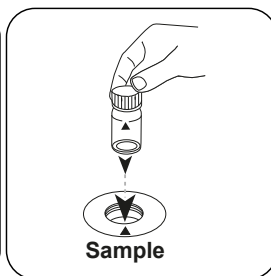
RU



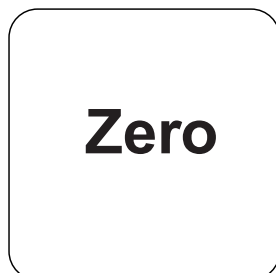
24-Наполните кювету -мм
10 пробой мл.



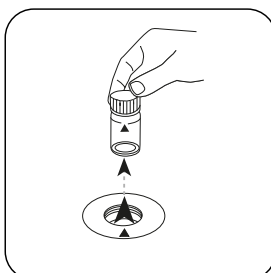
Закройте кювету(ы).



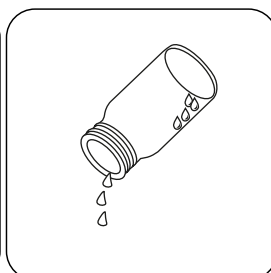
Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.



Выполнить нулевой.

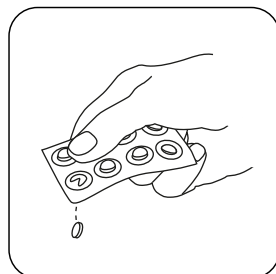


Извлеките кювету из измерительной шахты.

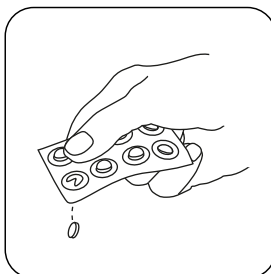


Опорожните кювету до нескольких капель.

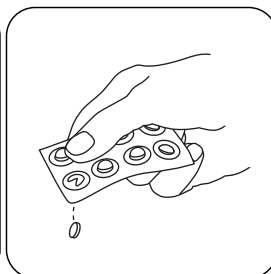
Для приборов, для которых не требуется **измерение нулевого значения**, начните отсюда.



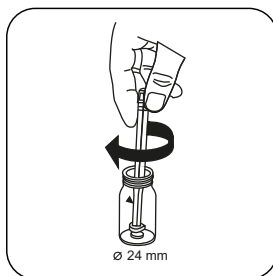
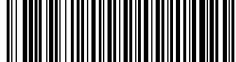
Добавить таблетку DPD
No. 1.



Добавить таблетку DPD
No. 3.



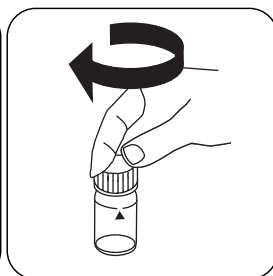
В качестве альтернативы таблеткам DPD №1 и №3 можно добавить 1 таблетку DPD №4.



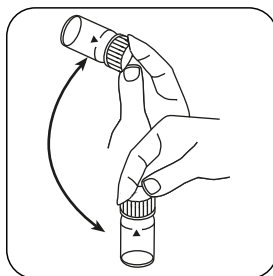
Раздавите таблетку (таблетки) легким вращением.



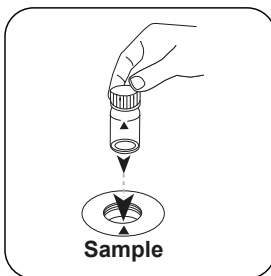
Наполните кювету **пробой** до **отметки 10 мл**.



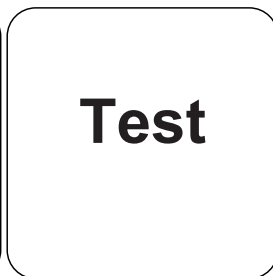
Закройте кювету(ы).



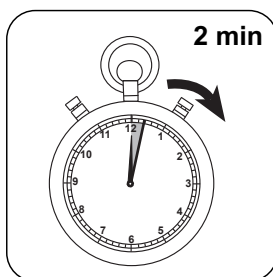
Растворите таблетку (таблетки) покачиванием.



Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.



Проведите тест.



Выдержите **2 минут(ы)** времени реакции.

По истечении времени реакции измерение выполняется автоматически.

На дисплее отображается результат в мг/л общего хлора.

Выполнение определения Хлор, дифференцированное, с использованием таблетки

Выберите метод в устройстве.

Также выберите определение: дифференцированное.

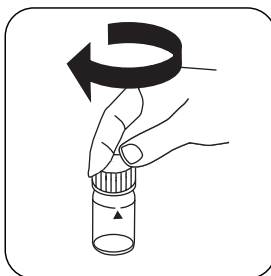


Для этого метода необязательно проводить измерение НУЛЯ каждый раз на следующих устройствах: XD 7000, XD 7500

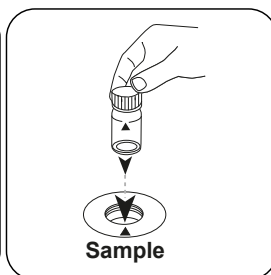
RU



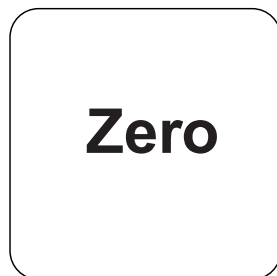
24-Наполните кювету -мм
10 пробой мл.



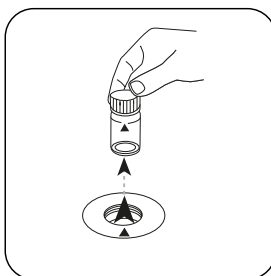
Закройте кювету(ы).



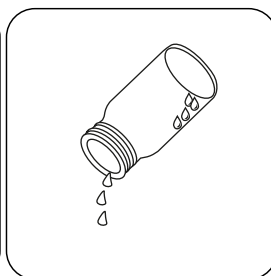
Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.



Выполнить нулевой.

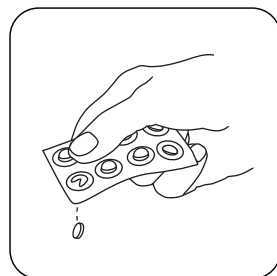


Извлеките кювету из измерительной шахты.

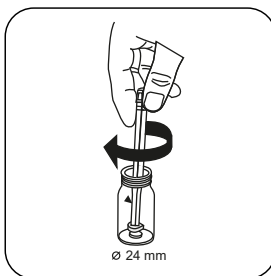


Опорожните кювету до нескольких капель.

Для приборов, для которых не требуется **измерение нулевого значения** ,
начните отсюда.



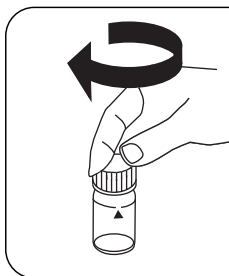
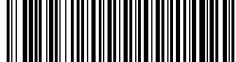
Добавить **таблетку DPD No. 1.**



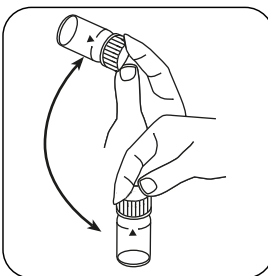
Раздавите таблетку (таблетки) легким вращением.



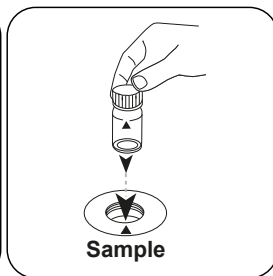
Наполните кювету **пробой** до **отметки 10 мл** .



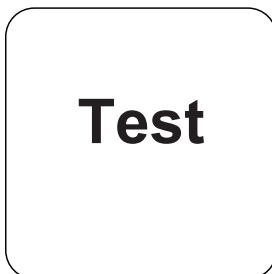
Закройте кювету(ы).



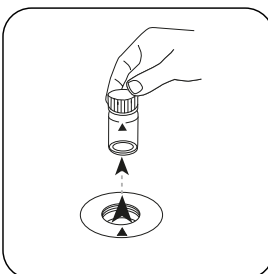
Растворите таблетку (таблетки) покачиванием.



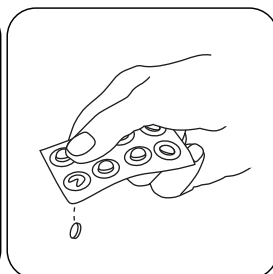
Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.



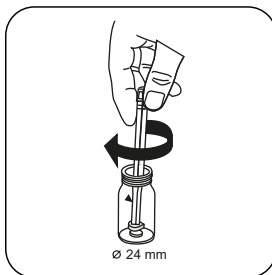
Проведите тест.



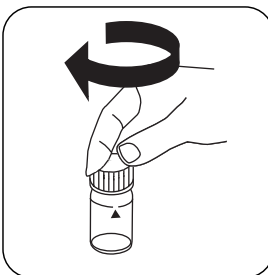
Извлеките кювету из измерительной шахты.



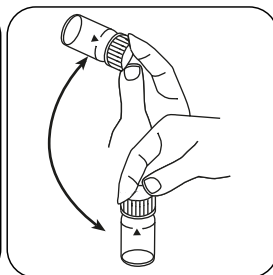
Добавить **таблетку DPD No. 3.**



Раздавите таблетку (таблетки) легким вращением.



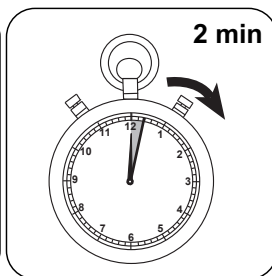
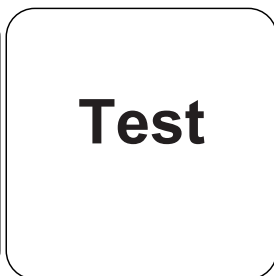
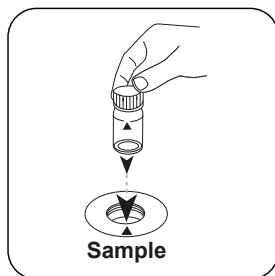
Закройте кювету(ы).



Растворите таблетку (таблетки) покачиванием.



RU



Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.

Проведите тест.

Выдержите **2 минут(ы)** времени реакции.

По истечении времени реакции измерение выполняется автоматически.

На дисплее отображается результат в мг/л мг/л Свободный хлор, мг/л связанный хлор, мг/л общий хлор.

Химический метод

DPD

Приложение

Нарушения

Постоянные нарушения

- Все окислительные средства, присутствующие в пробах, реагируют как хлор, что приводит к повышенным результатам.

Исключаемые нарушения

- Нарушения, вызванные медью и железом (III), должны быть устранены с помощью EDTA.
- В случае проб с высоким содержанием кальция* и/или высокой электропроводностью* использование таблеток реагента может привести к затуманиванию пробы и, как следствие, к неправильному измерению. В этом случае в качестве альтернативы используйте таблетку реагента DPD № 1 High Calcium и таблетку реагента DPD № 3. Использовать High Calcium.
*Точные значения не могут быть приведены, так как образование мутности зависит от типа и состава пробоотборной воды.
- Концентрации выше 10 мг/л хлора при использовании таблеток могут привести к результатам в диапазоне измерения до 0 мг/л. Если концентрация хлора слишком высока, пробу следует разбавить водой без содержания хлора. Добавьте реагент в 10 мл разбавленной пробы и повторите измерение (испытание на достоверность).

Помехи	от / [мг/л]
CrO_4^{2-}	0.01
MnO_2	0.01

Соответствует

EN ISO 7393-2

^{a)} определение свободного, связанного и общего содержания | ^{e)} альтернативный реагент, используемый вместо DPD №1/№3 в случае мутности в пробе воды, вызванной высокой концентрацией кальция и/или высокой проводимостью

**Хлор L****M101****0.02 - 4.0 mg/L Cl₂ ^{a)}****CL6****DPD**

RU

Материал

Необходимый материал (частично необязательный):

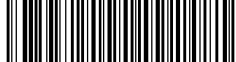
Реактивы	Упаковочная единица	Номер заказа
Буферный раствор DPD 1, синяя бутылка	15 mL	471010
DPD 1 буферный раствор	100 mL	471011
Буферный раствор DPD 1 в упаковке из 6 единиц	1 Шт.	471016
Раствор реагента DPD 1, зеленая бутылка	15 mL	471020
DPD 1 раствор реагента	100 mL	471021
Раствор реагента DPD 1 в упаковке из 6 единиц	1 Шт.	471026
Раствор DPD 3, красная бутылка	15 mL	471030
DPD 3 раствор	100 mL	471031
Раствор DPD 3 в упаковке из 6 единиц	1 Шт.	471036
Набор реагентов DPD	1 Шт.	471056

Доступные стандарты

Заголовок	Упаковочная единица	Номер заказа
ValidCheck Хлор 1,5 мг/л	1 Шт.	48105510

Отбор проб

1. Во время подготовки пробы необходимо избегать выделения хлора, например, из-за пипетирования и встряхивания.
2. Анализ должен проводиться сразу же после отбора проб.



Подготовка

1. Чистка кювет:
Поскольку многие бытовые чистящие средства (например, средства для мытья посуды) содержат восстановительные вещества, при определении хлора возможно получение пониженных результатов. Чтобы исключить эту погрешность измерения, стеклянные приборы не должны потреблять хлор. Для этого стеклотара хранится в течение часа под раствором гипохлорита натрия (0,1 г/л), а затем тщательно промывается полностью деминерализованной водой (полностью обессоленной водой).
2. Для индивидуального определения свободного хлора и общего хлора имеет смысл использовать отдельный набор кювет (см. EN ISO 7393-2, п. 5.3).
3. Развитие цвета DPD происходит при уровне pH от 6,2 до 6,5. Поэтому реагенты содержат буфер для регулировки уровня pH. Однако сильно щелочные или кислые воды должны быть приведены в диапазон pH от 6 до 7 (с 0,5 моль/л серной кислоты или 1 моль/л раствора гидроксида натрия) перед анализом.

Примечания

1. После использования бутылки с капельницей должны быть немедленно закрыты навинчивающейся крышкой того же цвета.
2. Храните набор реагентов при температуре от +6 °C до +10 °C в прохладном месте.



Выполнение определения Свободный хор, с использованием жидкого реагента

Выберите метод в устройстве.

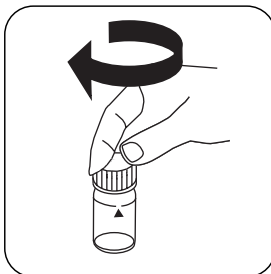
Также выберите определение: свободного.

Для этого метода необязательно проводить измерение НУЛЯ каждый раз на следующих устройствах: XD 7000, XD 7500

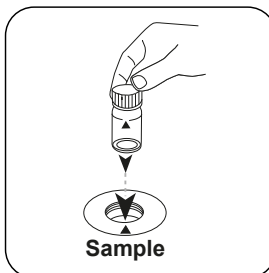
RU



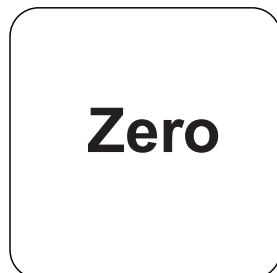
24-Наполните кювету -мм
10 пробой мл.



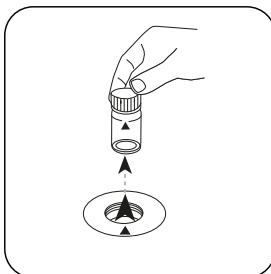
Закройте кювету(ы).



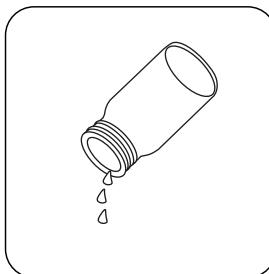
Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.



Выполнить нулевой.

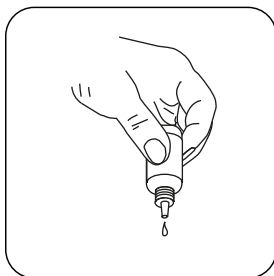
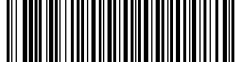


Извлеките кювету из измерительной шахты.

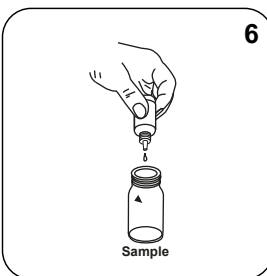


Опорожните кювету.

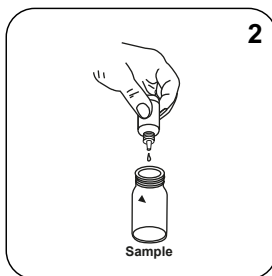
Для приборов, для которых не требуется **измерение нулевого значения**, начните отсчета.



Держите капельницы вертикально и добавляйте капли того же размера, медленно нажимая на них.



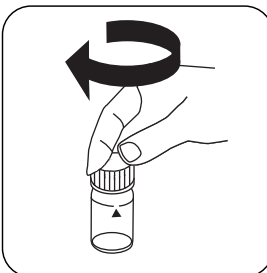
Добавьте **6 капли DPD 1 Buffer Solution** в кювету для проб.



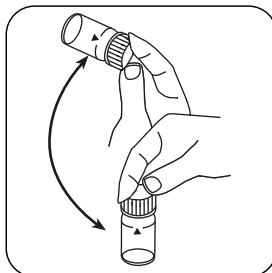
Добавьте **2 капли DPD 1 Reagent Solution** в кювету для проб.



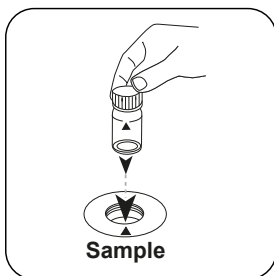
Наполните кювету пробой до **отметки 10 мл**



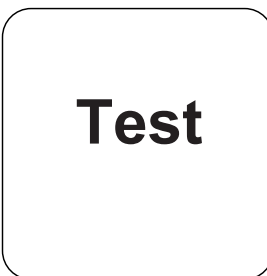
Закройте кювету(ы).



Перемешайте содержимое покачиванием.



Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.



Проведите тест.

На дисплее отображается результат в мг/л Свободный хлор.

Выполнение определения Общий хлор, с использованием жидкого реагента

Выберите метод в устройстве.



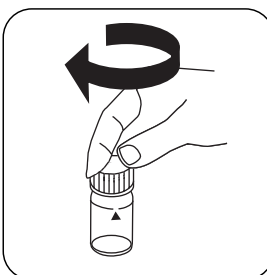
Также выберите определение: общего.

Для этого метода необязательно проводить измерение НУЛЯ каждый раз на следующих устройствах: XD 7000, XD 7500

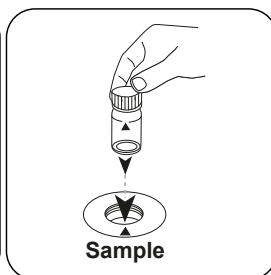
RU



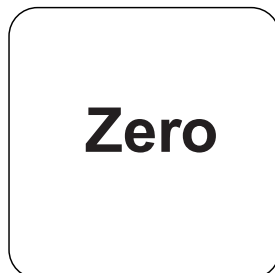
24-Наполните кювету -мм
10 пробой мл.



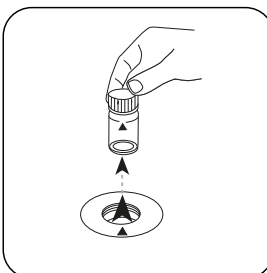
Закройте кювету(ы).



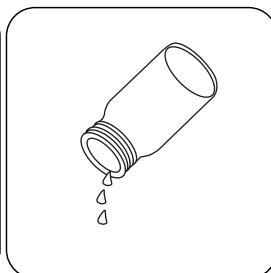
Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.



Выполнить нулевой.

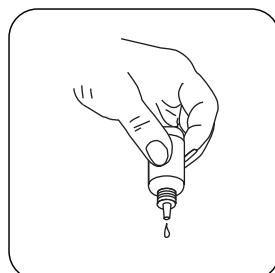


Извлеките кювету из измерительной шахты.

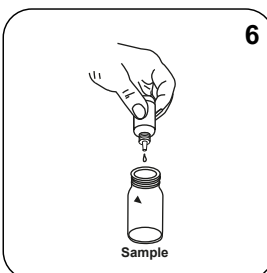


Опорожните кювету.

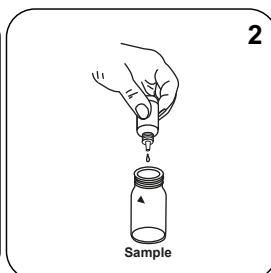
Для приборов, для которых не требуется **измерение нулевого значения**, начните отсюда.



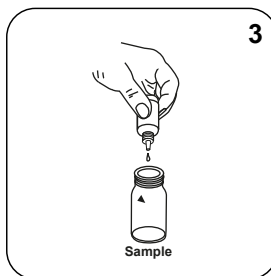
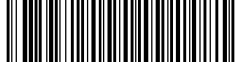
Держите капельницы вертикально и добавляйте капли того же размера, медленно нажимая на них.



Добавьте **6 капли DPD 1 Buffer Solution** в кювету для проб.



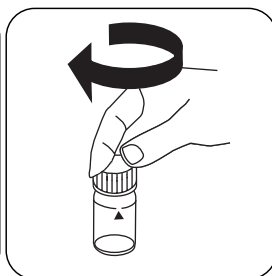
Добавьте **2 капли DPD 1 Reagent Solution** в кювету для проб.



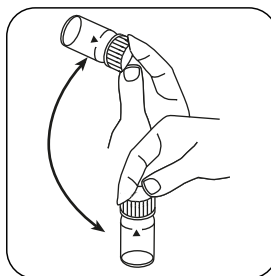
Добавьте **3 капли DPD 3 Solution** в кювету для проб.



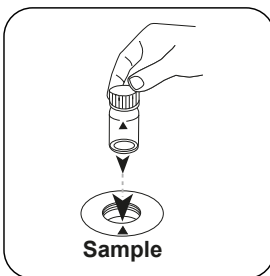
Наполните кювету **пробой** до **отметки 10 мл**.



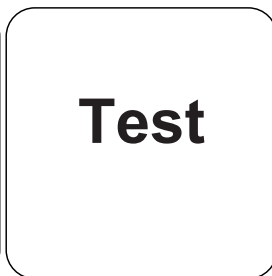
Закройте кювету(ы).



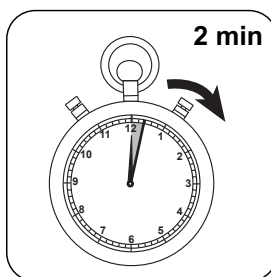
Перемешайте содержимое покачиванием.



Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.



Проведите тест.



Выдержите **2 минут(ы)** времени реакции.

По истечении времени реакции измерение выполняется автоматически.

На дисплее отображается результат в мг/л общего хлора.

Выполнение определения Хлор, дифференцированное определение, с использованием жидкого реагента

Выберите метод в устройстве.

Также выберите определение: дифференцированное.

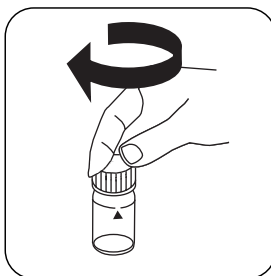


Для этого метода необязательно проводить измерение НУЛЯ каждый раз на следующих устройствах: XD 7000, XD 7500

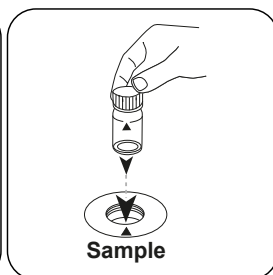
RU



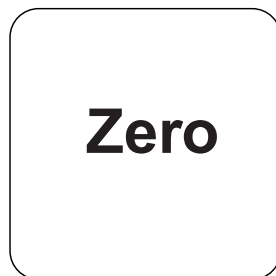
24-Наполните кювету -мм
10 пробой мл.



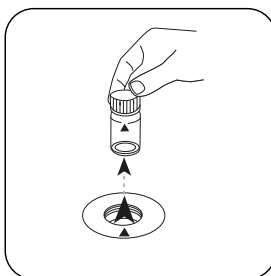
Закройте кювету(ы).



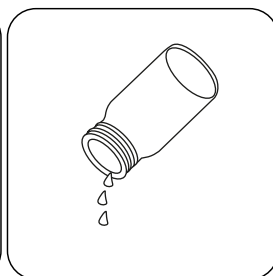
Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.



Выполнить нулевой.

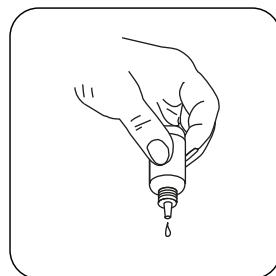


Извлеките кювету из измерительной шахты.

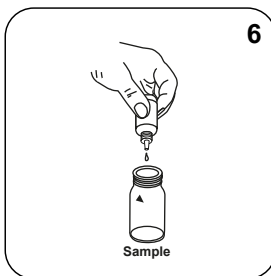


Опорожните кювету.

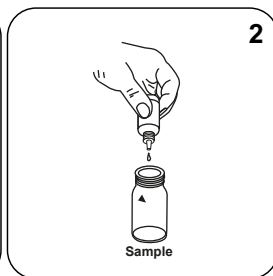
Для приборов, для которых не требуется **измерение нулевого значения**, начните отсюда.



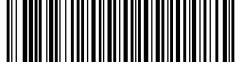
Держите капельницы вертикально и добавляйте капли того же размера, медленно нажимая на них.



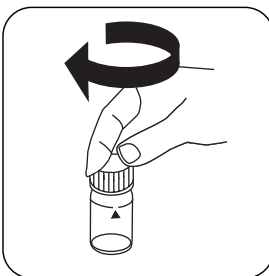
Добавьте **6 капли DPD 1 Buffer Solution** в кювету для проб.



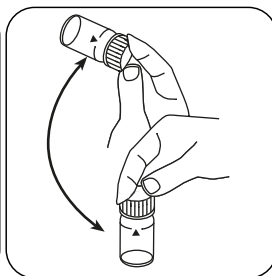
Добавьте **2 капли DPD 1 Reagent Solution** в кювету для проб.



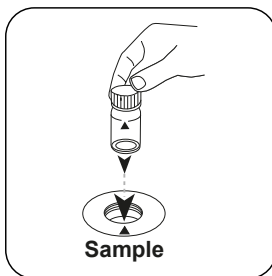
Наполните кювету пробой до отметки 10 мл .



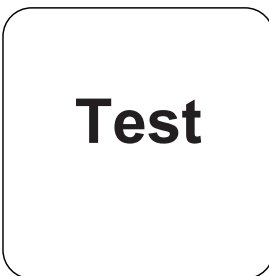
Закройте кювету(ы).



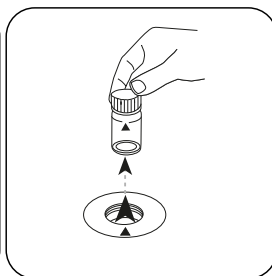
Перемешайте содержимое покачиванием.



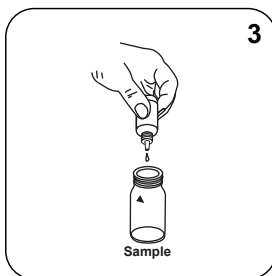
Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.



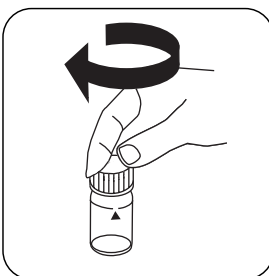
Проведите тест.



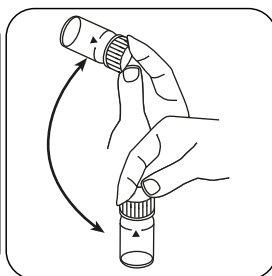
Извлеките кювету из измерительной шахты.



Добавьте **3 капли DPD 3 Solution** в кювету для проб.



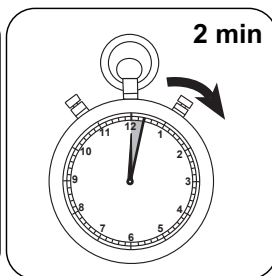
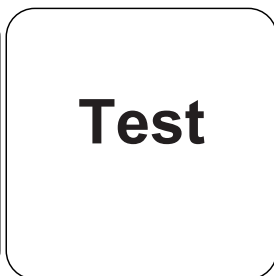
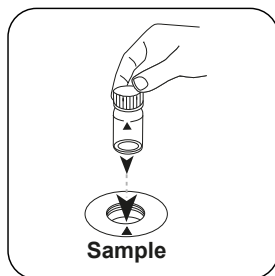
Закройте кювету(ы).



Перемешайте содержимое покачиванием.



RU



Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.

Проведите тест.

Выдержите **2 минут(ы)** времени реакции.

По истечении времени реакции измерение выполняется автоматически.

На дисплее отображается результат в мг/л мг/л Свободный хлор, мг/л связанный хлор, мг/л общий хлор.

Химический метод

DPD

Приложение

Нарушения

RU

Постоянные нарушения

- Все окислационные средства, присутствующие в пробах, реагируют как хлор, что приводит к повышенным результатам.

Исключаемые нарушения

- Нарушения, вызванные медью и железом (III), должны быть устранены с помощью EDTA.
- Концентрации выше 4 мг/л хлора при использовании жидких реагентов могут привести к результатам в диапазоне измерения до 0 мг/л. В этом случае проба должна быть разбавлена водой без содержания хлора. Добавьте реагент в 10 мл разбавленной пробы и повторите измерение (испытание на достоверность).

Помехи	от / [мг/л]
CrO_4^{2-}	0,01
MnO_2	0,01

Соответствует

EN ISO 7393-2

^{a)} определение свободного, связанного и общего содержания

**Хлор HR T****M103****0.1 - 10 mg/L Cl₂ ^{a)}****CL10****DPD**

RU

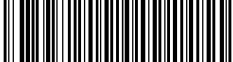
Материал

Необходимый материал (частично необязательный):

Реактивы	Упаковочная единица	Номер заказа
DPD № 1 HR	Таблетка / 100	511500BT
DPD № 1 HR	Таблетка / 250	511501BT
DPD № 1 HR	Таблетка / 500	511502BT
DPD № 3 HR	Таблетка / 100	511590BT
DPD № 3 HR	Таблетка / 250	511591BT
DPD № 3 HR	Таблетка / 500	511592BT
Набор DPD № 1 HR/№ 3 HR [#]	100 каждая	517791BT
Набор DPD № 1 HR/№ 3 HR [#]	250 каждая	517792BT
DPD № 1 Кальций высокий ^{e)}	Таблетка / 100	515740BT
DPD № 1 Кальций высокий ^{e)}	Таблетка / 250	515741BT
DPD № 1 Кальций высокий ^{e)}	Таблетка / 500	515742BT
DPD № 3 Кальций высокий ^{e)}	Таблетка / 100	515730BT
DPD № 3 Кальций высокий ^{e)}	Таблетка / 250	515731BT
DPD № 3 Кальций высокий ^{e)}	Таблетка / 500	515732BT
DPD №3 HR Evo	Таблетка / 100	511920BT
DPD № 3 HR Evo	Таблетка / 250	511921BT
DPD № 3 HR Evo	Таблетка / 500	511922BT

Отбор проб

1. Во время подготовки пробы необходимо избегать выделения хлора, например, из-за пипетирования и встряхивания.
2. Анализ должен проводиться сразу же после отбора проб.



Подготовка

1. Чистка кювет:
Поскольку многие бытовые чистящие средства (например, средства для мытья посуды) содержат восстановительные вещества, при определении хлора возможно получение пониженных результатов. Чтобы исключить эту погрешность измерения, стеклянные приборы не должны потреблять хлор. Для этого стеклотара хранится в течение часа под раствором гипохлорита натрия (0,1 г/л), а затем тщательно промывается полностью деминерализованной водой (полностью обессоленной водой).
2. Для индивидуального определения свободного хлора и общего хлора имеет смысл использовать отдельный набор кювет (см. EN ISO 7393-2, п. 5.3).
3. Развитие цвета DPD происходит при уровне pH от 6,2 до 6,5. Поэтому реагенты содержат буфер для регулировки уровня pH. Однако сильно щелочные или кислые воды должны быть приведены в диапазон pH от 6 до 7 (с 0,5 моль/л серной кислоты или 1 моль/л раствора гидроксида натрия) перед анализом.

Примечания

1. Таблетки Evo могут использоваться в качестве альтернативы соответствующим стандартным таблеткам (например, DPD № 3 Evo вместо DPD № 3).



Выполнение определения Свободный хлор HR, с использованием таблетки

Выберите метод в устройстве.

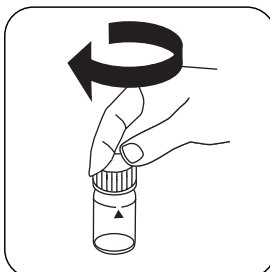
Также выберите определение: свободного.

Для этого метода необязательно проводить измерение НУЛЯ каждый раз на следующих устройствах: XD 7000, XD 7500

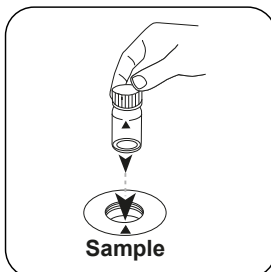
RU



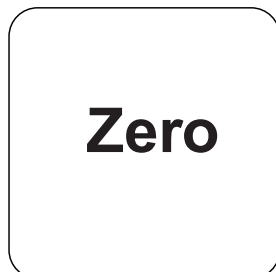
24-Наполните кювету -мм
10 пробой мл.



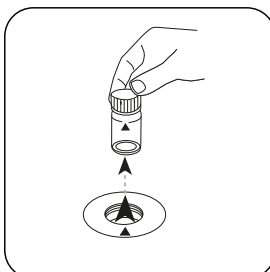
Закройте кювету(ы).



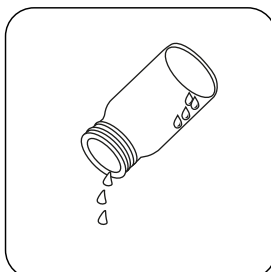
Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.



Выполнить нулевой.

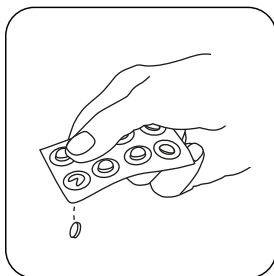
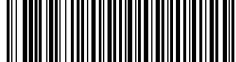


Извлеките кювету из измерительной шахты.

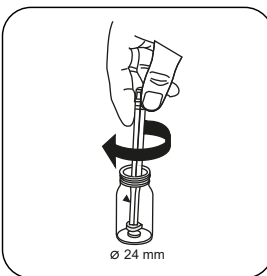


Опорожните кювету до нескольких капель.

Для приборов, для которых не требуется **измерение нулевого значения**, начните отсюда.



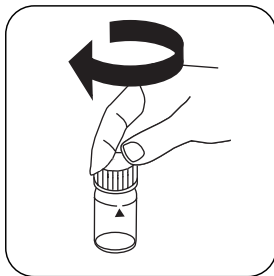
Добавить **таблетку DPD No. 1 HR**.



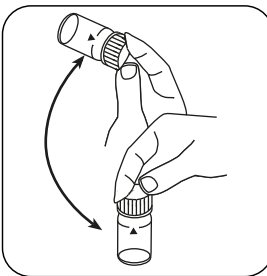
Раздавите таблетку (таблетки) легким вращением.



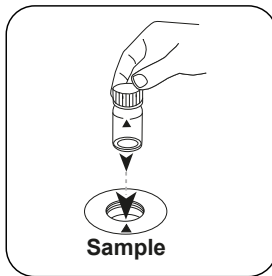
Наполните кювету **пробой** до **отметки 10 мл**.



Закройте кювету(ы).



Растворите таблетку (таблетки) покачиванием.



Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.

Test

Проведите тест.

На дисплее отображается результат в мг/л Свободный хлор.

Выполнение определения Общй Хлор HR с использованием таблетки

Выберите метод в устройстве.

Также выберите определение: общего.

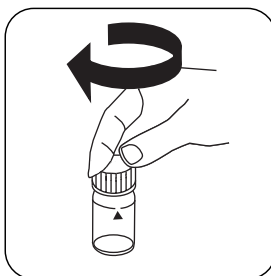
Для этого метода необязательно проводить измерение НУЛЯ каждый раз на следующих устройствах: XD 7000, XD 7500



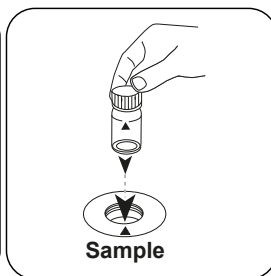
RU



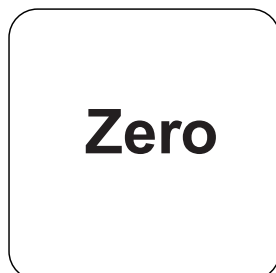
24-Наполните кювету -мм
10 пробой мл.



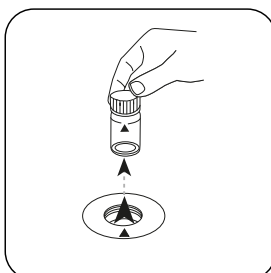
Закройте кювету(ы).



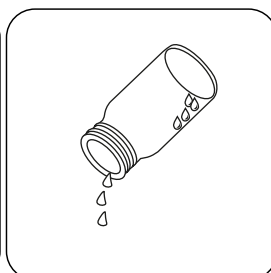
Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.



Выполнить нулевой.

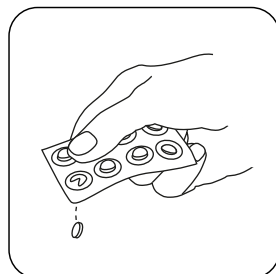


Извлеките кювету из измерительной шахты.

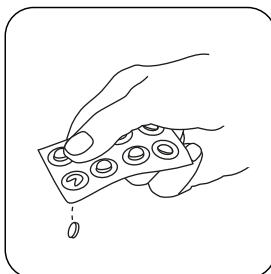


Опорожните кювету до нескольких капель.

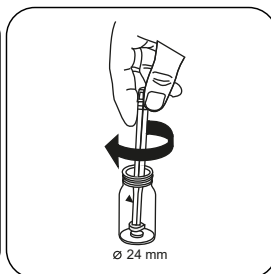
Для приборов, для которых не требуется **измерение нулевого значения**, начните отсюда.



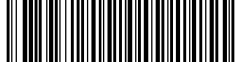
Добавить **таблетку DPD No. 1 HR**.



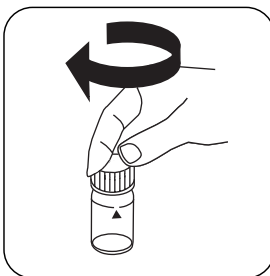
Добавить **таблетку DPD No. 3 HR**.



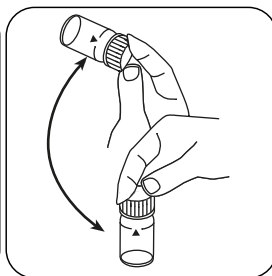
Раздавите таблетку (таблетки) легким вращением.



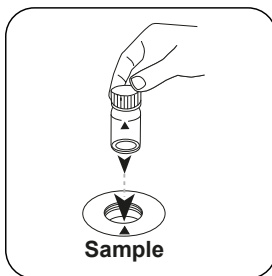
Наполните кювету **пробой** до **отметки 10 мл**.



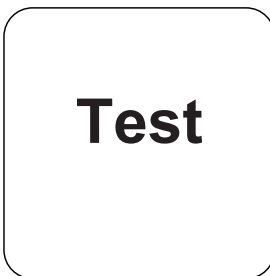
Закройте кювету(ы).



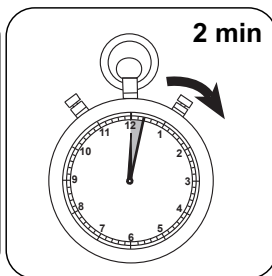
Растворите таблетку (таблетки) покачиванием.



Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.



Проведите тест.



Выдержите **2 минут(ы)** времени реакции.

По истечении времени реакции измерение выполняется автоматически.

На дисплее отображается результат в мг/л общего хлора.

Выполнение определения Хлор HR, дифференцированное, с использованием таблетки

Выберите метод в устройстве.

Также выберите определение: дифференцированное.

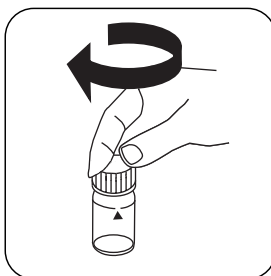
Для этого метода обязательно проводить измерение НУЛЯ каждый раз на следующих устройствах: XD 7000, XD 7500



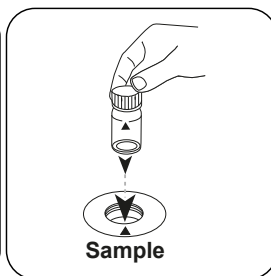
RU



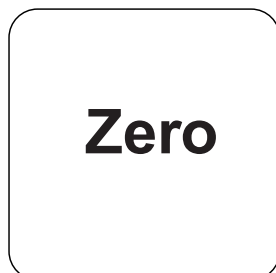
24-Наполните кювету -мм
10 пробой мл.



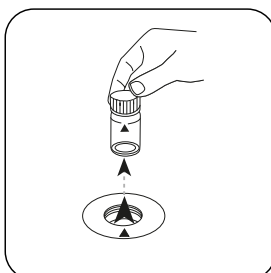
Закройте кювету(ы).



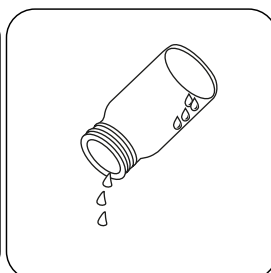
Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.



Выполнить нулевой.

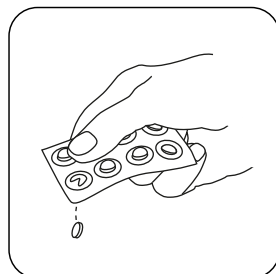


Извлеките кювету из измерительной шахты.

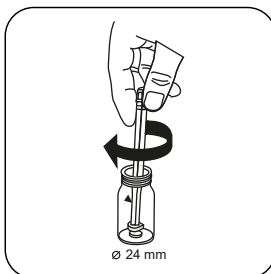


Опорожните кювету до нескольких капель.

Для приборов, для которых не требуется **измерение нулевого значения** ,
начните отсюда.



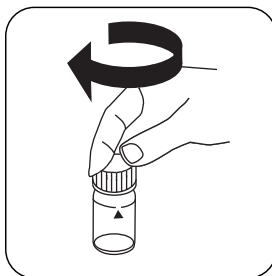
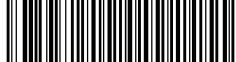
Добавить **таблетку DPD No. 1 HR** .



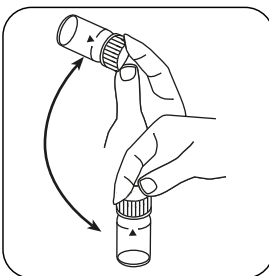
Раздавите таблетку (таблетки) легким вращением.



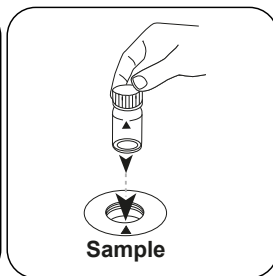
Наполните кювету **пробой** до **отметки 10 мл** .



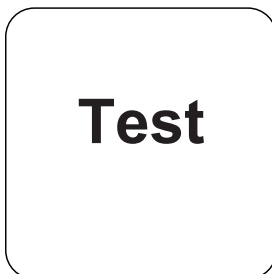
Закройте кювету(ы).



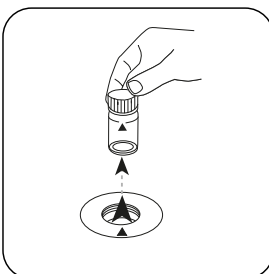
Растворите таблетку (таблетки) покачиванием.



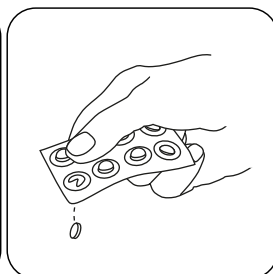
Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.



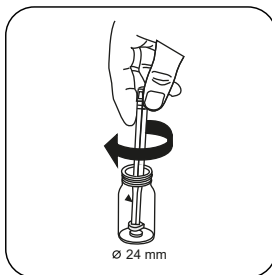
Проведите тест.



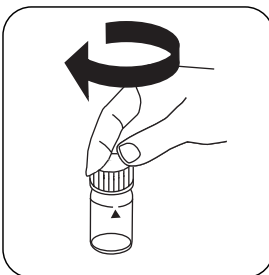
Извлеките кювету из измерительной шахты.



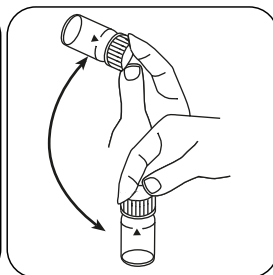
Добавить **таблетку DPD No. 3 HR**.



Раздавите таблетку (таблетки) легким вращением.



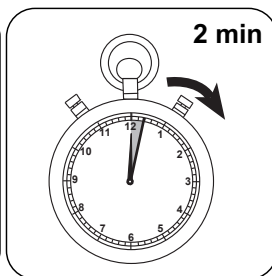
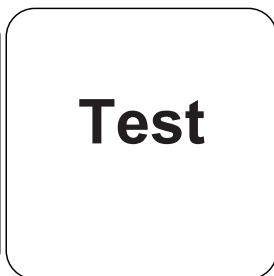
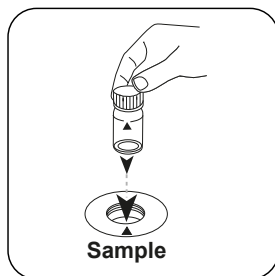
Закройте кювету(ы).



Растворите таблетку (таблетки) покачиванием.



RU



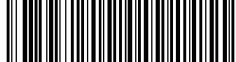
Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.

Проведите тест.

Выдержите **2 минут(ы)** времени реакции.

По истечении времени реакции измерение выполняется автоматически.

На дисплее отображается результат в мг/л мг/л Свободный хлор, мг/л связанный хлор, мг/л общий хлор.



Химический метод

DPD

Приложение

Нарушения

RU

Постоянные нарушения

- Все окислационные средства, присутствующие в пробах, реагируют как хлор, что приводит к повышенным результатам.

Исключаемые нарушения

- Нарушения, вызванные медью и железом (III), должны быть устранены с помощью EDTA.
- В случае проб с высоким содержанием кальция* и/или высокой электропроводностью* использование таблеток реагента может привести к затуманиванию пробы и, как следствие, к неправильному измерению. В этом случае альтернативой может быть таблетка реагента DPD № 1 High Calcium и таблетка реагента DPD № 3 Использовать High Calcium.

*Точные значения не могут быть приведены, так как образование мутности зависит от типа и состава пробоотборной воды.

Соответствует

EN ISO 7393-2

^{a)} определение свободного, связанного и общего содержания | ^{e)} альтернативный реагент, используемый вместо DPD №1/№3 в случае мутности в пробе воды, вызванной высокой концентрацией кальция и/или высокой проводимостью | * в комплект входит палочка для перемешивания

**Хлор РР****М110****0.02 - 2 mg/L Cl₂ ^{a)}****CL2****DPD**

RU

Материал

Необходимый материал (частично необязательный):

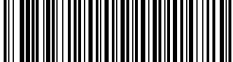
Реактивы	Упаковочная единица	Номер заказа
хлорины свободный DPD F10	Порошок / 100 шт.	530100
хлорины свободный DPD F10	Порошок / 1000 шт.	530103
хлорины общий DPD F10	Порошок / 100 шт.	530120
хлорины общий DPD F10	Порошок / 1000 шт.	530123

Доступные стандарты

Заголовок	Упаковочная единица	Номер заказа
ValidCheck Хлор 1,5 мг/л	1 шт.	48105510

Отбор проб

1. Во время подготовки пробы необходимо избегать выделения хлора, например, из-за пипетирования и встряхивания.
2. Анализ должен проводиться сразу же после отбора проб.



Подготовка

1. Чистка кювет:
Поскольку многие бытовые чистящие средства (например, средства для мытья посуды) содержат восстановительные вещества, при определении хлора возможно получение пониженных результатов. Чтобы исключить эту погрешность измерения, стеклянные приборы не должны потреблять хлор. Для этого стеклотара хранится в течение часа под раствором гипохлорита натрия (0,1 г/л), а затем тщательно промывается полностью деминерализованной водой (полностью обессоленной водой).
2. Для индивидуального определения свободного хлора и общего хлора имеет смысл использовать отдельный набор кювет (см. EN ISO 7393-2, п. 5.3).
3. Развитие цвета DPD происходит при уровне pH от 6,2 до 6,5. Поэтому реагенты содержат буфер для регулирования уровня pH. Однако сильно щелочные или кислые воды должны быть приведены в диапазон pH от 6 до 7 (с 0,5 моль/л серной кислоты или 1 моль/л раствора гидроксида натрия) перед анализом.

RU



Выполнение определения Свободный хлор, с использованием порошкообразного реагента

Выберите метод в устройстве.

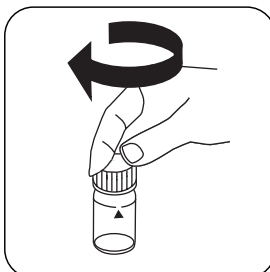
Также выберите определение: свободного.

Для этого метода необязательно проводить измерение НУЛЯ каждый раз на следующих устройствах: XD 7000, XD 7500

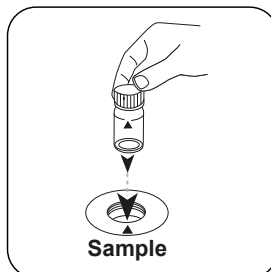
RU



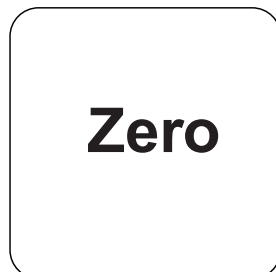
24-Наполните кювету -мм
10 пробой мл.



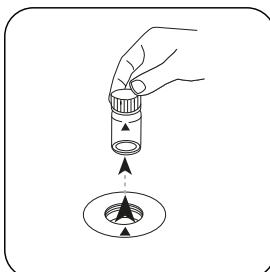
Закройте кювету(ы).



Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.

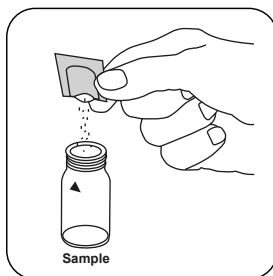
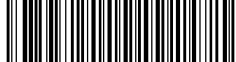


Выполнить нулевой.

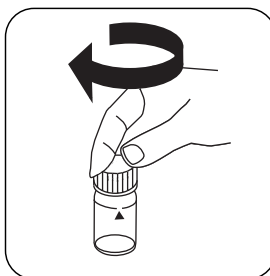


Извлеките кювету из измерительной шахты.

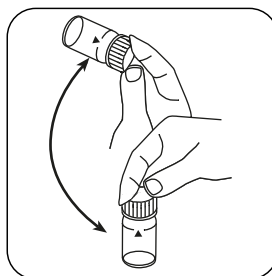
Для приборов, для которых не требуется **измерение нулевого значения**, начните отсюда.



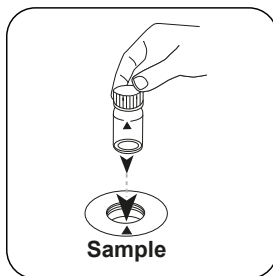
Добавьте **упаковку порошка Chlorine FREE-DPD/ F10**.



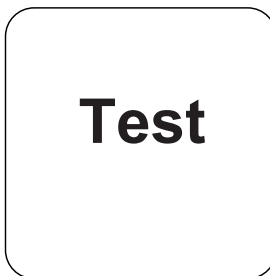
Закройте кювету(ы).



Перемешайте содержимое покачиванием (20 sec.).



Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.



Проведите тест.

На дисплее отображается результат в мг/л Свободный хлор.

Выполнение определения Общий хлор, с использованием порошкообразного реагента

Выберите метод в устройстве.

Также выберите определение: общего.

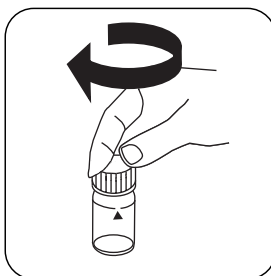
Для этого метода необязательно проводить измерение НУЛЯ каждый раз на следующих устройствах: XD 7000, XD 7500



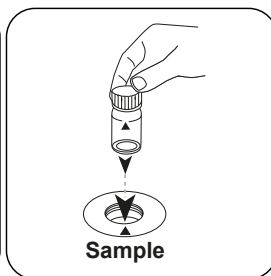
RU



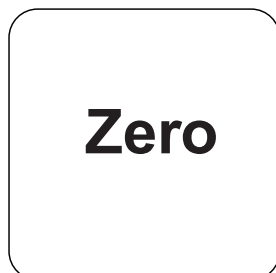
24-Наполните кювету -мм
10 пробой мл.



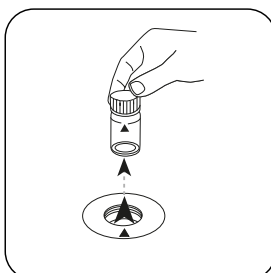
Закройте кювету(ы).



Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.

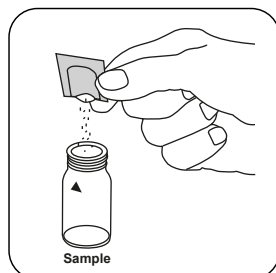


Выполнить нулевой.

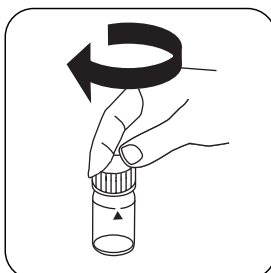


Извлеките кювету из измерительной шахты.

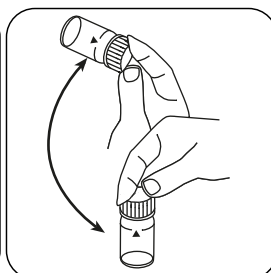
Для приборов, для которых не требуется **измерение нулевого значения**, начните отсюда.



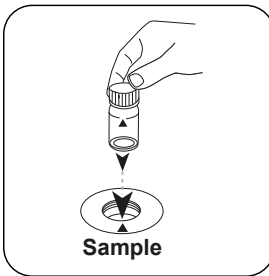
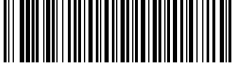
Добавьте **упаковку порошка Chlorine TOTAL-DPD/ F10**.



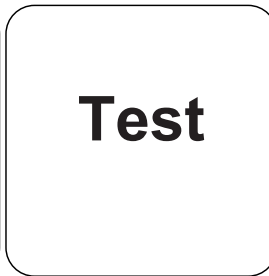
Закройте кювету(ы).



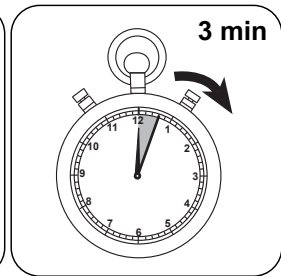
Перемешайте содержимое покачиванием (20 sec.).



Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.



Проведите тест.



Выдержите **3 минут(ы)** времени реакции.

RU

По истечении времени реакции измерение выполняется автоматически.

На дисплее отображается результат в мг/л общего хлора.

Выполнение определения Хлор, дифференцированное определение, с использованием порошкообразного реагента

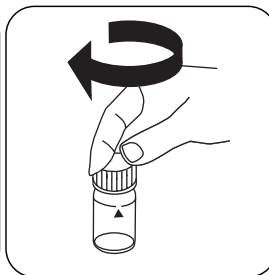
Выберите метод в устройстве.

Также выберите определение: дифференцированное.

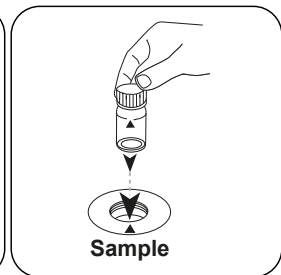
Для этого метода необязательно проводить измерение НУЛЯ каждый раз на следующих устройствах: XD 7000, XD 7500



24-Наполните кювету -мм **10 пробой мл.**



Закройте кювету(ы).

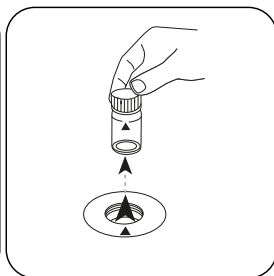


Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.



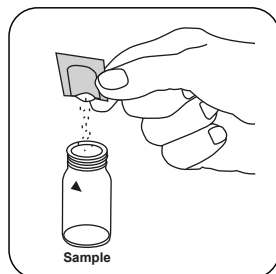
Zero

Выполнить нулевой.

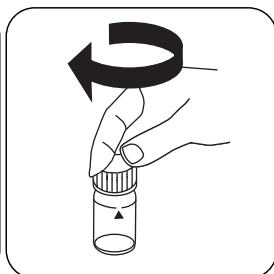


Извлеките кювету из измерительной шахты.

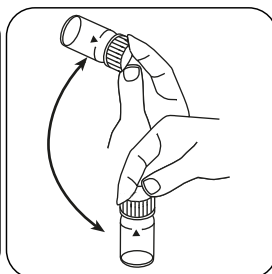
Для приборов, для которых не требуется **измерение нулевого значения**, **начните отсюда**.



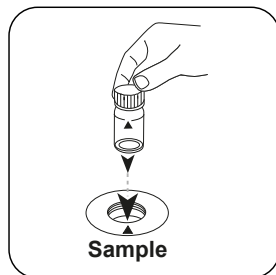
Добавьте **упаковку порошка Chlorine FREE-DPD/ F10**.



Закройте кювету(ы).



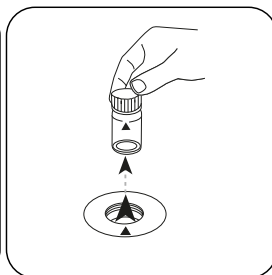
Перемешайте содержимое покачиванием (20 sec.).



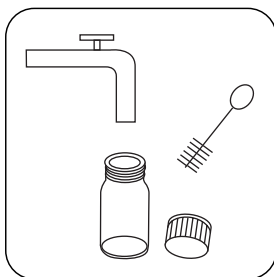
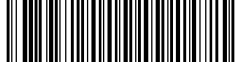
Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.

Test

Проведите тест.



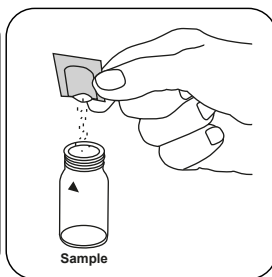
Извлеките кювету из измерительной шахты.



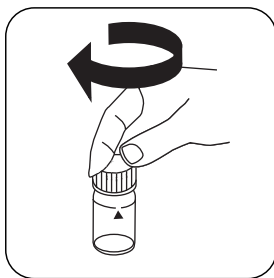
Тщательно очистите кювету и крышку для кювет.



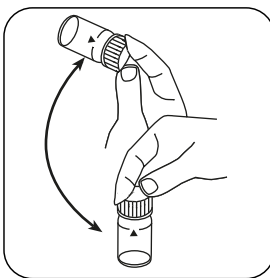
24-Наполните кювету -мм **10 пробой мл.**



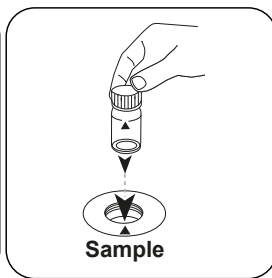
Добавьте **упаковку порошка TOTAL-DPD/ F10.**



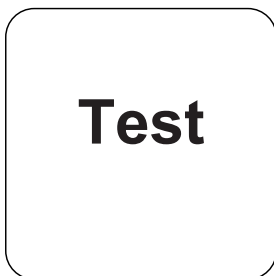
Закройте кювету(ы).



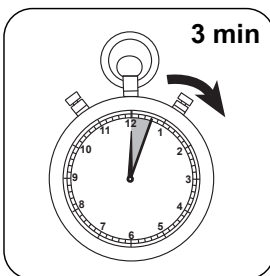
Перемешайте содержимое покачиванием (20 sec.).



Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.



Проведите тест.



Выдержите **3 минут(ы) времени реакции.**

По истечении времени реакции измерение выполняется автоматически.

На дисплее отображается результат в мг/л мг/л Свободный хлор, мг/л связанный хлор, мг/л общий хлор.



Химический метод

DPD

Приложение

RU

Нарушения

Постоянные нарушения

- Все окислительные средства, присутствующие в пробах, реагируют как хлор, что приводит к повышенным результатам.

Исключаемые нарушения

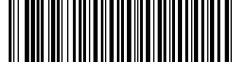
- Нарушения, вызванные медью и железом (III), должны быть устранены с помощью EDTA.
- Концентрации хлора выше 2 мг/л при использовании упаковок порошка могут привести к результатам в диапазоне измерения до 0 мг/л. В этом случае проба должна быть разбавлена водой без содержания хлора. Добавьте реагент в 10 мл разбавленной пробы и повторите измерение (испытание на достоверность).

Помехи	от / [мг/л]
CrO_4^{2-}	0,01
MnO_2	0,01

Соответствует

EN ISO 7393-2

^{a)} определение свободного, связанного и общего содержания



Хлор HR 2 PP

M112-2

0.1 - 10 mg/L Cl₂

DPD

RU

Материал

Необходимый материал (частично необязательный):

Реактивы	Упаковочная единица	Номер заказа
VARIO хлорины свободный DPD F25-100	Порошок / 100 шт.	530110
VARIO хлорины общий DPD F25-100	Порошок / 100 шт.	530130
хлорины свободный DPD F10	Порошок / 100 шт.	530100
хлорины общий DPD F10	Порошок / 100 шт.	530120

Отбор проб

1. Во время подготовки пробы необходимо избегать выделения хлора, например, из-за пипетирования и встряхивания.
2. Анализ должен проводиться сразу же после отбора проб.

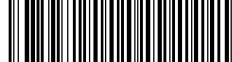
Подготовка

1. Чистка кювет:
Поскольку многие бытовые чистящие средства (например, средства для мытья посуды) содержат восстановительные вещества, при определении хлора возможно получение пониженных результатов. Чтобы исключить эту погрешность измерения, стеклянные приборы не должны потреблять хлор. Для этого стеклотара хранится в течение часа под раствором гипохлорита натрия (0,1 г/л), а затем тщательно промывается полностью деминерализованной водой (полностью обессоленной водой).
2. Для индивидуального определения свободного хлора и общего хлора имеет смысл использовать отдельный набор кювет (см. EN ISO 7393-2, п. 5.3).
3. Развитие цвета DPD происходит при уровне pH от 6,2 до 6,5. Поэтому реагенты содержат буфер для регулировки уровня pH. Однако сильно щелочные или кислые воды должны быть приведены в диапазон pH от 6 до 7 (с 0,5 моль/л серной кислоты или 1 моль/л раствора гидроксида натрия) перед анализом.



Примечания

1. Для проведения теста в MD50/150 вместо мультикюветы используется 24-
Øмиллиметровая кювета.



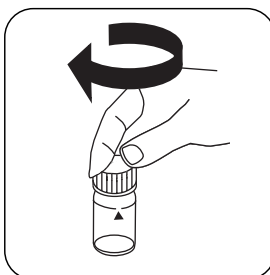
Выполнение определения Свободный хлор, верхний диапазон 2, с использованием порошкообразного реагента (MD50/MD150)

Выберите метод в устройстве.

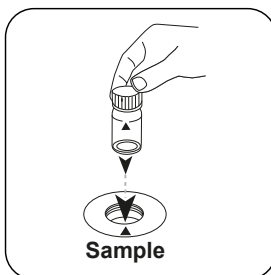
RU



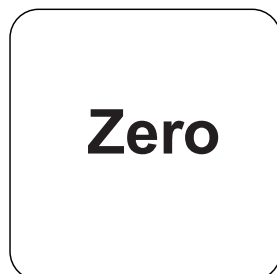
24-Наполните кювету -мм 10 пробой мл.



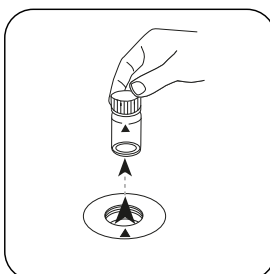
Закройте кювету(ы).



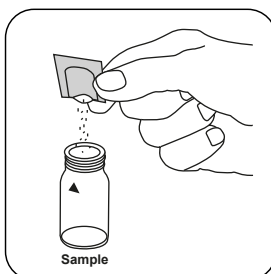
Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.



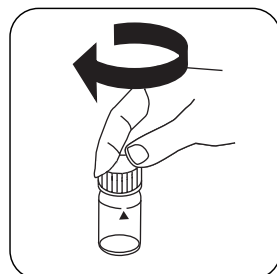
Выполнить нулевой.



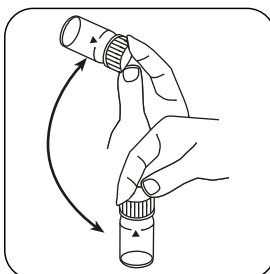
Извлеките кювету из измерительной шахты.



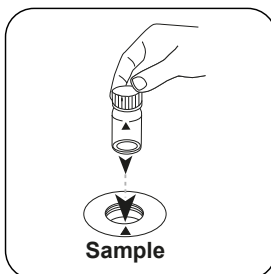
Добавьте **упаковку порошка 1 Vario Chlorine Free / F25 или 2 Chlorine Total / F10.**



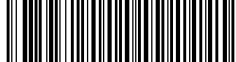
Закройте кювету(ы).



Перемешайте содержимое покачиванием (20 sec.).



Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.



Test

Проведите тест.

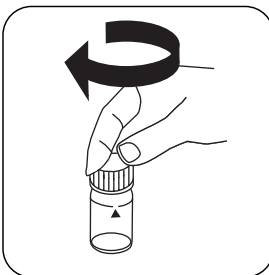
На дисплее отображается результат в мг/л хлор.

Выполнение определения общего хлора, верхний диапазон 2, с использованием порошкообразного реагента (MD50/MD150)

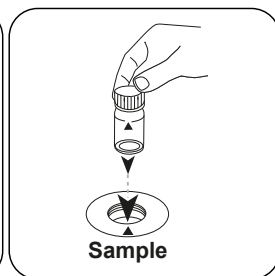
Выберите метод в устройстве.



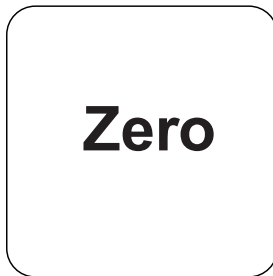
24-Наполните кювету -мм 10 пробой мл.



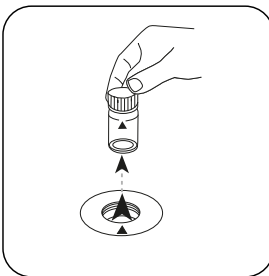
Закройте кювету(ы).



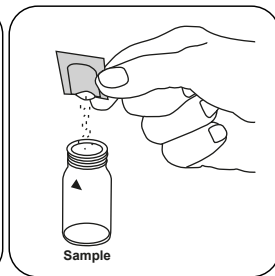
Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.



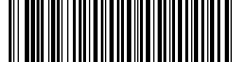
Выполнить нулевой.



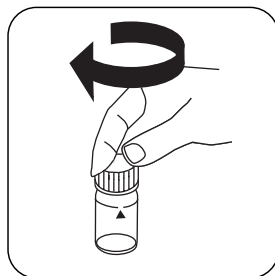
Извлеките кювету из измерительной шахты.



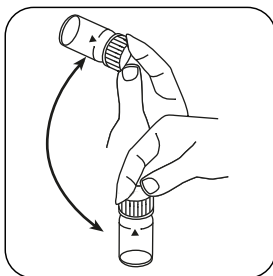
Добавьте **упаковку порошка 1 Vario Chlorine Free / F25 или 2 Chlorine Total / F10.**



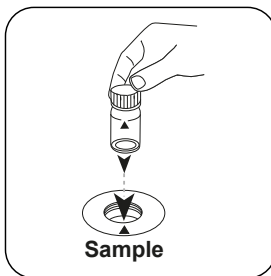
RU



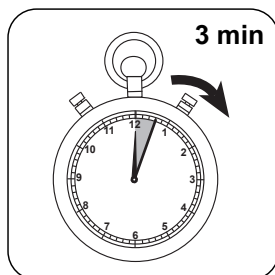
Закройте кювету(ы).



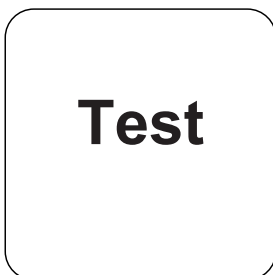
Перемешайте
содержимое
покачиванием (20 sec.).



Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.

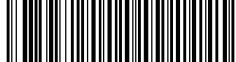


Выдержите **3 минут(ы)**
времени реакции.



Проведите тест.

На дисплее отображается результат в мг/л хлор.



Химический метод

DPD

Приложение

Нарушения

RU

Постоянные нарушения

- Все окислационные средства, присутствующие в пробах, реагируют как хлор, что приводит к повышенным результатам.

Исключаемые нарушения

- Нарушения, вызванные медью и железом (III), должны быть устранены с помощью EDTA.
- Концентрации хлора выше 10 мг/л при использовании упаковок порошка могут привести к результатам в диапазоне измерения до 0 мг/л. В этом случае проба должна быть разбавлена водой без содержания хлора. Добавьте реагент в 5 мл разбавленной пробы и повторите измерение (испытание на достоверность).

Соответствует

EN ISO 7393-2



CyA HR T

M161

10 - 200 mg/L CyA

CyAH

Меламин

RU

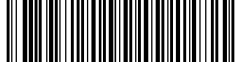
Материал

Необходимый материал (частично необязательный):

Реактивы	Упаковочная единица	Номер заказа
Тест CyA HR	Таблетка / 100	511430BT
Тест CyA HR	Таблетка / 250	511431BT

Примечания

1. Циановая кислота вызывает очень мелко распределенную мутность с молочным внешним видом. Отдельные частицы не связаны с наличием циановой кислоты.
2. После добавления тестовой таблетки CyA-HR она самостоятельно растворяется в течение двух минут.



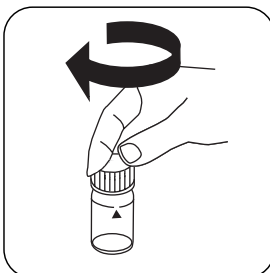
Выполнение определения Тест на циануровую кислоту с таблеткой

Выберите метод в устройстве.

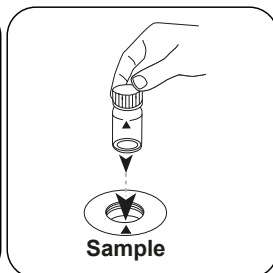
Для этого метода необязательно проводить измерение НУЛЯ каждый раз на следующих устройствах: XD 7000, XD 7500



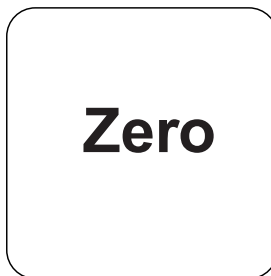
24-Наполните кювету -мм 10 пробой мл.



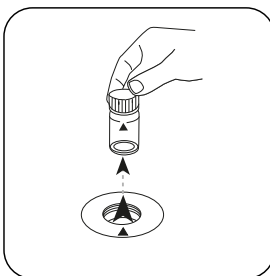
Закройте кювету(ы).



Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.



Выполнить нулевой.



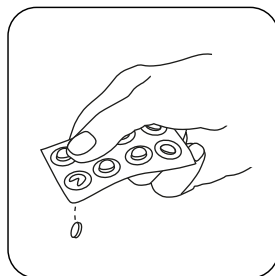
Извлеките кювету из измерительной шахты.

Для приборов, для которых не требуется **измерение нулевого значения** , **начните отсюда.**

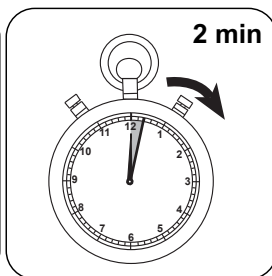
RU



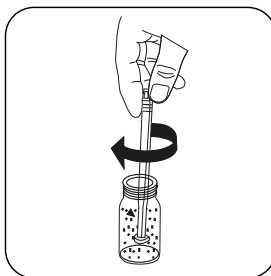
RU



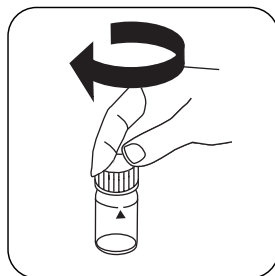
Добавить таблетку CyA HR Test.



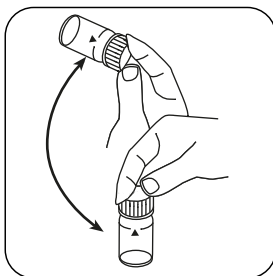
Выдержите **2 минут(ы)** времени реакции.



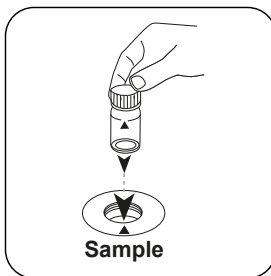
При необходимости раздавите остатки таблетки легким вращением.



Закройте кювету(ы).



Перемешайте содержимое покачиванием (не тряси).



Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.

Test

Проведите тест.

На дисплее отображается результат в мг/л Циановая кислота.



Химический метод

Меламин

Нарушения

Постоянные нарушения

- 1. Нерастворенные частицы могут привести к повышенным результатам.

RU

Проверка метода

Предел обнаружения	2.07 mg/L
Предел детерминации	6.2 mg/L
Конечное значение диапазона измерений	200 mg/L
Восприимчивость	77.47 mg/L / Abs
Доверительная область	4.6 mg/L
Среднеквадратическое отклонение процесса	4.78 mg/L
Коэффициент вариации метода	4.55 %



Уровень pH Т

М330

6.5 - 8.4 pH

PH

Фенол красный

RU

Материал

Необходимый материал (частично необязательный):

Реактивы	Упаковочная единица	Номер заказа
Феноловый красный для фотометра	Таблетка / 100	511770BT
Феноловый красный для фотометра	Таблетка / 250	511771BT
Феноловый красный для фотометра	Таблетка / 500	511772BT

Отбор проб

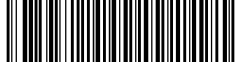
Содержание соли пробы в г/л	30 (морская вода)	60	120	180
уточнение	-0,15 ¹⁾	-0,21 ²⁾	-0,26 ²⁾	-0,29 ²⁾

¹⁾ по Колтхоффу (1922)

²⁾ по Парсону и Дугласу (1926)

Примечания

- Для фотометрического определения pH используются только таблетки PHENOL RED с черной печатью на пленке, помеченной термином PHOTOMETER.



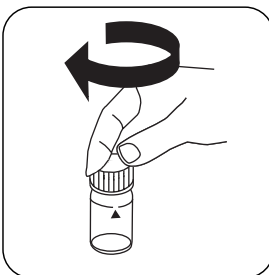
Выполнение определения Уровень pH с таблеткой

Выберите метод в устройстве.

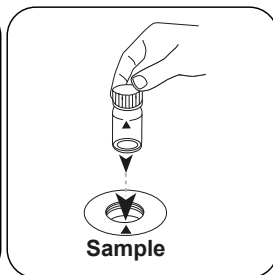
Для этого метода необязательно проводить измерение НУЛЯ каждый раз на следующих устройствах: XD 7000, XD 7500



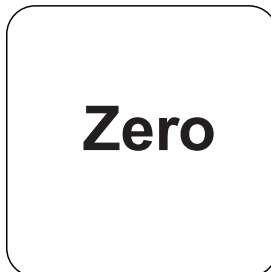
24-Наполните кювету -мм
10 пробой мл.



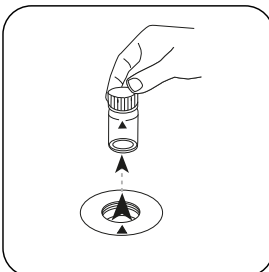
Закройте кювету(ы).



Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.

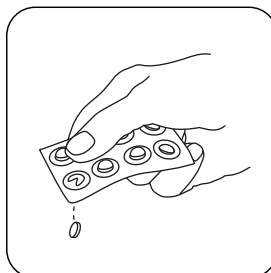


Выполнить нулевой.

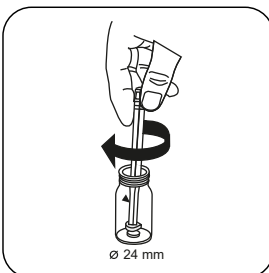


Извлеките кювету из измерительной шахты.

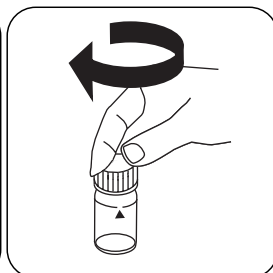
Для приборов, для которых не требуется **измерение нулевого значения** ,
начните отсюда.



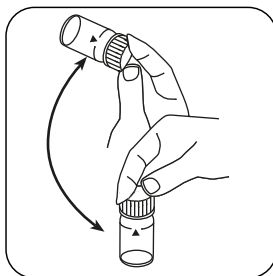
Добавить **таблетку**
PHENOL RED
PHOTOMETER.



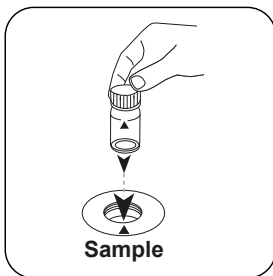
Раздавите таблетку
(таблетки) легким
вращением.



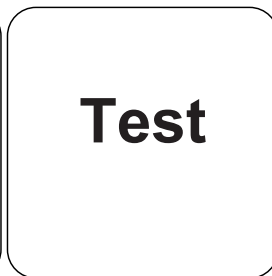
Закройте кювету(ы).



Растворите таблетку (таблетки) покачиванием.



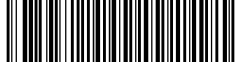
Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.



Проведите тест.

На дисплее отображается результат в виде Уровень pH.

RU



Химический метод

Фенол красный

Приложение

Нарушения

RU

Постоянные нарушения

1. Пробы воды с низкой карбонатной жесткостью* могут привести к неправильным значениям уровня pH.

* $K_{S4.3} < 0,7$ ммоль/л $\triangle$ общая калийность < 35 мг/л CaCO_3 .

Исключаемые нарушения

1. Уровни pH ниже 6,5 и выше 8,4 могут привести к результатам в пределах диапазона измерения. Рекомендуется проведение теста на достоверность (pH-метр).
2. Соляная ошибка:
При содержании соли до 2 г/л существенных солевых ошибок из-за содержания соли в таблетках реагентов не ожидается. Если содержание соли выше, то измеряемые величины корректируются следующим образом:

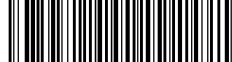
Содержание соли пробы в г/л	30 (морская вода)	60	120	180
уточнение	-0,15 ¹⁾	-0,21 ²⁾	-0,26 ²⁾	-0,29 ²⁾

¹⁾ по Колтхоффу (1922)

²⁾ по Парсону и Дугласу (1926)

Ссылки на литературу

Colorimetric Chemical Analytical Methods, 9th Edition, London



Уровень pH L

M331

6.5 - 8.4 pH

PH

Фенол красный

RU

Материал

Необходимый материал (частично необязательный):

Реактивы	Упаковочная единица	Номер заказа
Раствор феноловый красный	15 mL	471040
Раствор феноловый красный	100 mL	471041
Раствор феноловый красный в упаковке из 6 единиц	1 Шт.	471046

Отбор проб

Содержание соли пробы	уточнение
30 г/л (морская вода)	-0,15 ¹⁾
60 г/л	-0,21 ²⁾
120 г/л	-0,26 ²⁾
180 г/л	-0,29 ²⁾

¹⁾ по Колтхоффу (1922)

²⁾ по Парсону и Дугласу (1926)

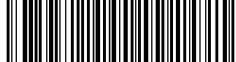
При исследовании хлорированной воды остаточное содержание хлора может повлиять на цветовую реакцию жидкого реагента. Этого можно избежать, добавив небольшой кристалл тиосульфата натрия ($\text{Na}_2\text{S}_2\text{O}_3 \cdot 5 \text{H}_2\text{O}$) в раствор пробы перед добавлением раствора PHENOL RED.

Подготовка

- Из-за разных размеров капель результат измерения может иметь большие отклонения, чем при использовании таблеток.
При использовании пипетки (0,18 мл соответствует 6 каплям) это отклонение можно минимизировать.

Примечания

- После использования бутылка с капельницей должна быть немедленно закрыта навинчивающейся крышкой того же цвета.
- Храните реагент при температуре от +6 °C до +10 °C в прохладном месте.



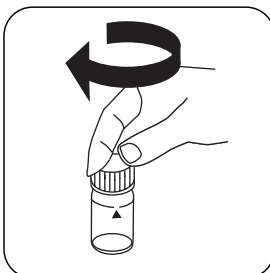
Выполнение определения Уровень pH с жидким реагентом

Выберите метод в устройстве.

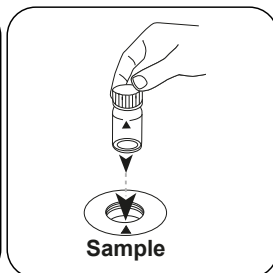
Для этого метода необязательно проводить измерение НУЛЯ каждый раз на следующих устройствах: XD 7000, XD 7500



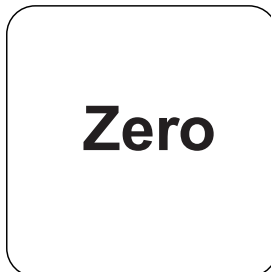
24-Наполните кювету -мм 10 пробой мл.



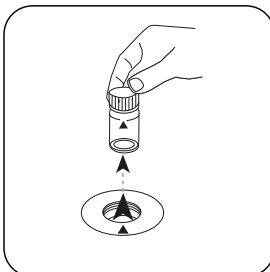
Закройте кювету(ы).



Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.



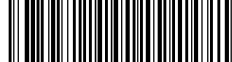
Выполнить нулевой.



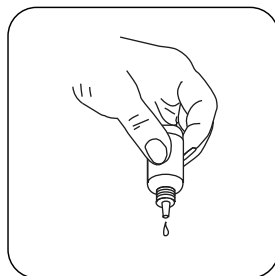
Извлеките кювету из измерительной шахты.

Для приборов, для которых не требуется **измерение нулевого значения** , **начните отсюда.**

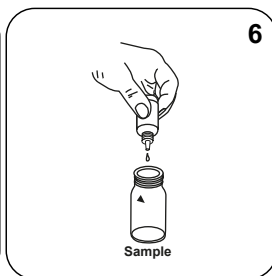
RU



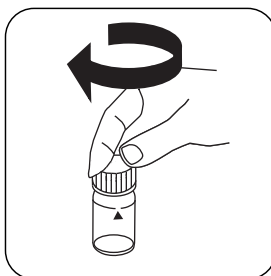
RU



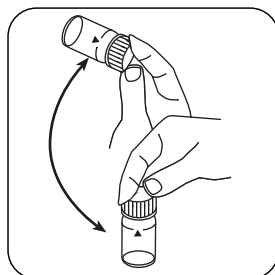
Держите капельницы вертикально и добавляйте капли того же размера, медленно нажимая на них.



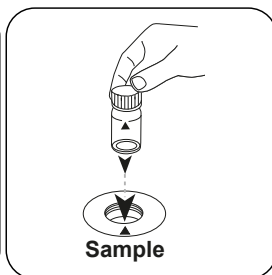
Добавьте **6 капли PHENOL Red-Lösung** в кювету для проб.



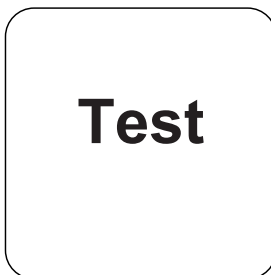
Закройте кювету(ы).



Перемешайте содержимое покачиванием.



Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.



Проведите тест.

На дисплее отображается результат в виде **Уровень pH**.



Химический метод

Фенол красный

Приложение

Нарушения

RU

Исключаемые нарушения

1. Соляная ошибка: Корректировка измеренного значения (средних значений) для проб с содержанием соли:

2.	Содержание соли пробы	уточнение
	30 г/л (морская вода)	-0,15 ¹⁾
	60 г/л	-0,21 ²⁾
	120 г/л	-0,26 ²⁾
	180 г/л	-0,29 ²⁾
	¹⁾ по Колтхоффу (1922)	²⁾ по Парсону и Дугласу (1926)

3. При исследовании хлорированной воды остаточное содержание хлора может повлиять на цветовую реакцию жидкого реагента. Этого можно избежать, добавив небольшой кристалл тиосульфата натрия ($\text{Na}_2\text{S}_2\text{O}_3 \cdot 5 \text{H}_2\text{O}$) в раствор пробы перед добавлением раствора PHENOL RED.

Ссылки на литературу

Colorimetric Chemical Analytical Methods, 9th Edition, London

KS4.3 T / 20



方法名称

方法号

用于方法检测的条形码

测量范围

KS_{4.3} T

0.1 - 4 mmol/l K_{4.3}

酸性 / 指示剂

20

S:4.3

屏幕显示: MD 100 / MD 110 / MD 200

化学方法

儀器的具體信息

測試可以在以下設備上執行。此外還指出了所需的比色杯和光度計的吸收範圍。

儀器類型	比色皿	λ	測量範圍
MD 200, MD 600, MD 610, MD 640, MultiDirect, PM 620, PM 630	ø 24 mm	610 nm	0.1 - 4 mmol/l K _{4.3}
SpectroDirect, XD 7000, XD 7500	ø 24 mm	615 nm	0.1 - 4 mmol/l K _{4.3}

材料

所需材料 (部分可選) :

標題	包裝單位	貨號
Alka-M-Photometer	片劑 / 100	513210BT
Alka-M-Photometer	片劑 / 250	513211BT

應用列表

- 污水處理
- 飲用水處理
- 原水處理

備註

1. 術語總度-m、m-值、總碱度和酸容量 K_{4.3} 是相同的。
2. 準確地遵守 10 ml 的樣本體積對分析結果的準確度至關重要。

語言代碼ISO 639-1

修訂狀態

CN 方法手冊 01/20

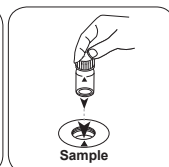
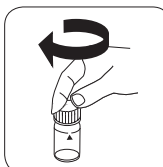
ZH

开始测量

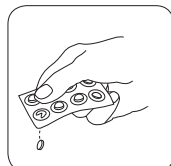
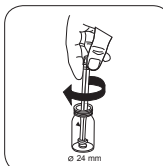
进行测定 $K_{s4.3}$ 片剂酸容量

选择设备中的方法。

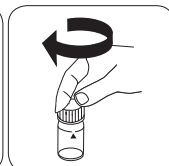
对于这种方法，在以下设备上不能进行 ZERO 测量：XD 7000, XD 7500

用 10 ml 样本填充 24 mm 比密封比色杯。
色杯。将样本比色杯放入测量轴
中。注意定位。

• • •

加入 ALKA-M-PHOTOME-
TER 片剂。

用轻微的扭转压碎片剂。



密封比色杯。



T 氯

M100

0.01 - 6.0 mg/L Cl₂ ^{a)}

CL6

DPD

材料

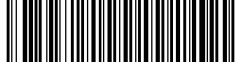
所需材料 (部分可選) :

ZH

试剂	包装单位	货号
DPD No.1	片剂 / 100	511050BT
DPD No.1	片剂 / 250	511051BT
DPD No.1	片剂 / 500	511052BT
DPD No.3	片剂 / 100	511080BT
DPD No.3	片剂 / 250	511081BT
DPD No.3	片剂 / 500	511082BT
DPD No.1 高钙 ^{e)}	片剂 / 100	515740BT
DPD No.1 高钙 ^{e)}	片剂 / 250	515741BT
DPD No.1 高钙 ^{e)}	片剂 / 500	515742BT
DPD No.3 高钙 ^{e)}	片剂 / 100	515730BT
DPD No.3 高钙 ^{e)}	片剂 / 250	515731BT
DPD No.3 高钙 ^{e)}	片剂 / 500	515732BT
DPD No.4	片剂 / 100	511220BT
DPD No.4	片剂 / 250	511221BT
DPD No.4	片剂 / 500	511222BT
DPD No.3 Evo	片剂 / 100	511420BT
DPD No.3 Evo	片剂 / 250	511421BT
DPD No.3 Evo	片剂 / 500	511422BT
DPD No.4 Evo	片剂 / 100	511970BT
DPD No.4 Evo	片剂 / 250	511971BT
DPD No.4 Evo	片剂 / 500	511972BT

現有標準

标题	包装单位	货号
ValidCheck 氯 1.5 mg/l	1 片	48105510



取样

1. 在样本制备中，通过移液和摇动来避免氯的排气。
2. 取样后必须立即进行分析。

准备

1. 清洗比色杯：
由于许多家用清洁剂（例如洗碗用洗涤剂）含有还原剂，所以测定的氯结果可能会不足。为了排除这种测量误差，玻璃器皿应无氯。为此，将玻璃器皿在次氯酸钠溶液（0.1 g/L）下存放 1 小时，然后用去离子水（软化水）彻底冲洗。
2. 对于游离氯和总氯的单独测定，使用一套相应单独的比色杯是有意义的（参见 EN ISO 7393-2，第 5.3 段）。
3. DPD 显色发生在 pH 值在 6.2 至 6.5 时。因此该试剂含有用于调节 pH 值的缓冲液。但在分析前（用 0.5 mol/l 硫酸或 1 mol/l 氢氧化钠溶液）必须将强碱性或酸性水的 pH 范围调节到 6 和 7 之间。

备注

1. EVO 片剂可以作为相应标准片剂的替代品（如 DPD No.3 EVO 代替 DPD No.3）。



进行测定 余氯 片剂法

选择设备中的方法。

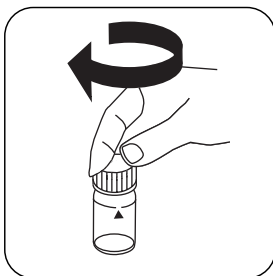
另外选择测定：余氯

对于此方法，不必每次都在以下设备上上进行零测量：XD 7000, XD 7500

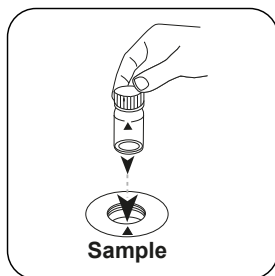
ZH



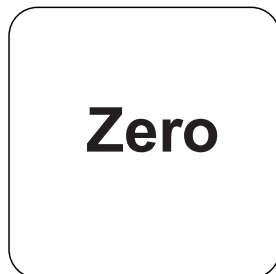
用 10 mL 样本填充 24 mm 比色杯。



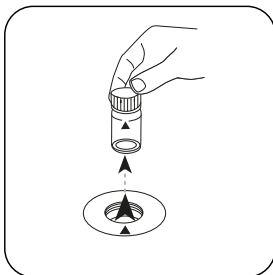
密封比色杯。



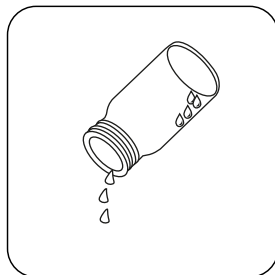
将样本比色杯放入测量轴中。注意定位。



执行调零。

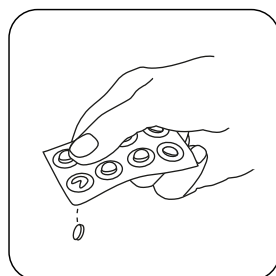


从测量轴上取下比色杯。

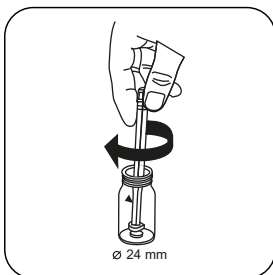


将比色杯倒空。

对于不需要 ZERO 测量的设备，从这里开始。



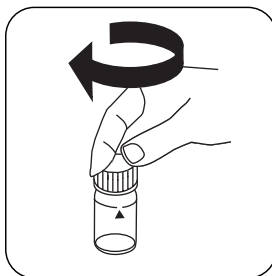
加入 DPD No. 1 片剂。



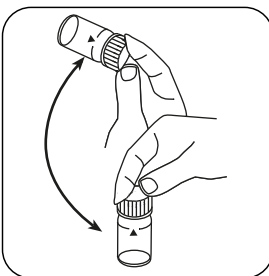
用轻微的扭转压碎片剂。



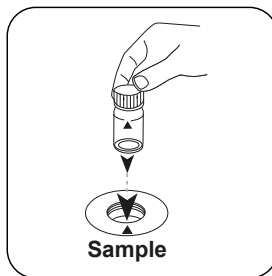
用样本将比色杯填充至 10 mL 刻度处。



密封比色杯。



通过旋转溶解片剂。

将样本比色杯放入测量轴中。
注意定位。

ZH

Test

进行测试。

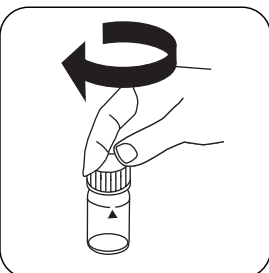
结果在显示屏上显示为 mg / l 余氯。

进行测定 总氯 片剂法

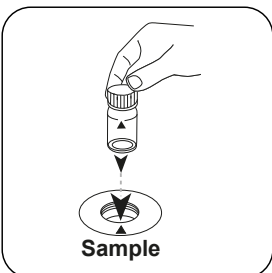
选择设备中的方法。

另外选择测定：总氯

对于此方法，不必每次都在以下设备上进行了零测量：XD 7000, XD 7500

用 10 mL 样本填充 24 mm
比色杯。

密封比色杯。

将样本比色杯放入测量轴
中。注意定位。



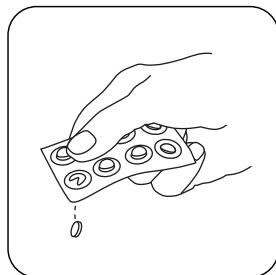
Zero

执行调零。

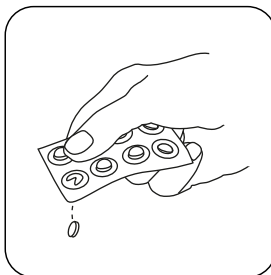
从测量轴上取下比色杯。

将比色杯倒空。

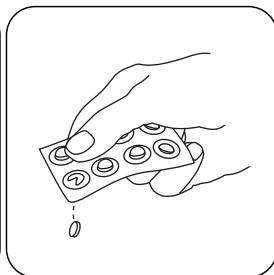
对于不需要 **ZERO** 测量的设备，从这里开始。



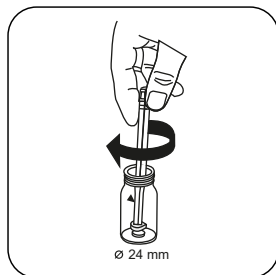
加入 **DPD No. 1** 片剂。



加入 **DPD No. 3** 片剂。



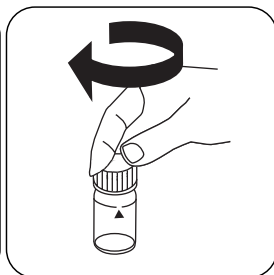
作为 DPD 1号和3号片剂的替代品，可以添加1个DPD 4号片剂。



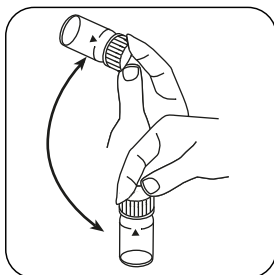
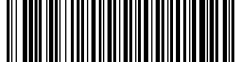
用轻微的扭转压碎片剂。



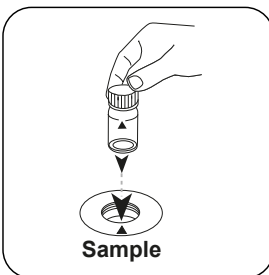
用样本将比色杯填充至 **10 mL** 刻度处。



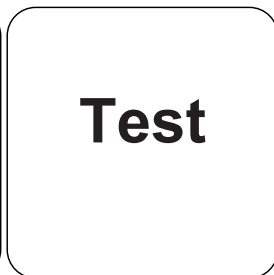
密封比色杯。



通过旋转溶解片剂。

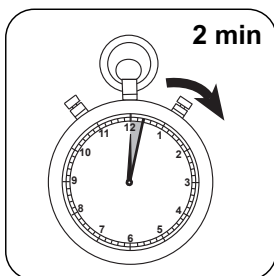


将样本比色杯放入测量轴中。注意定位。



进行测试。

ZH



等待 2 分钟反应时间。

反应时间结束后，自动进行测量。

结果在显示屏上显示为 mg / l 总氯。

进行测定 结合氯 片剂法

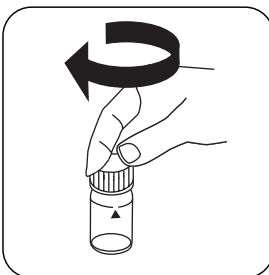
选择设备中的方法。

另外选择测定：结合氯

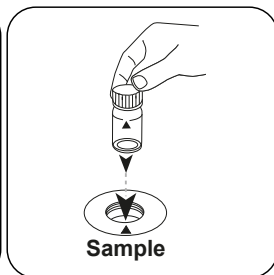
对于此方法，不必每次都在以下设备上进行了零测量：XD 7000, XD 7500



用 10 mL 样本填充 24 mL 比色杯。



密封比色杯。



将样本比色杯放入测量轴中。注意定位。



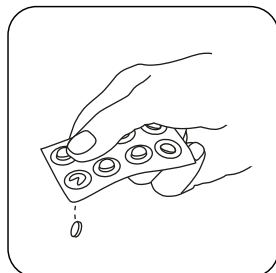
Zero

执行调零。

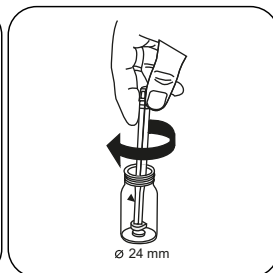
从测量轴上取下比色杯。

将比色杯倒空。

对于不需要 ZERO 测量的设备，从这里开始。



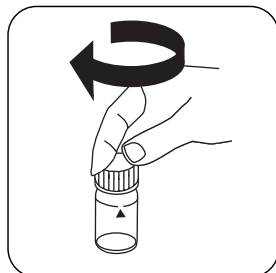
加入 DPD No. 1 片剂。



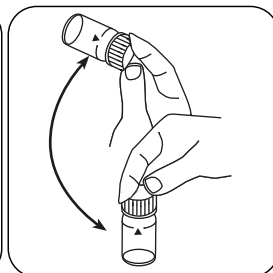
用轻微的扭转压碎片剂。



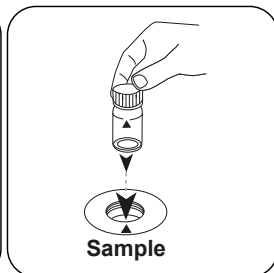
用样本将比色杯填充至
10 mL 刻度处。



密封比色杯。



通过旋转溶解片剂。



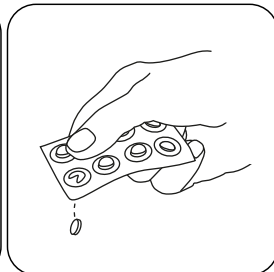
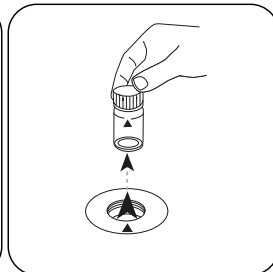
将样本比色杯放入测量轴
中。注意定位。

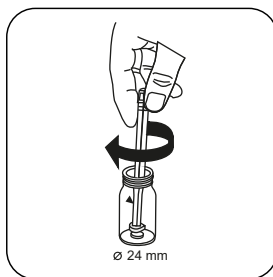
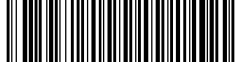
Test

进行测试。

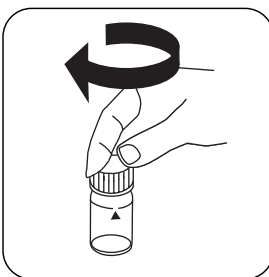
从测量轴上取下比色杯。

加入 DPD No. 3 片剂。

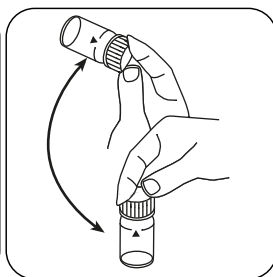




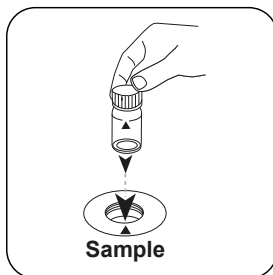
用轻微的扭转压碎片剂。



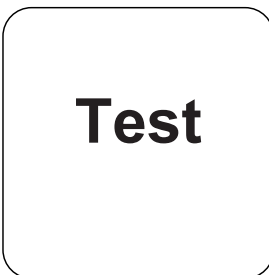
密封比色杯。



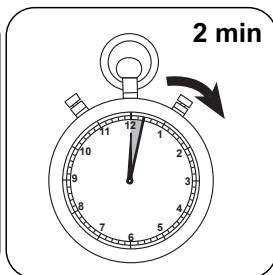
通过旋转溶解片剂。



将样本比色杯放入测量轴中。注意定位。



进行测试。



等待 2 分钟反应时间。

反应时间结束后，自动进行测量。

结果在显示屏上显示为 mg / l 余氯, mg/l 结合 氯, mg/l 总氯。



化学方法

DPD

附录

ZH

干扰说明

持续干扰

- 存在于样本中的所有氧化剂都像氯一样反应，导致多重结果。

可消除干扰

- 铜和铁 (III) 的干扰必须通过 EDTA 消除。
- 对于高钙含量*和/或高电导率*的样本，使用试剂片可能会导致样本浑浊和相关的测量误差。在这种情况下，可选用试剂片 DPD 编号1 高钙和试剂片 DPD 编号3 高钙。
*不能给出精确值，因为浑浊的形成取决于样本水的类型和组成。
- 在使用片剂时，高于 10 mg/L 氯的浓度可导致测量范围内的结果高达 0 mg/L。氯浓度过高时应用无氯水稀释样本。将 10 ml 稀释的样本与试剂混合并重复测量 (可信度测试) 。

干扰	從/ [mg/l]
CrO_4^{2-}	0.01
MnO_2	0.01

一致性

EN ISO 7393-2

^{a)} 测定余氯，总氯和结合氯 | ^{a)} 替代试剂，取代 DPD No.1/No.3 试剂，用于由高浓度钙离子和/或高电导率引起的浑浊水样分析



L 氯

M101

0.02 - 4.0 mg/L Cl₂ ^{a)}

CL6

DPD

材料

所需材料 (部分可选) :

ZH

试剂	包装单位	货号
DPD 1 缓冲溶液, 蓝瓶	15 mL	471010
DPD 1 缓冲溶液	100 mL	471011
DPD 1 缓冲溶液, 6 件装	1 片	471016
DPD 1 试剂溶液, 绿瓶	15 mL	471020
DPD 1 试剂溶液	100 mL	471021
DPD 1 试剂溶液, 6 件装	1 片	471026
DPD 3 溶液, 红瓶	15 mL	471030
DPD 3 溶液	100 mL	471031
DPD 3 溶液, 6 件装	1 片	471036
DPD 试剂套件	1 片	471056

現有標準

标题	包装单位	货号
ValidCheck 氯 1.5 mg/l	1 片	48105510

取样

1. 在样本制备中, 通过移液和摇动来避免氯的排气。
2. 取样后必须立即进行分析。

准备

1. 清洗比色杯 :
由于许多家用清洁剂 (例如洗碗用洗涤剂) 含有还原剂, 所以测定的氯结果可能会不足。为了排除这种测量误差, 玻璃器皿应无氯。为此, 将玻璃器皿在次氯酸钠溶液 (0.1 g/L) 下存放 1 小时, 然后用去离子水 (软化水) 彻底冲洗。
2. 对于游离氯和总氯的单独测定, 使用一套相应单独的比色杯是有意义的 (参见 EN ISO 7393-2, 第 5.3 段)。
3. DPD 显色发生在 pH 值在 6.2 至 6.5 时。因此该试剂含有用于调节 pH 值的缓冲液。但在分析前 (用 0.5 mol/l 硫酸或 1 mol/l 氢氧化钠溶液) 必须将强碱性或酸性水的 pH 范围调节到 6 和 7 之间。



备注

1. 使用后滴瓶必须立即用相同颜色的瓶盖重新密封。
2. 将试剂盒冷藏在 $+6\text{ }^{\circ}\text{C}$ 至 $+10\text{ }^{\circ}\text{C}$ 。



进行测定 余氯 水剂法

选择设备中的方法。

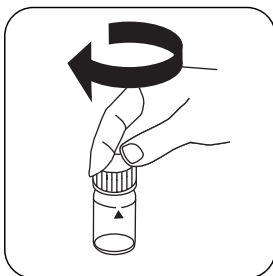
另外选择测定：余氯

对于此方法，不必每次都在以下设备上上进行零测量：XD 7000, XD 7500

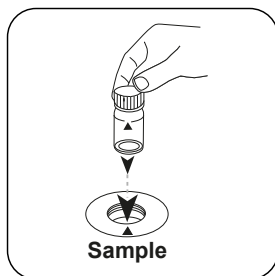
ZH



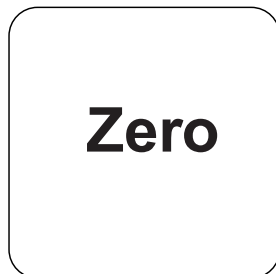
用 **10 mL** 样本填充 24 mm 比色杯。



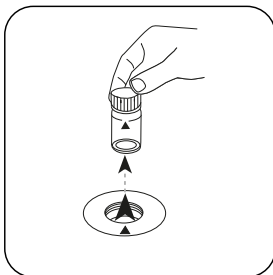
密封比色杯。



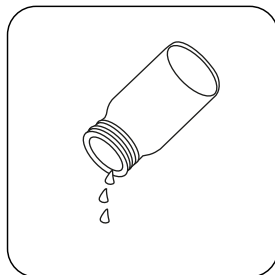
将样本比色杯放入测量轴中。
注意定位。



执行调零。

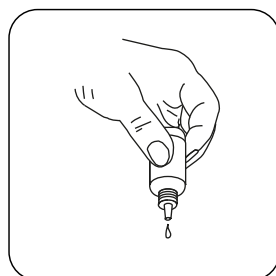


从测量轴上取下比色杯。

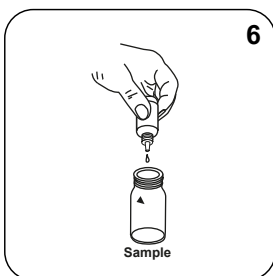


倒空比色杯。

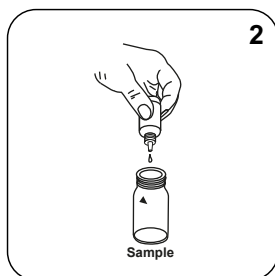
对于不需要 **ZERO** 测量的设备，从这里开始。



垂直握住滴瓶，慢慢加入相同大小的滴剂。



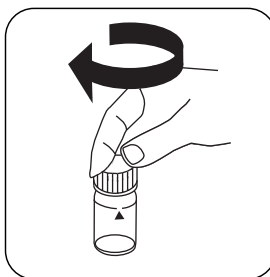
将 **6 滴 DPD 1 Buffer Solution** 添加到样本比色杯中。



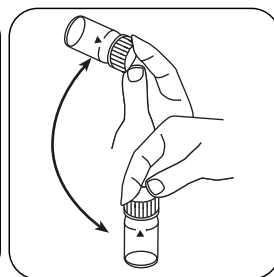
将 **2 滴 DPD 1 Reagent Solution** 添加到样本比色杯中。



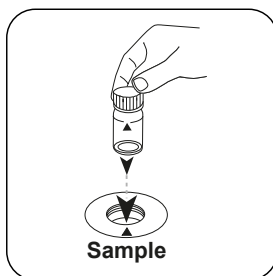
用样本将比色杯填充至
10 mL 刻度处。



密封比色杯。



通过旋转混合内容物。



将样本比色杯放入测量轴
中。注意定位。



进行测试。

结果在显示屏上显示为 mg / l 余氯。

进行测定 总氯 水剂法

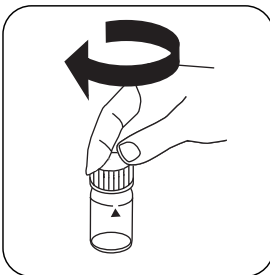
选择设备中的方法。

另外选择测定：总氯

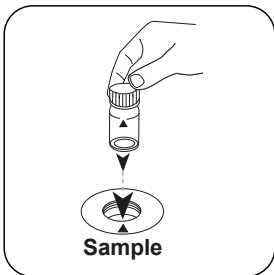
对于此方法，不必每次都在以下设备上进行了零测量：XD 7000, XD 7500



用 10 mL 样本填充 24 mm
比色杯。



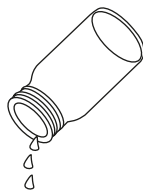
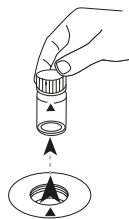
密封比色杯。



将样本比色杯放入测量轴
中。注意定位。



Zero



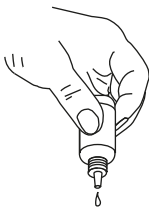
ZH

执行调零。

从测量轴上取下比色杯。

倒空比色杯。

对于不需要 **ZERO** 测量的设备，从这里开始。



垂直握住滴瓶，慢慢加入相同大小的滴剂。



6

将 **6 滴 DPD 1 Buffer Solution** 添加到样本比色杯中。



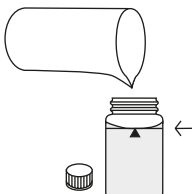
2

将 **2 滴 DPD 1 Reagent Solution** 添加到样本比色杯中。

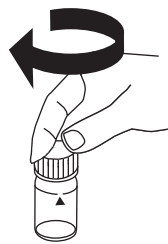


3

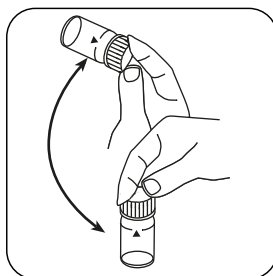
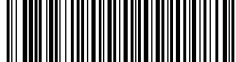
将 **3 滴 DPD 3 Solution** 添加到样本比色杯中。



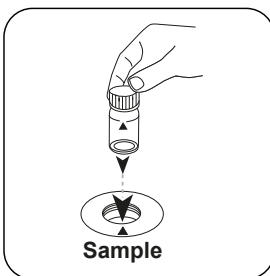
用样本将比色杯填充至 **10 mL 刻度处**。



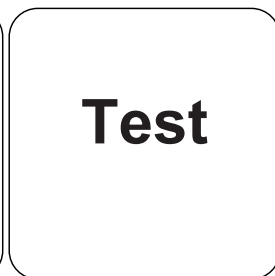
密封比色杯。



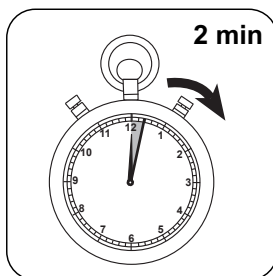
通过旋转混合内容物。



将样本比色杯放入测量轴中。注意定位。



进行测试。



等待 2 分钟反应时间。

反应时间结束后，自动进行测量。

结果在显示屏上显示为 mg / l 总氯。

进行测定 结合氯 水剂法

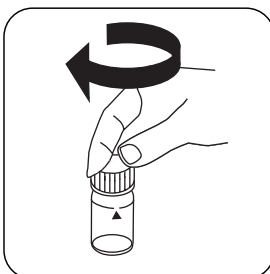
选择设备中的方法。

另外选择测定：结合氯

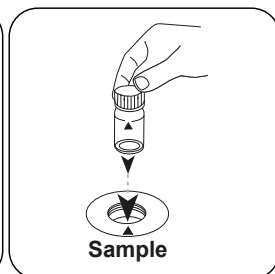
对于此方法，不必每次都在以下设备上进行了零测量：XD 7000, XD 7500



用 10 mL 样本填充 24 mm 比色杯。



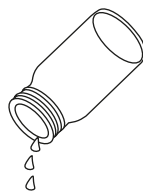
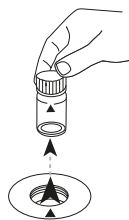
密封比色杯。



将样本比色杯放入测量轴中。注意定位。



Zero



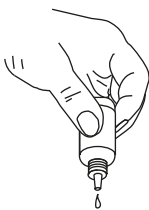
ZH

执行调零。

从测量轴上取下比色杯。

倒空比色杯。

对于不需要 **ZERO** 测量的设备，从这里开始。



垂直握住滴瓶，慢慢加入相同大小的滴剂。



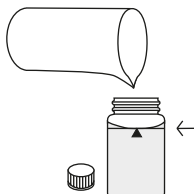
6

将 **6 滴 DPD 1 Buffer Solution** 添加到样本比色杯中。

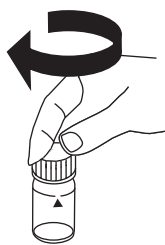


2

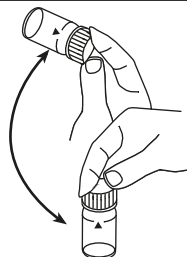
将 **2 滴 DPD 1 Reagent Solution** 添加到样本比色杯中。



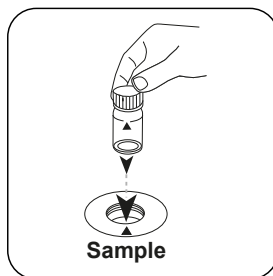
用样本将比色杯填充至 **10 mL** 刻度处。



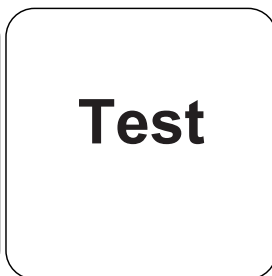
密封比色杯。



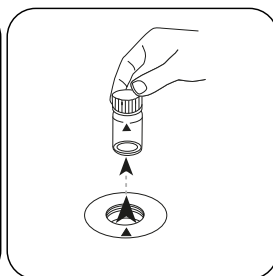
通过旋转混合内容物。



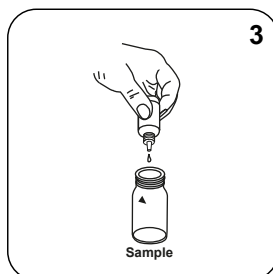
将样本比色杯放入测量轴中。注意定位。



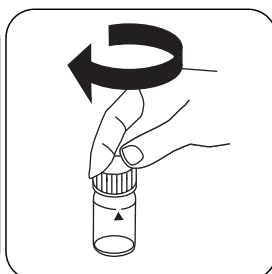
进行测试。



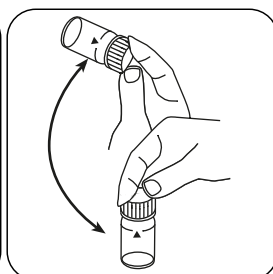
从测量轴上取下比色杯。



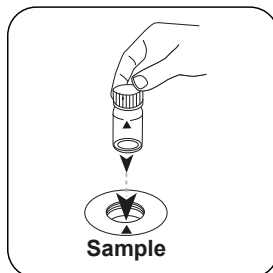
将 3 滴 DPD 3 Solution 添加到样本比色杯中。



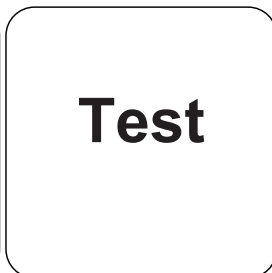
密封比色杯。



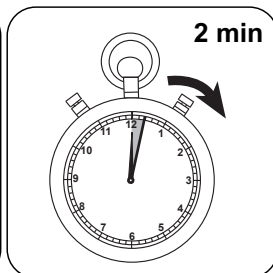
通过旋转混合内容物。



将样本比色杯放入测量轴中。注意定位。



进行测试。



等待 2 分钟反应时间。

反应时间结束后，自动进行测量。

结果在显示屏上显示为 mg / l 余氯, mg/l 结合 氯, mg/l 总氯。



化学方法

DPD

附錄

ZH

干扰说明

持续干扰

- 存在于样本中的所有氧化剂都像氯一样反应，导致多重结果。

可消除干扰

- 铜和铁 (III) 的干扰必须通过 EDTA 消除。
- 在使用液剂时，高于 4 mg/L 氯的浓度可导致测量范围内的结果高达 0 mg/L。在这种情况下应用无氯水稀释样本。将 10 ml 稀释的样本与试剂混合并重复测量 (可信度测试) 。

干擾	從/ [mg/l]
CrO_4^{2-}	0,01
MnO_2	0,01

一致性

EN ISO 7393-2

^{a)} 测定余氯，总氯和结合氯



HR T 氯

M103

0.1 - 10 mg/L Cl₂ ^{a)}

CL10

DPD

材料

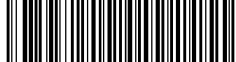
所需材料 (部分可选) :

ZH

试剂	包装单位	货号
DPD No.1 HR	片剂 / 100	511500BT
DPD No.1 HR	片剂 / 250	511501BT
DPD No.1 HR	片剂 / 500	511502BT
DPD No.3 HR	片剂 / 100	511590BT
DPD No.3 HR	片剂 / 250	511591BT
DPD No.3 HR	片剂 / 500	511592BT
套件 DPD No.1 HR/No.3 HR ^{a)}	各100次	517791BT
套件 DPD No.1 HR/No.3 HR ^{a)}	各250次	517792BT
DPD No.1 高钙 ^{e)}	片剂 / 100	515740BT
DPD No.1 高钙 ^{e)}	片剂 / 250	515741BT
DPD No.1 高钙 ^{e)}	片剂 / 500	515742BT
DPD No.3 高钙 ^{e)}	片剂 / 100	515730BT
DPD No.3 高钙 ^{e)}	片剂 / 250	515731BT
DPD No.3 高钙 ^{e)}	片剂 / 500	515732BT
DPD No.3 HR Evo	片剂 / 100	511920BT
DPD No.3 HR Evo	片剂 / 250	511921BT
DPD No.3 HR Evo	片剂 / 500	511922BT

取样

1. 在样本制备中, 通过移液和摇动来避免氯的排气。
2. 取样后必须立即进行分析。



准备

1. 清洗比色杯：
由于许多家用清洁剂（例如洗碗用洗涤剂）含有还原剂，所以测定的氯结果可能会不足。为了排除这种测量误差，玻璃器皿应无氯。为此，将玻璃器皿在次氯酸钠溶液（0.1 g/L）下存放 1 小时，然后用去离子水（软化水）彻底冲洗。
2. 对于游离氯和总氯的单独测定，使用一套相应单独的比色杯是有意义的（参见 EN ISO 7393-2，第 5.3 段）。
3. DPD 显色发生在 pH 值在 6.2 至 6.5 时。因此该试剂含有用于调节 pH 值的缓冲液。但在分析前（用 0.5 mol/L 硫酸或 1 mol/L 氢氧化钠溶液）必须将强碱性或酸性水的 pH 范围调节到 6 和 7 之间。

ZH

备注

1. Evo 片剂可以作为相应标准片剂的替代品（如 DPD No.3 Evo 代替 DPD No.3）。



进行测定 余氯 HR 片剂法

选择设备中的方法。

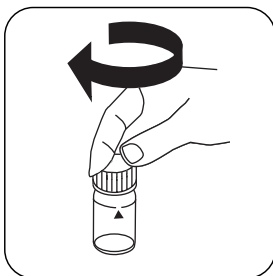
另外选择测定：余铜

对于此方法，不必每次都在以下设备上上进行零测量：XD 7000, XD 7500

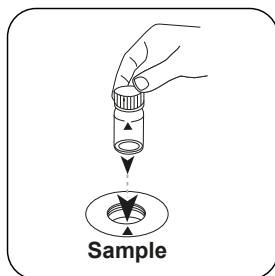
ZH



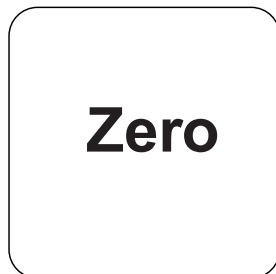
用 10 mL 样本填充 24 mm 比色杯。



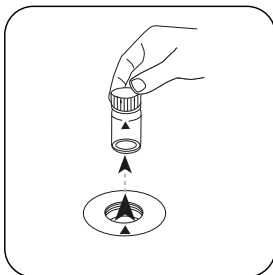
密封比色杯。



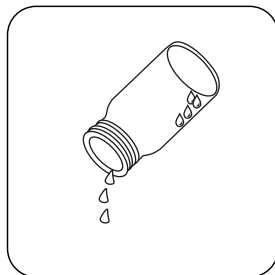
将样本比色杯放入测量轴中。注意定位。



执行调零。

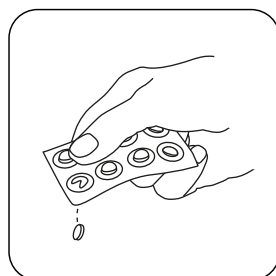


从测量轴上取下比色杯。

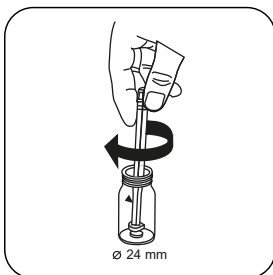


将比色杯倒空。

对于不需要 ZERO 测量的设备，从这里开始。



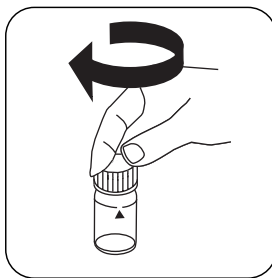
加入 DPD No. 1 HR 片剂。



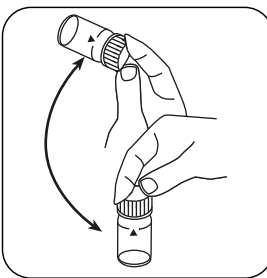
用轻微的扭转压碎片剂。



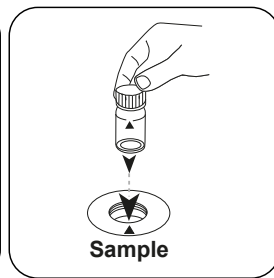
用样本将比色杯填充至 10 mL 刻度处。



密封比色杯。



通过旋转溶解试剂。

将样本比色杯放入测量轴中。
注意定位。

ZH

Test

进行测试。

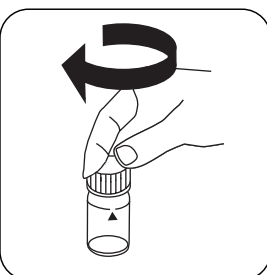
结果在显示屏上显示为 mg/l 余氯。

进行测定 总氯 HR 片剂法

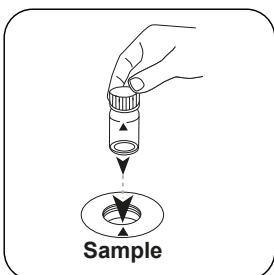
选择设备中的方法。

另外选择测定：总铜

对于此方法，不必每次都在以下设备上进行了零测量：XD 7000, XD 7500

用 10 mL 样本填充 24 mm
比色杯。

密封比色杯。

将样本比色杯放入测量轴
中。注意定位。



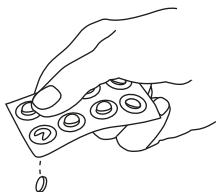
Zero

执行调零。

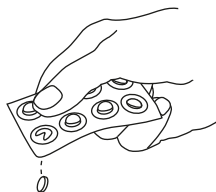
从测量轴上取下比色杯。

将比色杯倒空。

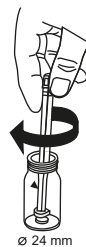
对于不需要 ZERO 测量的设备，从这里开始。



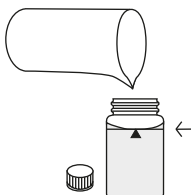
加入 DPD No. 1 HR 片剂。



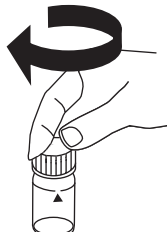
加入 DPD No. 3 HR 片剂。



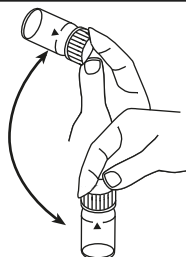
用轻微的扭转压碎片剂。



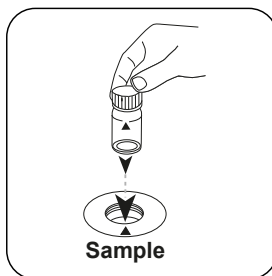
用样本将比色杯填充至
10 mL 刻度处。



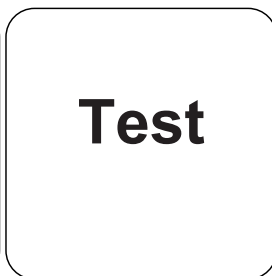
密封比色杯。



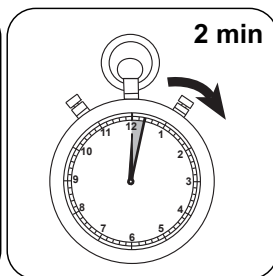
通过旋转溶解片剂。



将样本比色杯放入测量轴中。注意定位。



进行测试。



等待 2 分钟反应时间。

反应时间结束后，自动进行测量。

结果在显示屏上显示为 mg / l 总氯。

进行测定 结合氯HR 片剂法

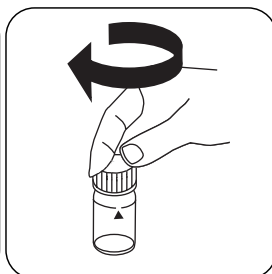
选择设备中的方法。

另外选择测定：差值

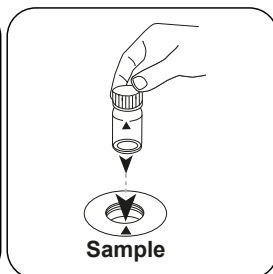
对于此方法，不必每次都在以下设备上进行零测量：XD 7000, XD 7500



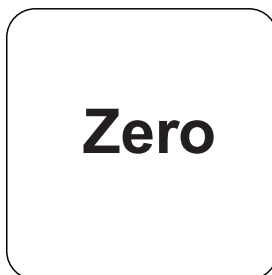
用 10 mL 样本填充 24 mm 比色杯。



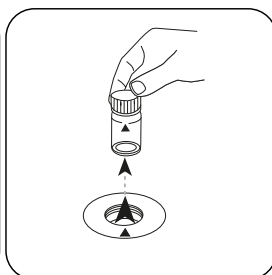
密封比色杯。



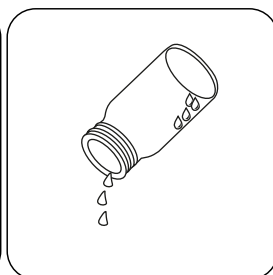
将样本比色杯放入测量轴中。注意定位。



执行调零。



从测量轴上取下比色杯。

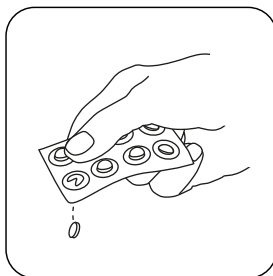
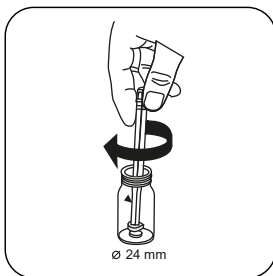


将比色杯倒空。

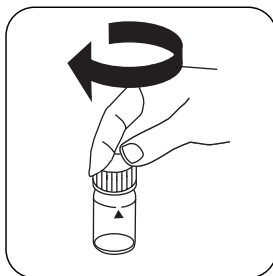
对于不需要 ZERO 测量的设备，从这里开始。



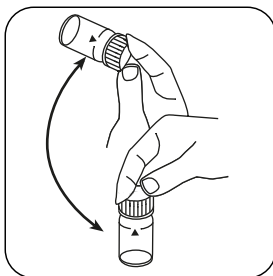
ZH

加入 **DPD No. 1 HR** 片剂。

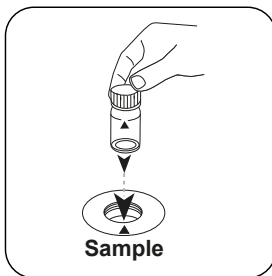
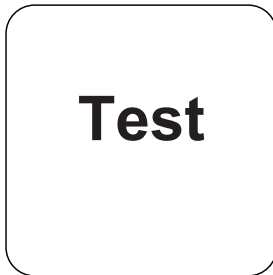
用轻微的扭转压碎片剂。

用样本将比色杯填充至
10 mL 刻度处。

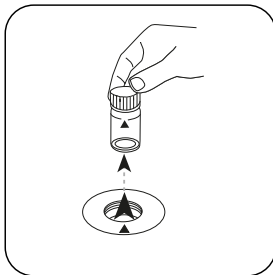
密封比色杯。



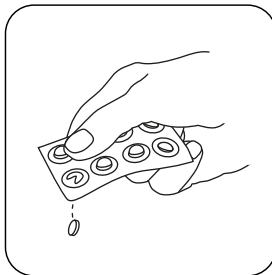
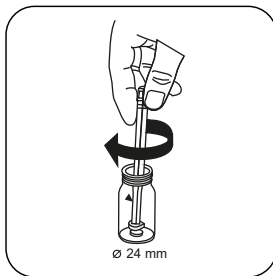
通过旋转溶解片剂。

将样本比色杯放入测量轴
中。注意定位。

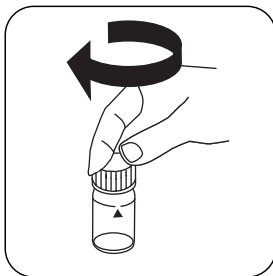
进行测试。



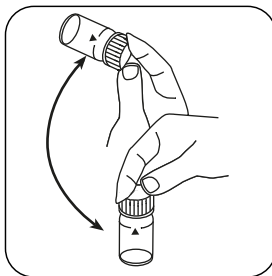
从测量轴上取下比色杯。

加入 **DPD No. 3 HR** 片剂。

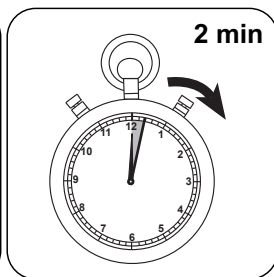
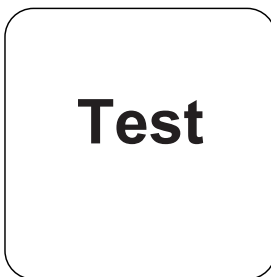
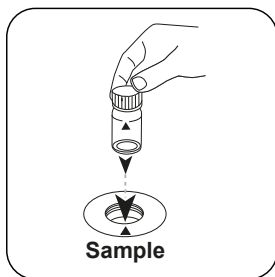
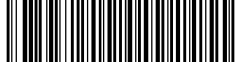
用轻微的扭转压碎片剂。



密封比色杯。



通过旋转溶解片剂。



将样本比色杯放入测量轴中。注意定位。

进行测试。

等待 2 分钟反应时间。

ZH

反应时间结束后，自动进行测量。

结果在显示屏上显示为 mg / l 余氯, mg/l 结合 氯, mg/l 总氯。



化学方法

DPD

附录

ZH

干扰说明

持续干扰

- 存在于样本中的所有氧化剂都像氯一样反应，导致多重结果。

可消除干扰

- 铜和铁 (III) 的干扰必须通过 EDTA 消除。
- 对于高钙含量*和/或高电导率*的样本，使用试剂片可能会导致样本浑浊和相关的测量误差。在这种情况下，可选用试剂片 DPD 编号1 高钙和试剂片 DPD 编号3 高钙。
*不能给出精确值，因为浑浊的形成取决于样本水的类型和组成。

一致性

EN ISO 7393-2

^{a)} 测定余氯，总氯和结合氯 | ^{a)} 替代试剂，取代DPD No.1/No.3试剂，用于由高浓度钙离子和/或高电导率引起的浑浊水样分析 | ^{a)} 含搅拌棒，10cm



PP 氯

M110

0.02 - 2 mg/L Cl₂ ^{a)}

CL2

DPD

材料
所需材料 (部分可選) :

ZH

试剂	包装单位	货号
游离氯 DPD F10	粉剂 / 100 片	530100
游离氯 DPD F10	粉剂 / 1000 片	530103
氯总量 DPD F10	粉剂 / 100 片	530120
氯总量 DPD F10	粉剂 / 1000 片	530123

現有標準

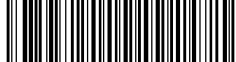
标题	包装单位	货号
ValidCheck 氯 1.5 mg/l	1 片	48105510

取樣

- 1. 在样本制备中，通过移液和摇动来避免氯的排气。
- 2. 取样后必须立即进行分析。

准备

- 1. 清洗比色杯：
由于许多家用清洁剂（例如洗碗用洗涤剂）含有还原剂，所以测定的氯结果可能会不足。为了排除这种测量误差，玻璃器皿应无氯。为此，将玻璃器皿在次氯酸钠溶液（0.1 g/L）下存放 1 小时，然后用去离子水（软化水）彻底冲洗。
- 2. 对于游离氯和总氯的单独测定，使用一套相应单独的比色杯是有意义的（参见 EN ISO 7393-2，第 5.3 段）。
- 3. DPD 显色发生在 pH 值在 6.2 至 6.5 时。因此该试剂含有用于调节 pH 值的缓冲液。但在分析前（用 0.5 mol/l 硫酸或 1 mol/l 氢氧化钠溶液）必须将强碱性或酸性水的 pH 范围调节到 6 和 7 之间。



进行测定 余氯 粉剂法

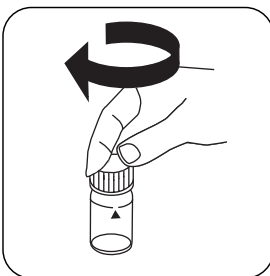
选择设备中的方法。

另外选择测定：余氯

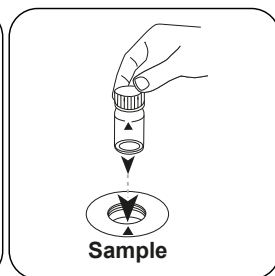
对于此方法，不必每次都在以下设备上进行零测量：XD 7000, XD 7500



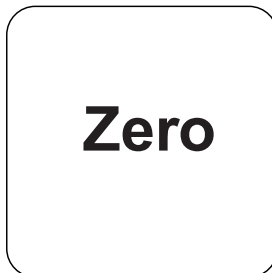
用 **10 mL** 样本填充 24 mm 比色杯。



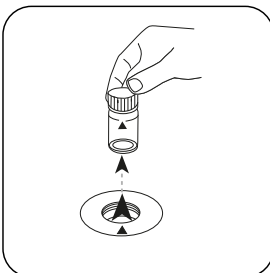
密封比色杯。



将样本比色杯放入测量轴中。注意定位。

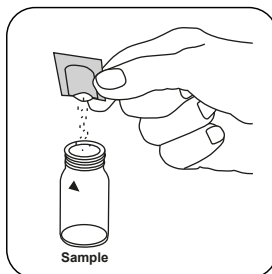


执行调零。

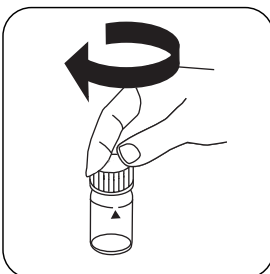


从测量轴上取下比色杯。

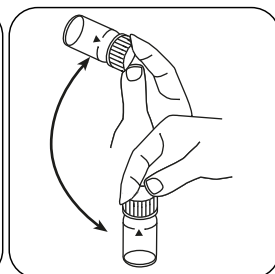
对于不需要 **ZERO** 测量的设备，从这里开始。



加入 **Chlorine FREE-DPD/ F10** 粉包。



密封比色杯。

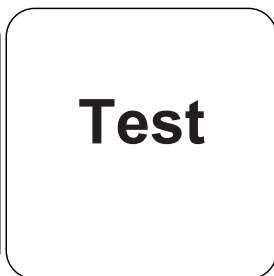
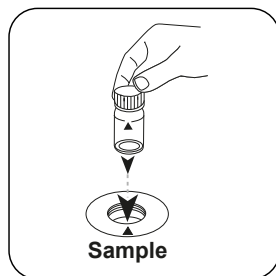


通过旋转混合内容物
(20 sec.) 。

ZH



ZH



将样本比色杯放入测量轴中。注意定位。

进行测试。

结果在显示屏上显示为 mg / l 余氯。

进行测定 总氯 粉剂法

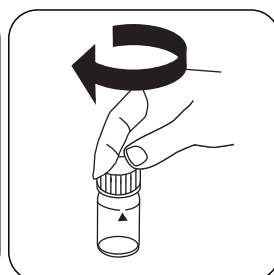
选择设备中的方法。

另外选择测定：总氯

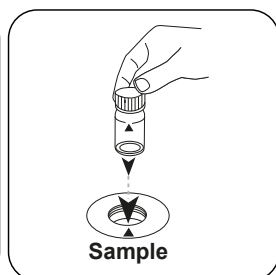
对于此方法，不必每次都在以下设备上进行了零测量：XD 7000, XD 7500



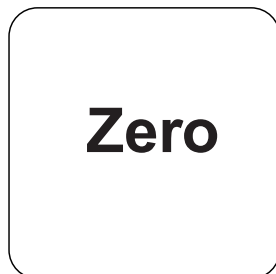
用 10 mL 样本填充 24 mm 比色杯。



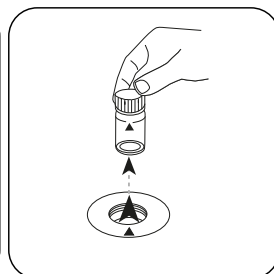
密封比色杯。



将样本比色杯放入测量轴中。注意定位。

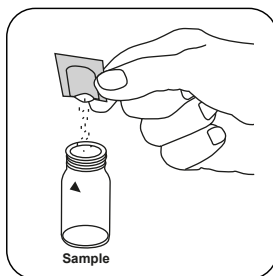
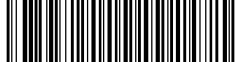


执行调零。

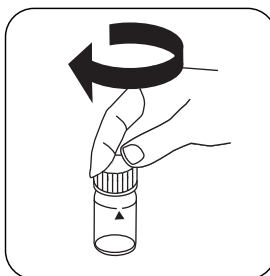


从测量轴上取下比色杯。

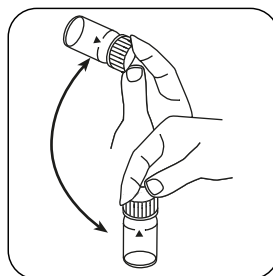
对于不需要 ZERO 测量的设备，从这里开始。



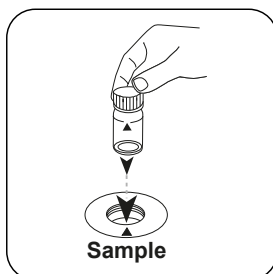
加入 **Chlorine TOTAL-DPD/ F10** 粉包。



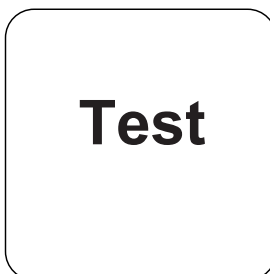
密封比色杯。



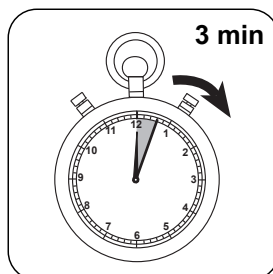
通过旋转混合内容物
(20 sec.)。



将样本比色杯放入测量轴
中。注意定位。



进行测试。



等待 3 分钟反应时间。

反应时间结束后，自动进行测量。

结果在显示屏上显示为 mg / l 总氯。

进行测定 结合氯 粉剂法

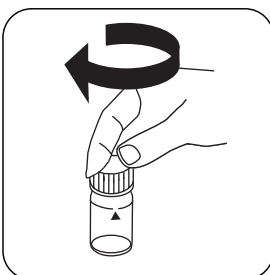
选择设备中的方法。

另外选择测定：结合氯

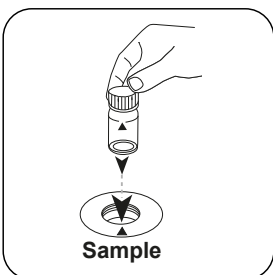
对于此方法，不必每次都在以下设备上上进行零测量：XD 7000, XD 7500



用 10 mL 样本填充 24 mm
比色杯。



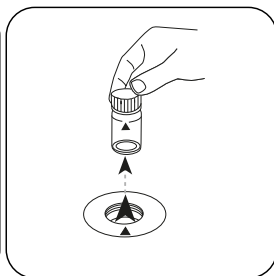
密封比色杯。



将样本比色杯放入测量轴
中。注意定位。



Zero

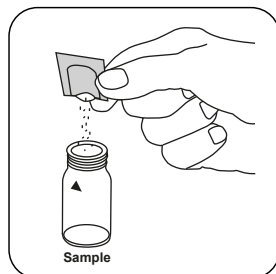
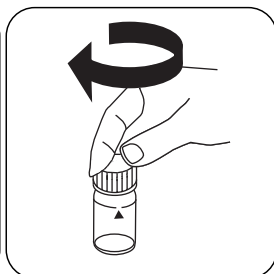


ZH

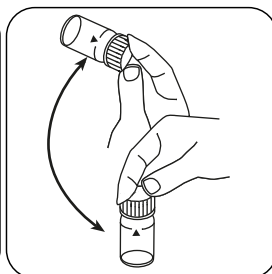
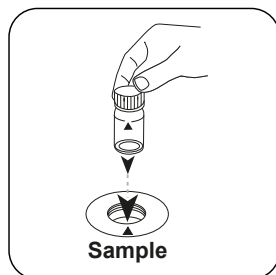
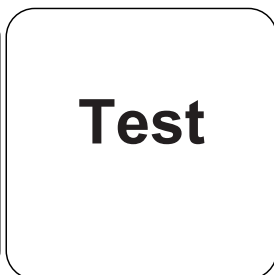
执行调零。

从测量轴上取下比色杯。

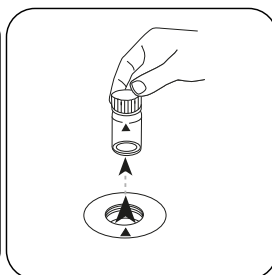
对于不需要 ZERO 测量的设备，从这里开始。

加入 **Chlorine FREE-DPD/ F10** 粉包。

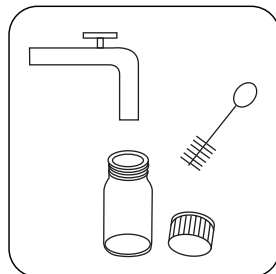
密封比色杯。

通过旋转混合内容物
(20 sec.)。将**样本**比色杯放入测量轴中。注意定位。

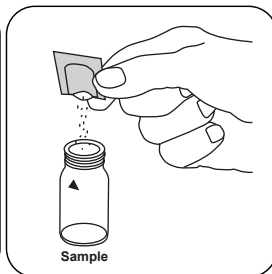
进行测试。

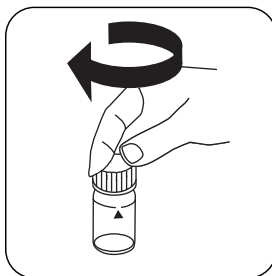
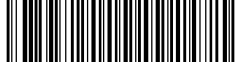


从测量轴上取下比色杯。

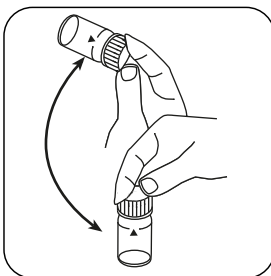


彻底清洗比色杯和比色杯杯盖。

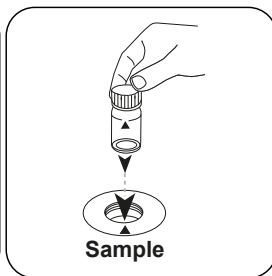
用 **10 mL** 样本填充 24 mm 比色杯。加入 **TOTAL-DPD/ F10** 粉包。



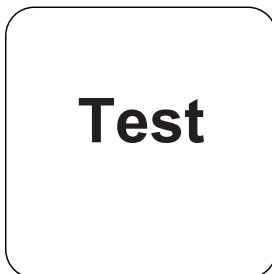
密封比色杯。



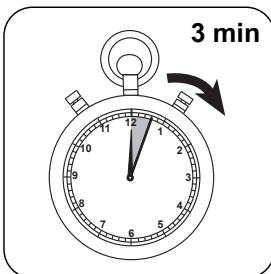
通过旋转混合内容物
(20 sec.) 。



将样本比色杯放入测量轴
中。注意定位。



进行测试。



等待 3 分钟反应时间 。

反应时间结束后，自动进行测量。

结果在显示屏上显示为 mg / l 余氯, mg/l 结合 氯, mg/l 总氯。



化学方法

DPD

附錄

ZH

干扰说明

持续干扰

- 存在于样本中的所有氧化剂都像氯一样反应，导致多重结果。

可消除干扰

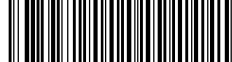
- 铜和铁 (III) 的干扰必须通过 EDTA 消除。
- 在使用粉包时，高于 2 mg/L 氯的浓度可导致测量范围内的结果高达 0 mg/L。在这种情况下应用无氯水稀释样本。将 10 ml 稀释的样本与试剂混合并重复测量 (可信度测试) 。

干擾	從/ [mg/l]
CrO ₄ ²⁻	0,01
MnO ₂	0,01

一致性

EN ISO 7393-2

^{a)} 测定余氯，总氯和结合氯



HR 2 PP 氯

M112-2

0.1 - 10 mg/L Cl₂

DPD

材料

所需材料 (部分可选) :

ZH

试剂	包装单位	货号
VARIO 游离氯 DPD F25-100	粉剂 / 100 片	530110
VARIO 氯总量 DPD F25-100	粉剂 / 100 片	530130
游离氯 DPD F10	粉剂 / 100 片	530100
氯总量 DPD F10	粉剂 / 100 片	530120

取样

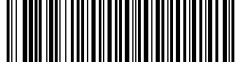
1. 在样本制备中, 通过移液和摇动来避免氯的排气。
2. 取样后必须立即进行分析。

准备

1. 清洗比色杯 :
由于许多家用清洁剂 (例如洗碗用洗涤剂) 含有还原剂, 所以测定的氯结果可能会不足。为了排除这种测量误差, 玻璃器皿应无氯。为此, 将玻璃器皿在次氯酸钠溶液 (0.1 g/L) 下存放 1 小时, 然后用去离子水 (软化水) 彻底冲洗。
2. 对于游离氯和总氯的单独测定, 使用一套相应单独的比色杯是有意义的 (参见 EN ISO 7393-2, 第 5.3 段)。
3. DPD 显色发生在 pH 值在 6.2 至 6.5 时。因此该试剂含有用于调节 pH 值的缓冲液。但在分析前 (用 0.5 mol/l 硫酸或 1 mol/l 氢氧化钠溶液) 必须将强碱性或酸性水的 pH 范围调节到 6 和 7 之间。

备注

1. 在 MD50/150 中进行测试时, 使用的是 24 ∅ 毫米比色皿而不是多比色皿。

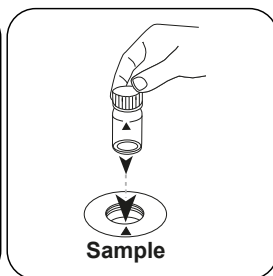
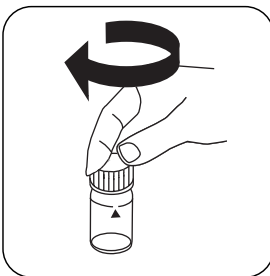


进行测定 余氯HR 2 粉剂法 (MD50/MD150)

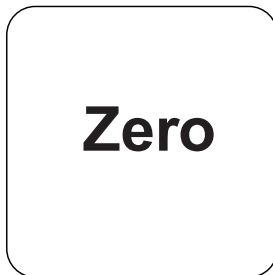
选择设备中的方法。



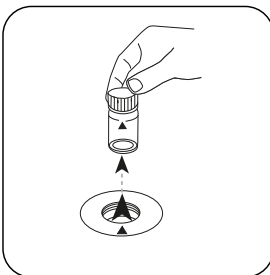
用 **10 mL** 样本填充 24 mm 密封比色杯。



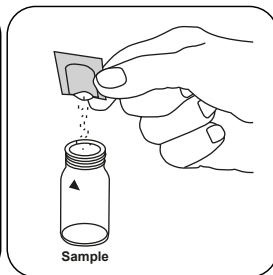
将样本比色杯放入测量轴中。注意定位。



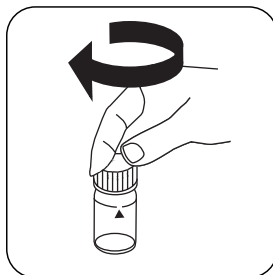
执行调零。



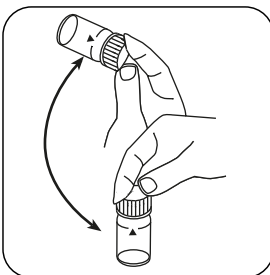
从测量轴上取下比色杯。



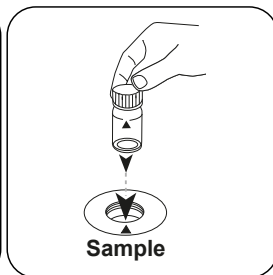
加入 **1 Vario Chlorine Free / F25** 或 **2 Chlorine Total / F10** 粉包。



密封比色杯。

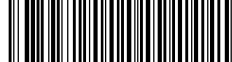


通过旋转混合内容物 (20 sec.)。



将样本比色杯放入测量轴中。注意定位。

ZH



Test

ZH

进行测试。

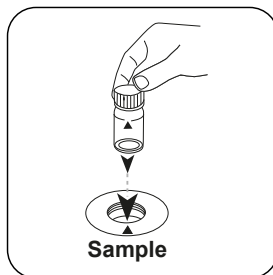
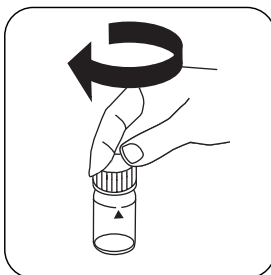
结果在显示屏上显示为 mg / l 氯。

进行测定 总氯HR 2粉剂法 (MD50/MD150)

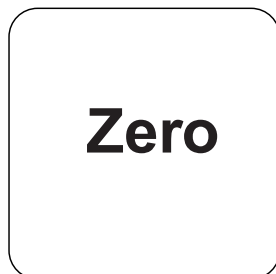
选择设备中的方法。



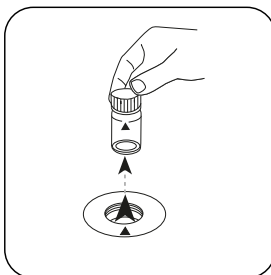
用 10 mL 样本填充 24 mm 密封比色杯。



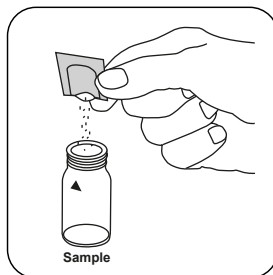
将样本比色杯放入测量轴中。
注意定位。



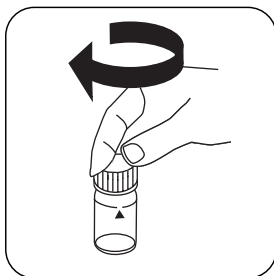
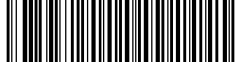
执行调零。



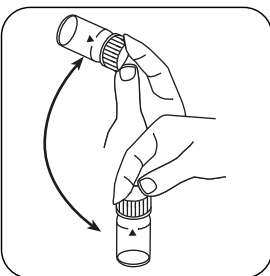
从测量轴上取下比色杯。



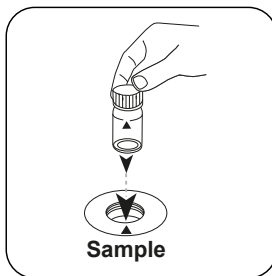
加入 1 Vario Chlorine
Free / F25 或 2 Chlorine
Total / F10 粉包。



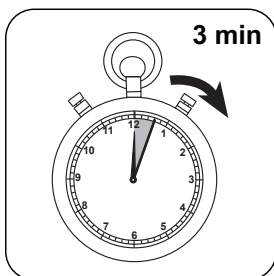
密封比色杯。



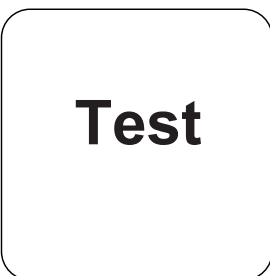
通过旋转混合内容物
(20 sec.) 。



将样本比色杯放入测量轴中。
注意定位。

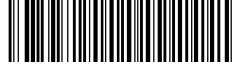


等待 3 分钟反应时间。



进行测试。

结果在显示屏上显示为 mg / l 氯。



化学方法

DPD

附錄

ZH

干扰说明

持续干扰

- 存在于样本中的所有氧化剂都像氯一样反应，导致多重结果。

可消除干扰

- 铜和铁 (III) 的干扰必须通过 EDTA 消除。
- 在使用粉包时，高于 10 mg/L 氯的浓度可导致测量范围内的结果高达 0 mg/L。在这种情况下应用无氯水稀释样本。将 5 ml 稀释的样本与试剂混合并重复测量 (可信度测试) 。

一致性

EN ISO 7393-2



CyA HR T

M161

10 - 200 mg/L CyA

CyAH

三聚氰胺

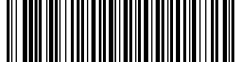
材料
所需材料 (部分可選) :

ZH

试剂	包装单位	货号
CYA HR 测试	片剂 / 100	511430BT
CYA HR 测试	片剂 / 250	511431BT

备注

- 1. 氰尿酸引起非常细微的分散浑浊和乳白色的外观。单个颗粒不是由于氰尿酸的存在造成的。
- 2. 加入CyA-HR-Test片剂后，两分钟内自动溶解。



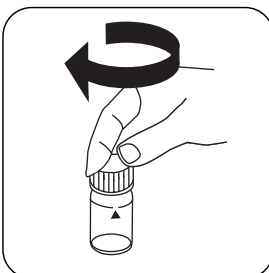
进行测定 用片剂进行氰尿酸测试

选择设备中的方法。

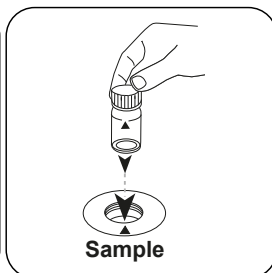
对于此方法，不必每次都在以下设备上进行零测量：XD 7000, XD 7500



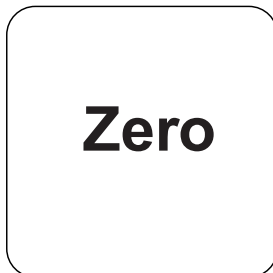
用 10 mL 样本填充 24 mm 比色杯。



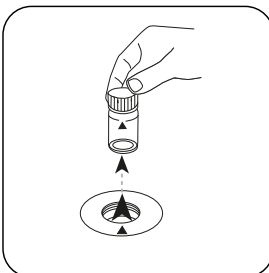
密封比色杯。



将样本比色杯放入测量轴中。注意定位。

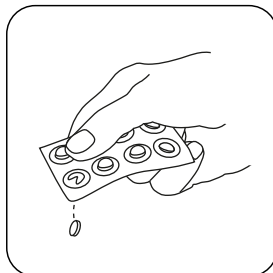


执行调零。

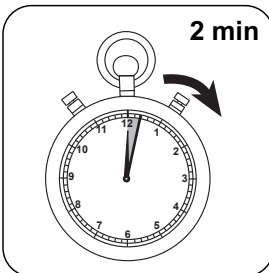


从测量轴上取下比色杯。

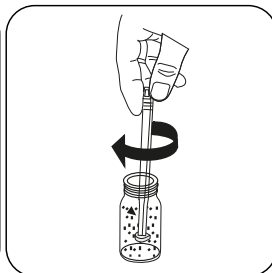
对于不需要 ZERO 测量的设备，从这里开始。



加入 CyA HR Test 片剂。

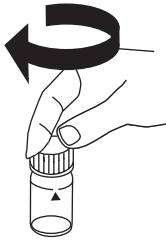


等待 2 分钟反应时间。

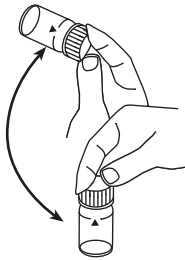


用清洁的搅拌棒搅拌溶解片剂。

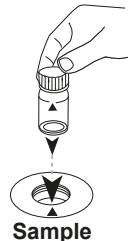
ZH



密封比色杯。



通过旋转混合内容物（不要摇晃）。



将样本比色杯放入测量轴中。注意定位。

Test

进行测试。

结果在显示屏上显示为 mg / l 三聚氰酸。



化学方法

三聚氰胺

干扰说明

持续干扰

- 1. 未溶解的颗粒可能会导致结果过高。

ZH

方法验证

检出限	2.07 mg/L
测定下限	6.2 mg/L
测量上限	200 mg/L
灵敏度	77.47 mg/L / Abs
置信范围	4.6 mg/L
标准偏差	4.78 mg/L
变异系数	4.55 %



T pH 值

M330

6.5 - 8.4 pH

PH

苯酚红

材料

所需材料 (部分可选) :

ZH

试剂	包装单位	货号
酚红光度计	片剂 / 100	511770BT
酚红光度计	片剂 / 250	511771BT
酚红光度计	片剂 / 500	511772BT

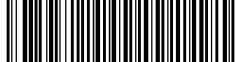
取样

样本的盐含量 以 g/L 为单位	30 (海水)	60	120	180
校正	-0,15 ¹⁾	-0,21 ²⁾	-0,26 ²⁾	-0,29 ²⁾

¹⁾ 根据 Kolthoff (1922)²⁾ 根据 Parson 和 Douglas (1926)

备注

1. 对于光度 pH 值测定, 只应使用标有 PHOTOMETER 的带有黑色烫印的 PHENOL RED 片剂。



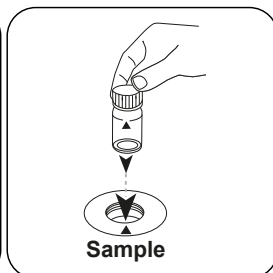
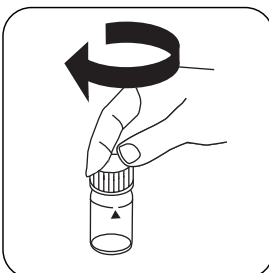
进行测定 pH 值片剂

选择设备中的方法。

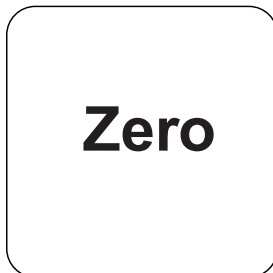
对于此方法，不必每次都在以下设备上上进行零测量：XD 7000, XD 7500



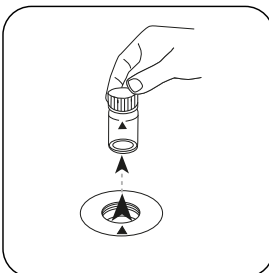
用 10 mL 样本填充 24 mm 密封比色杯。



将样本比色杯放入测量轴中。注意定位。

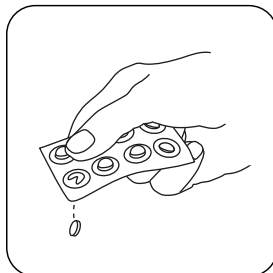


执行调零。

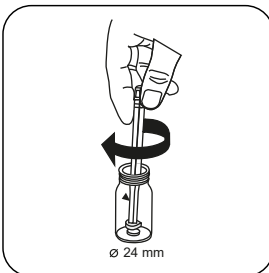


从测量轴上取下比色杯。

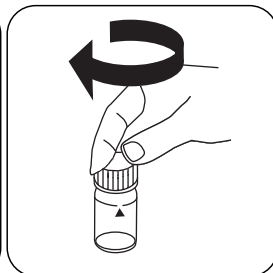
对于不需要 ZERO 测量的设备，从这里开始。



加入 PHENOL RED
PHOTOMETER 片剂。

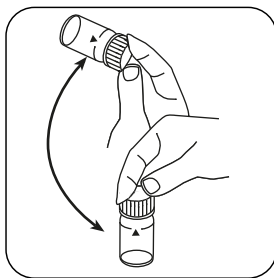


用轻微的扭转压碎片剂。

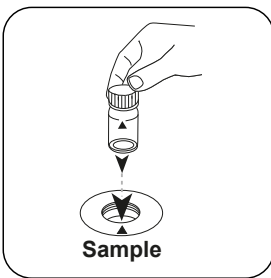


密封比色杯。

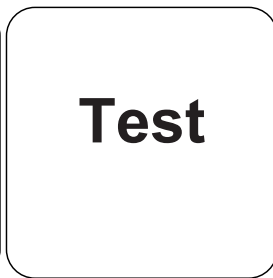
ZH



通过旋转溶解片剂。



将样本比色杯放入测量轴中。注意定位。



进行测试。

Test

ZH

结果在显示屏上显示为 pH 值。



化学方法

苯酚红

附錄

干扰说明

ZH

持续干扰

1. 碳酸盐硬度*低的水样可能会得出错误的 pH 值。
*K_{S4,3} < 0,7 mmol/l ≙ 总碱度 < 35 mg/L CaCO₃.

可消除干扰

1. pH 值低于 6.5 和高于 8.4 可导致测量范围内的结果。建议使用可信度测试 (pH 计) 。
2. 盐误差：
对于盐含量高达 2 g/L，试剂片的盐含量不会引起明显的盐误差。对于较高的盐含量，测量值应进行如下校正：

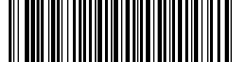
样本的盐 含量以 g/ L 为 单 位	30 (海 水)	60	120	180
校正	-0,15 ¹⁾	-0,21 ²⁾	-0,26 ²⁾	-0,29 ²⁾

¹⁾ 根据 Kolthoff (1922)

²⁾ 根据 Parson 和 Douglas (1926)

参考文献

Colorimetric Chemical Analytical Methods, 9th Edition, London



L pH 值

M331

6.5 - 8.4 pH

PH

苯酚红

材料

所需材料 (部分可选) :

ZH

试剂	包装单位	货号
酚红溶液	15 mL	471040
酚红溶液	100 mL	471041
酚红溶液 6 件装	1 片	471046

取样

样本盐含量	校正
30 g/L (海水)	-0,15 ¹⁾
60 g/L	-0,21 ²⁾
120 g/L	-0,26 ²⁾
180 g/L	-0,29 ²⁾

¹⁾ 根据 Kolthoff (1922)²⁾ 根据 Parson 和 Douglas (1926)

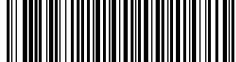
分析氯化水时存在的残余氯含量会影响液体试剂的显色反应。在添加 PHENOL RED 溶液之前，向样本溶液中加入一小块硫代硫酸钠晶体 ($\text{Na}_2\text{S}_2\text{O}_3 \cdot 5 \text{H}_2\text{O}$) 来防止这种情况。

准备

1. 由于液滴大小不同，测量结果可能会比使用片剂时有更大的偏差。
使用移液管 (0.18 ml 相当于 6 滴) 时这种偏差可以最小化。

备注

1. 使用后滴瓶必须立即用相同颜色的瓶盖重新密封。
2. 将试剂冷藏在 +6 °C 至 + 10 °C。



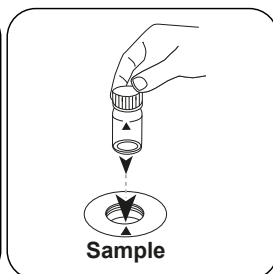
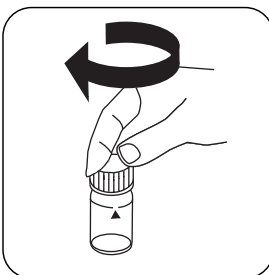
进行测定 pH 值液剂

选择设备中的方法。

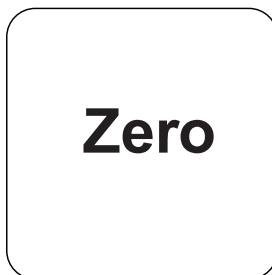
对于此方法，不必每次都在以下设备上进行零测量：XD 7000, XD 7500



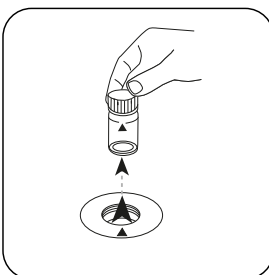
用 10 mL 样本填充 24 mm 比色杯。
密封比色杯。



将样本比色杯放入测量轴中。注意定位。

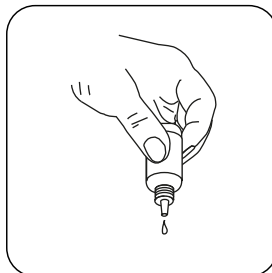


执行调零。

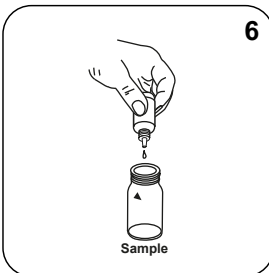


从测量轴上取下比色杯。

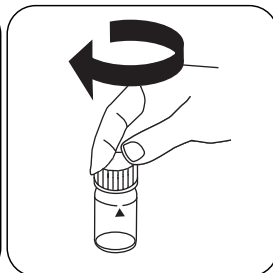
对于不需要 **ZERO** 测量的设备，从这里开始。



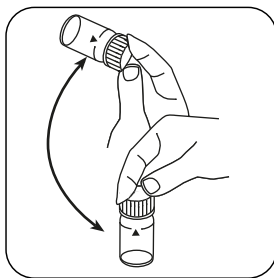
垂直握住滴瓶，慢慢加入相同大小的滴剂。



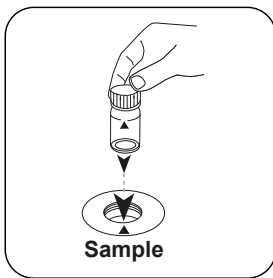
将 6 滴 **PHENOL Red-Lösung** 添加到样本比色杯中。



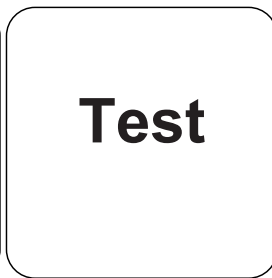
密封比色杯。



通过旋转混合内容物。



将样本比色杯放入测量轴中。注意定位。



进行测试。

Test

结果在显示屏上显示为 pH 值。

ZH



化学方法

苯酚红

附錄

干扰说明

ZH

可消除干扰

1. 盐误差：通过盐含量校正样本的测量值（平均值）：

2.

样本盐含量	校正
30 g/L（海水）	-0,15 ¹⁾
60 g/L	-0,21 ²⁾
120 g/L	-0,26 ²⁾
180 g/L	-0,29 ²⁾

¹⁾ 根据 Kolthoff (1922)

²⁾ 根据 Parson 和 Douglas (1926)
3. 分析氯化水时存在的残余氯含量会影响液体试剂的显色反应。在添加 PHENOL RED 溶液之前，向样本溶液中加入一小块硫代硫酸钠晶体 ($\text{Na}_2\text{S}_2\text{O}_3 \cdot 5 \text{H}_2\text{O}$) 来防止这种情况。

参考文献

Colorimetric Chemical Analytical Methods, 9th Edition, London

Tintometer GmbH

Lovibond® Water Testing
Schleefstraße 8-12
44287 Dortmund
Tel.: +49 (0)231/94510-0
sales@lovibond.com
www.lovibond.com
Germany

Tintometer South East Asia

Unit B-3-12, BBT One Boulevard,
Lebuh Nilam 2, Bandar Bukit Tinggi,
Klang, 41200, Selangor D.E
Tel.: +60 (0)3 3325 2285/6
Fax: +60 (0)3 3325 2287
lovibond.asia@tintometer.com
www.lovibond.com
Malaysia

Tintometer India Pvt. Ltd.

Door No: 7-2-C-14, 2nd, 3rd & 4th Floor
Sanathnagar Industrial Estate,
Hyderabad, 500018
Telangana
Tel: +91 (0) 40 23883300
Toll Free: 1 800 599 3891/ 3892
indiaoffice@lovibond.in
www.lovibondwater.in
India

The Tintometer Limited

Lovibond House
Sun Rise Way
Amesbury, SP4 7GR
Tel.: +44 (0)1980 664800
sales@lovibond.uk
www.lovibond.com
UK

Tintometer Brazil

Caixa Postal: 271
CEP: 13201-970
Jundiaí – SP
Tel.: +55 (11) 3230-6410
sales@lovibond.us
www.lovibond.com.br
Brazil

Tintometer Spain

Postbox: 24047
08080 Barcelona
Tel.: +34 661 606 770
sales@tintometer.es
www.lovibond.com
Spain

Tintometer China

9F, SOHO II C.
No.9 Guanghualu,
Chaoyang District,
Beijing, 100020
Customer Care: +86 021 69910081
Tel.: +86 10 85251111 Ext. 330
Fax: +86 10 85251001
chinaoffice@tintometer.com
www.lovibond.com
China

Tintometer Inc.

6456 Parkland Drive
Sarasota, FL 34243
Tel: 941.756.6410
Fax: 941.727.9654
sales@lovibond.us
www.lovibond.us
USA



Technical changes without notice
Printed in Germany 07/25

No.: 00386781

Lovibond® and Tintometer® are Trademarks of
the Tintometer Group of Companies