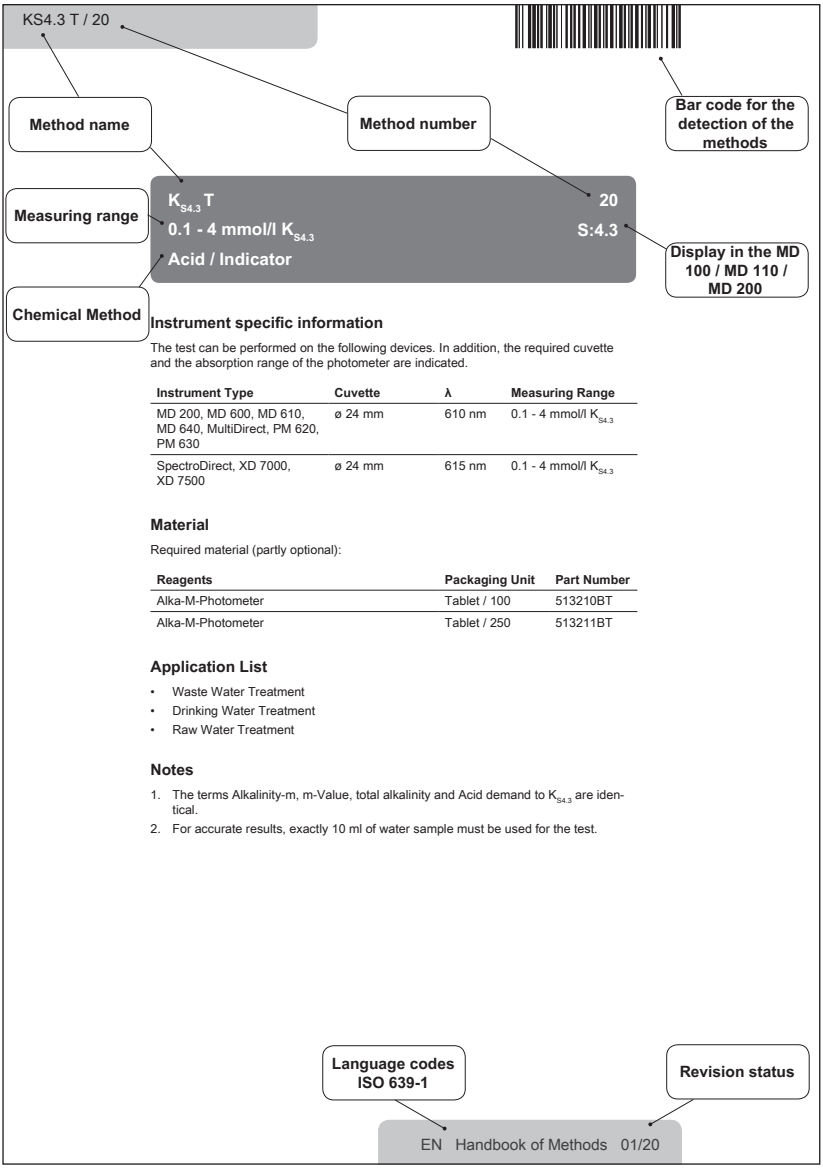
Lovibond® Water Testing

Tintometer® Group

Manual of Methods

MD50

Chlorine



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.

Performing test procedure

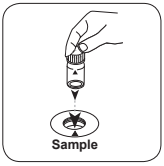
Implementation of the provision Acid capacity $K_{S4.3}$ with Tablet

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**.

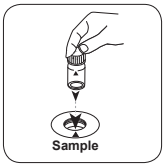
Close vial(s).



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 Cl_2 [a] CL6

DPD

EN

Material

Required material (partly optional):

Reagents	Packaging Unit	Part Number
DPD No.1	Tablet / 100	511050BT
DPD No. 1	Tablet / 250	511051BT
DPD No. 1	Tablet / 500	511052BT
DPD No. 3	Tablet / 100	511080BT
DPD No. 3	Tablet / 250	511081BT
DPD No. 3	Tablet / 500	511082BT
DPD No. 1 High Calcium [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

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).

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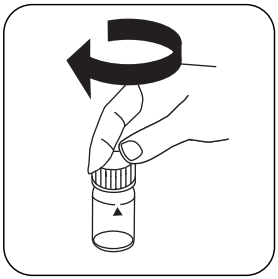
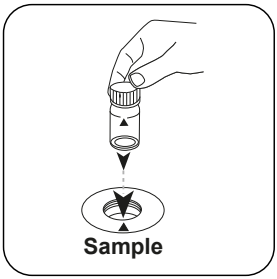
Determination of free chlorine with tablet

Select the method on the device.

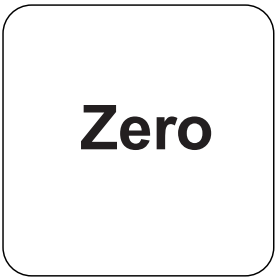
Fill 24 mm vial with **10 mL sample**.



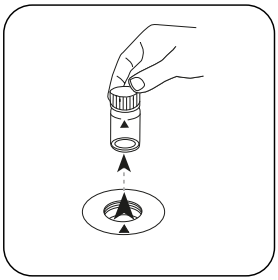
Close vial(s).



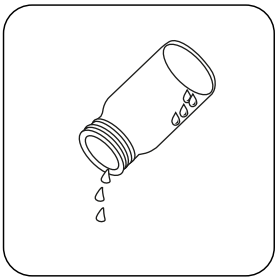
Place **sample vial** in the sample chamber. Pay attention to the positioning.



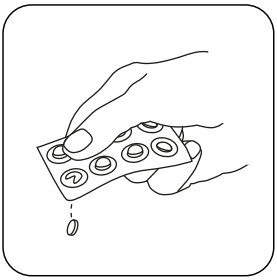
Press the **ZERO** button.



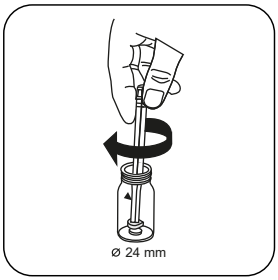
Remove the vial from the sample chamber.



Empty vial except for a few drops.

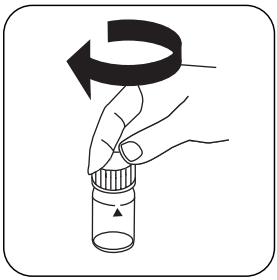


Add **DPD No. 1 tablet** .

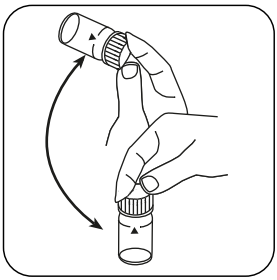


Crush tablet(s) by rotating slightly.

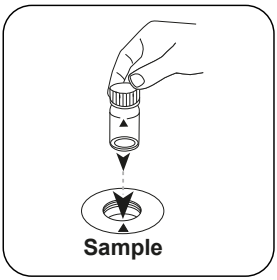
Fill up vial with **sample** to the **10 mL mark**.



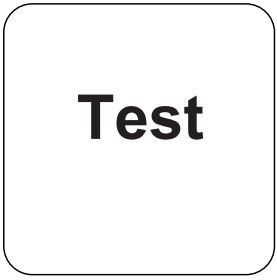
Close vial(s).



Dissolve tablet(s) by inverting.



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



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

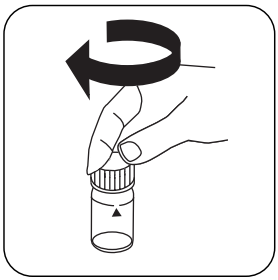
The result in mg/L free chlorine appears on the display.

Determination of total Chlorine with tablet

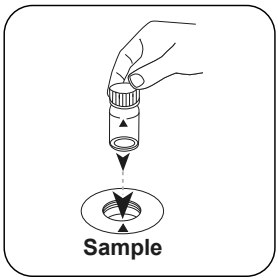
Select the method on the device.

In addition, choose the test: total

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



Close vial(s).



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

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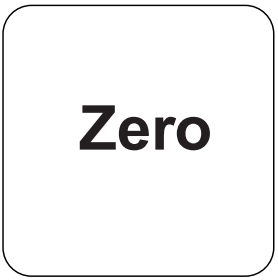
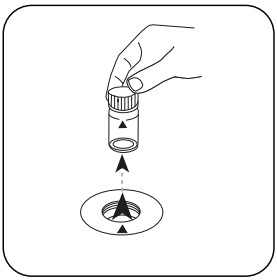
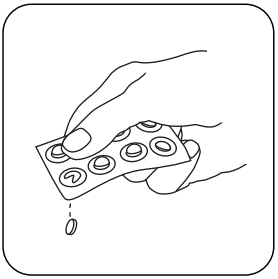


Press the **ZERO** button.

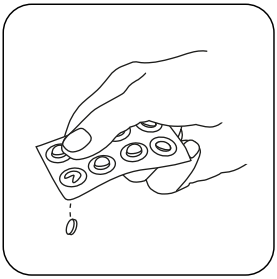


Remove the vial from the sample chamber.

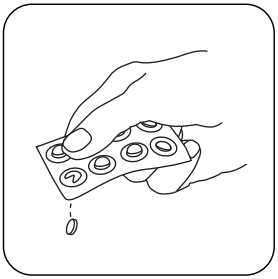
Empty vial except for a few drops.



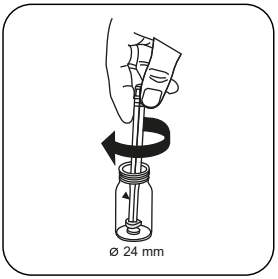
Add **DPD No. 1 tablet** .



Add **DPD No. 3 tablet** .

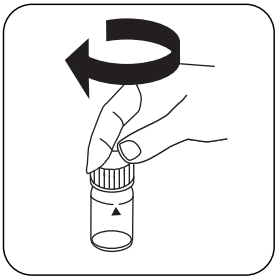


As an alternative to DPD No. 1 and No. 3 tablets, a DPD No. 4 tablet can be added.

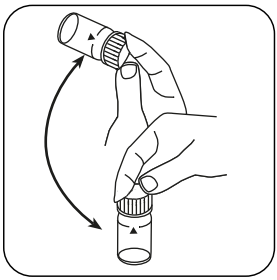


Crush tablet(s) by rotating slightly.

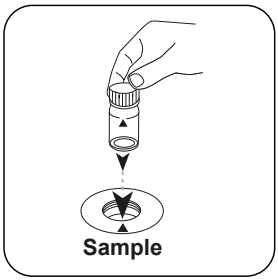
Fill up vial with **sample** to the **10 mL mark**.



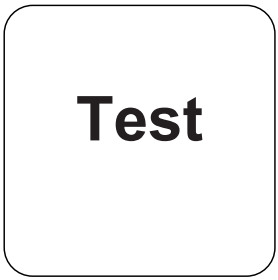
Close vial(s).



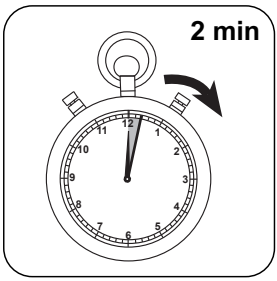
Dissolve tablet(s) by inverting.



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



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



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

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

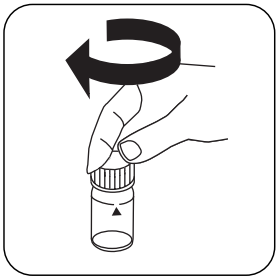
The result in mg/L total Chlorine appears on the display.

Determination of Chlorine differentiated with tablet

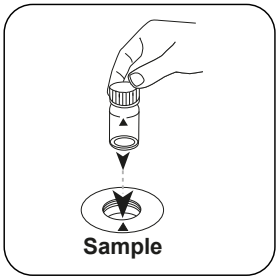
Select the method on the device.

In addition, choose the test: differentiated

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



Close vial(s).

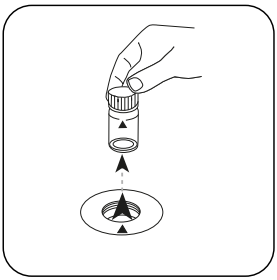


Place **sample vial** in the sample chamber. Pay attention to the positioning.

EN

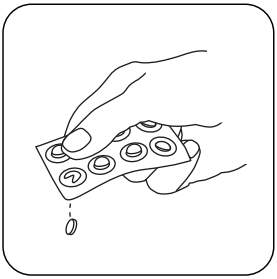
Zero

Press the **ZERO** button.

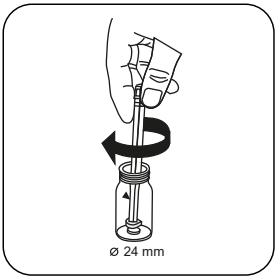


Remove the vial from the sample chamber.

Empty vial except for a few drops.

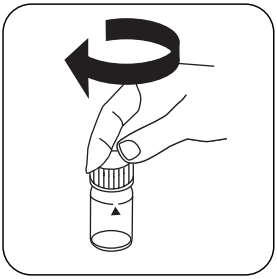


Add **DPD No. 1 tablet** .

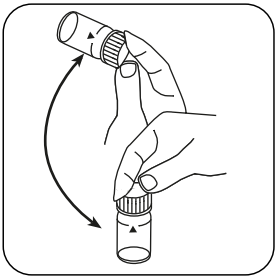


Crush tablet(s) by rotating slightly.

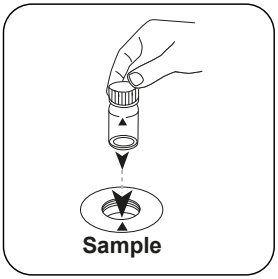
Fill up vial with **sample** to the **10 mL mark**.



Close vial(s).



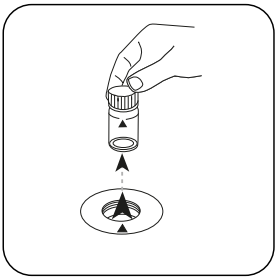
Dissolve tablet(s) by inverting.



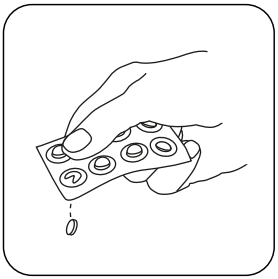
Place **sample vial** in the sample chamber. Pay attention to the positioning.

Test

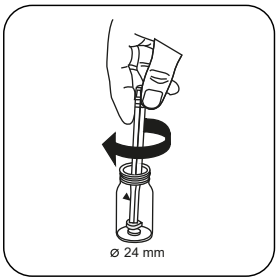
Press the **TEST** (XD: **START**)button.



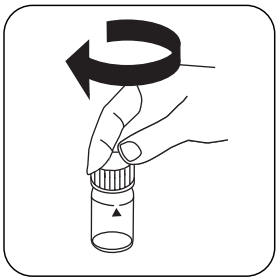
Remove the vial from the sample chamber.



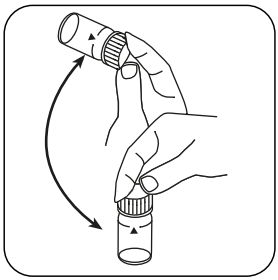
Add **DPD No. 3 tablet** .



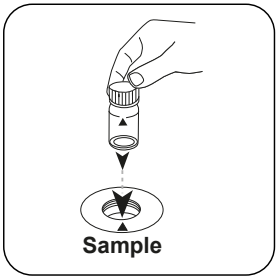
Crush tablet(s) by rotating slightly.



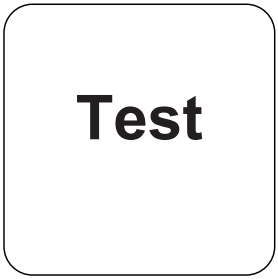
Close vial(s).



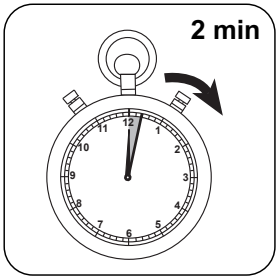
Dissolve tablet(s) by inverting.



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



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



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

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

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

Chemical Method

DPD

Appendix

EN

Interferences

Persistant 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

Method Validation

Limit of Detection	0.02 mg/L
Limit of Quantification	0.06 mg/L
End of Measuring Range	6 mg/L
Sensitivity	2.05 mg/L / Abs
Confidence Intervall	0.04 mg/L
Standard Deviation	0.019 mg/L
Variation Coefficient	0.87 %

Conformity

EN ISO 7393-2

[a)] determination of free, combined and total | [e)] 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 Cl_2 [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.

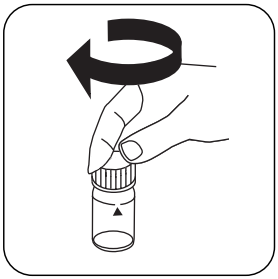
EN

Determination of free chlorine with liquid reagent

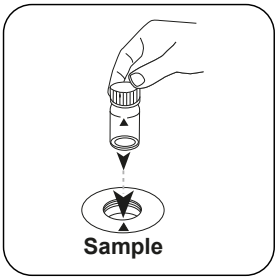
Select the method on the device.

In addition, choose the test: free

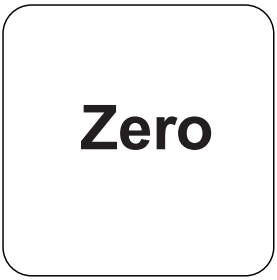
Fill 24 mm vial with **10 mL sample**.



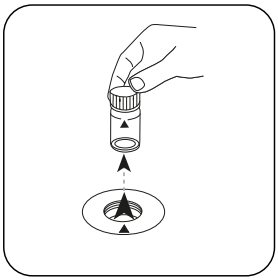
Close vial(s).



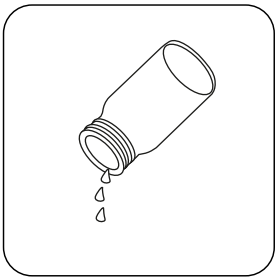
Place **sample vial** in the sample chamber. Pay attention to the positioning.



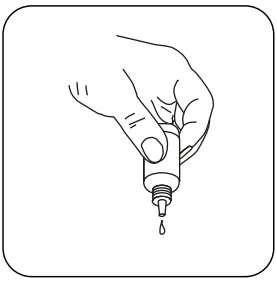
Press the **ZERO** button.



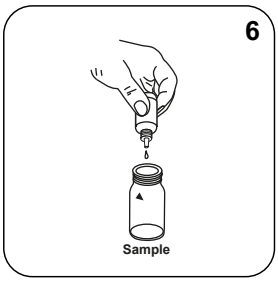
Remove the vial from the sample chamber.



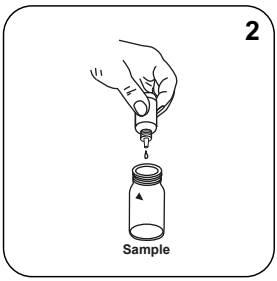
Empty vial.



Hold cuvettes vertically and add equal drops by pressing slowly.

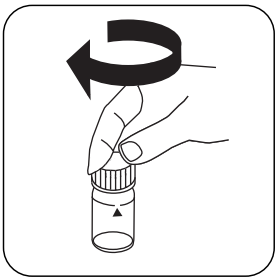


Add **6 drops DPD 1 Buffer Solution** to the **sample vial**.

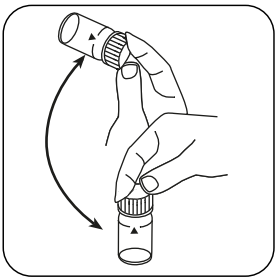


Add **2 drops DPD 1 Reagent Solution** to the **sample vial**.

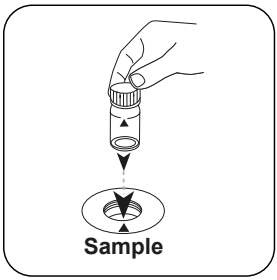
Fill up vial with **sample** to the **10 mL mark**.



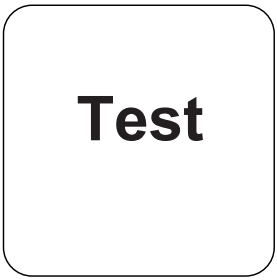
Close vial(s).



Invert several times to mix the contents.



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



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

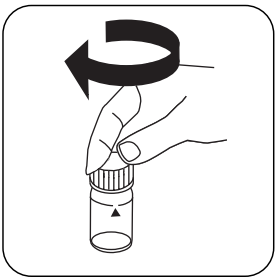
The result in mg/L free chlorine appears on the display.

Determination of totale Chlorine with liquid reagent

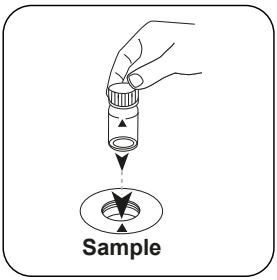
Select the method on the device.

In addition, choose the test: total

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

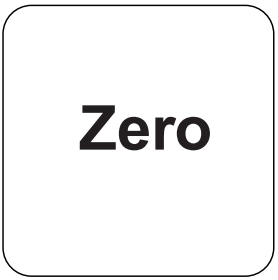


Close vial(s).

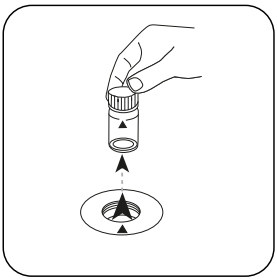


Place **sample vial** in the sample chamber. Pay attention to the positioning.

EN

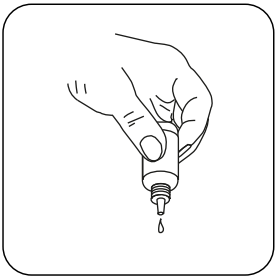


Press the **ZERO** button.

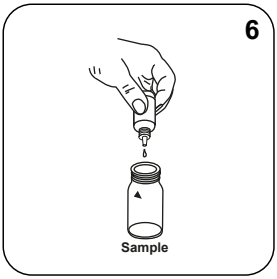


Remove the vial from the sample chamber.

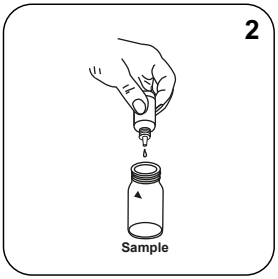
Empty vial.



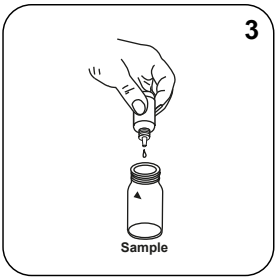
Hold cuvettes vertically and add equal drops by pressing slowly.



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

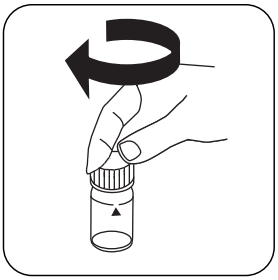


Add **2 drops DPD 1 Reagent Solution** to the **sample vial**.

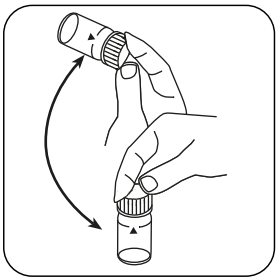


Add **3 drops DPD 3 Solution** to the **sample vial**.

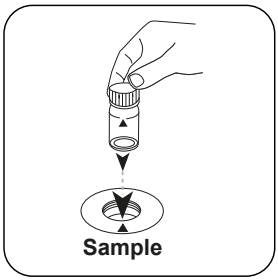
Fill up vial with **sample** to the **10 mL mark**.



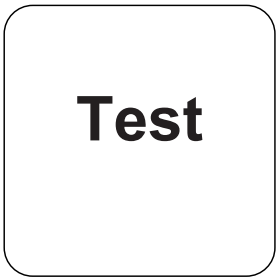
Close vial(s).



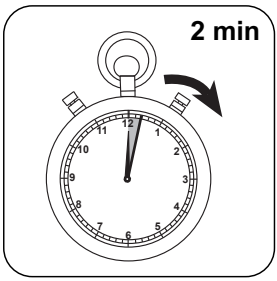
Invert several times to mix the contents.



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



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



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

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

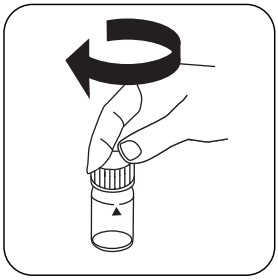
The result in mg/L total Chlorine appears on the display.

Determination of Chlorine differentiated with liquid reagent

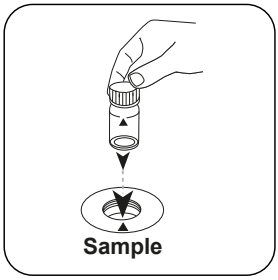
Select the method on the device.

In addition, choose the test: differentiated

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

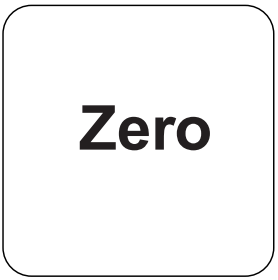


Close vial(s).

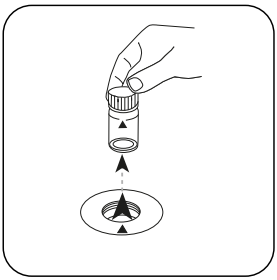


Place **sample vial** in the sample chamber. Pay attention to the positioning.

EN

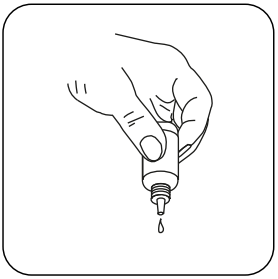


Press the **ZERO** button.

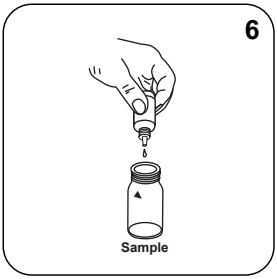


Remove the vial from the sample chamber.

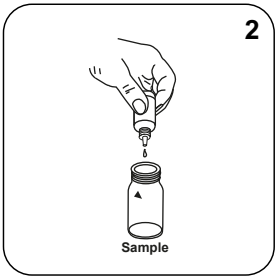
Empty vial.



Hold cuvettes vertically and add equal drops by pressing slowly.



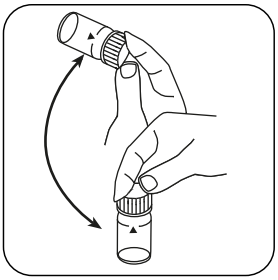
Add **6 drops DPD 1 Buffer Solution** to the **sample vial**.



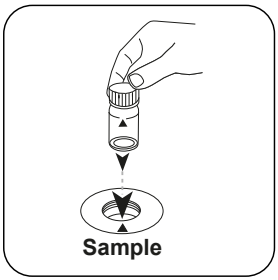
Add **2 drops DPD 1 Reagent Solution** to the **sample vial**.

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

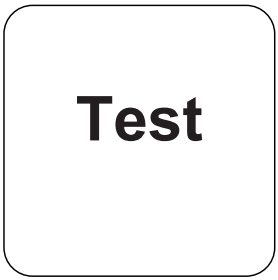
Close vial(s).



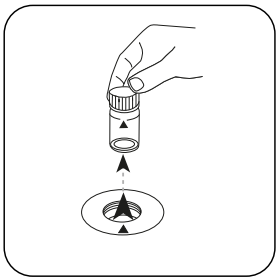
Invert several times to mix the contents.



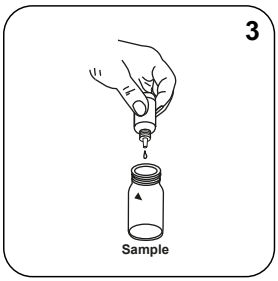
Place **sample vial** in the sample chamber. Pay attention to the positioning.



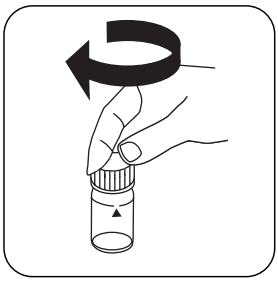
Press the **TEST** (XD: **START**)button.



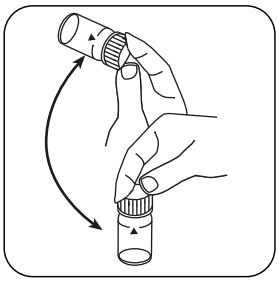
Remove the vial from the sample chamber.



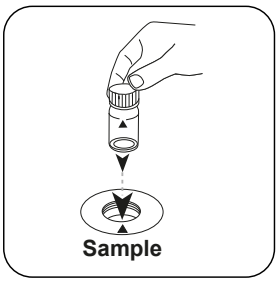
Add **3 drops DPD 3 Solution** to the **sample vial**.



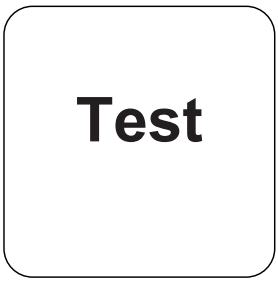
Close vial(s).



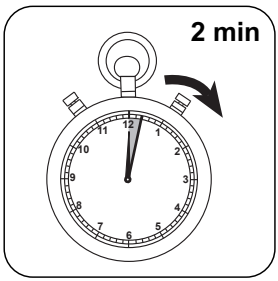
Invert several times to mix the contents.



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



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



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

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

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

Chemical Method

DPD

Appendix

EN

Interferences

Persistant 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 Cl_2 [a] CL10

DPD

EN

Material

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 [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.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).

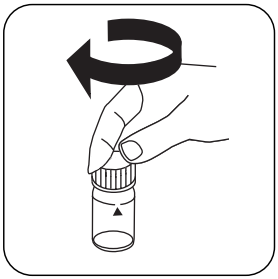
EN

Determination of free chlorine HR with tablet

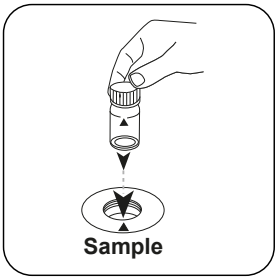
Select the method on the device.

In addition, choose the test: free

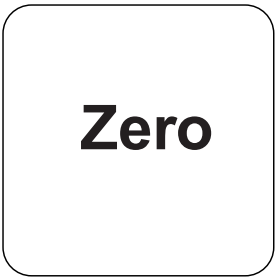
Fill 24 mm vial with **10 mL sample**.



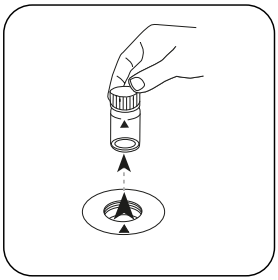
Close vial(s).



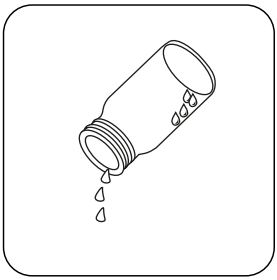
Place **sample vial** in the sample chamber. Pay attention to the positioning.



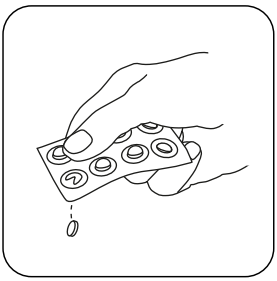
Press the **ZERO** button.



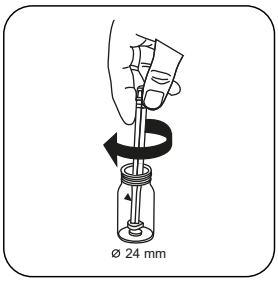
Remove the vial from the sample chamber.



Empty vial except for a few drops.

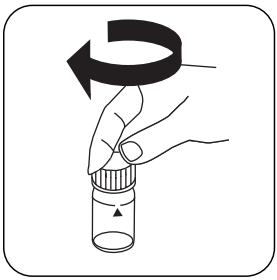


Add **DPD No. 1 HR tablet**.

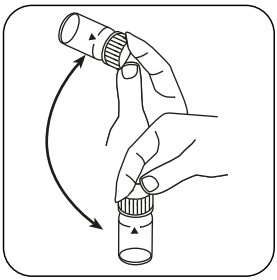


Crush tablet(s) by rotating slightly.

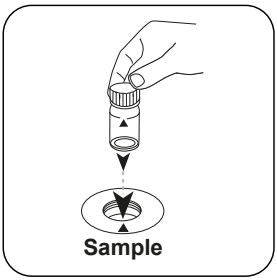
Fill up vial with **sample** to the **10 mL mark**.



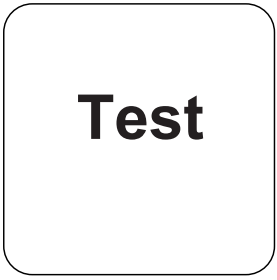
Close vial(s).



Dissolve tablet(s) by inverting.



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



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

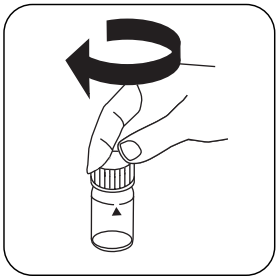
The result in mg/L free chlorine appears on the display.

Determination of total Chlorine HR with tablet

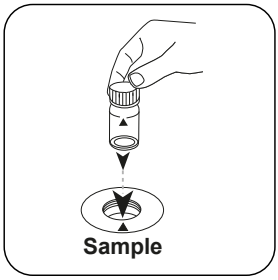
Select the method on the device.

In addition, choose the test: total

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

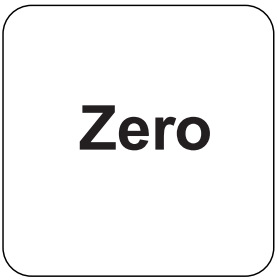


Close vial(s).

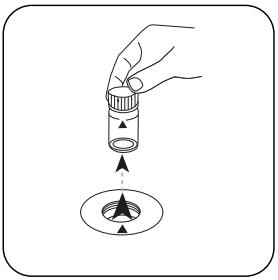


Place **sample vial** in the sample chamber. Pay attention to the positioning.

EN

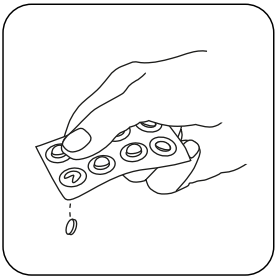


Press the **ZERO** button.

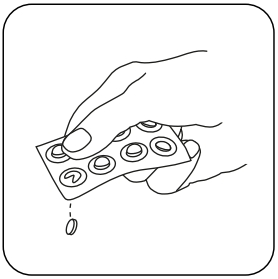


Remove the vial from the sample chamber.

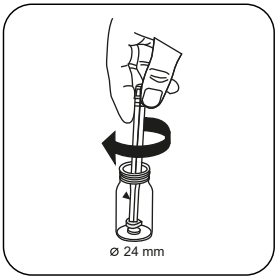
Empty vial except for a few drops.



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



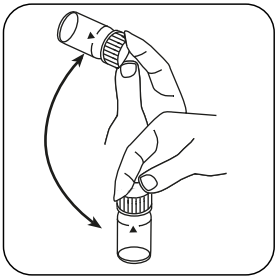
Add **DPD No. 3 HR tablet**.



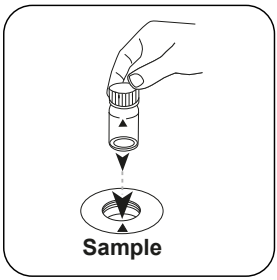
Crush tablet(s) by rotating slightly.

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

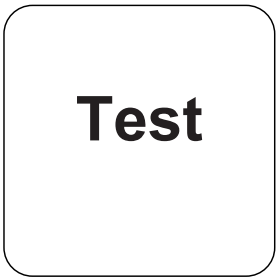
Close vial(s).



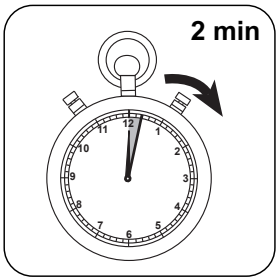
Dissolve tablet(s) by inverting.



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



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



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

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

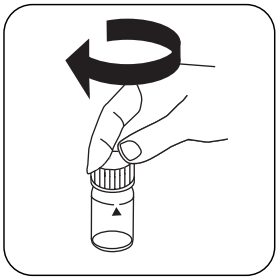
The result in mg/L total Chlorine appears on the display.

Determination of Chlorine HR differentiated with tablet

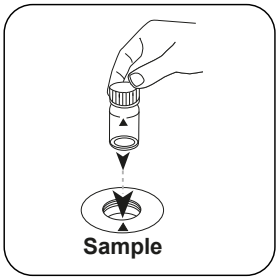
Select the method on the device.

In addition, choose the test: differentiated

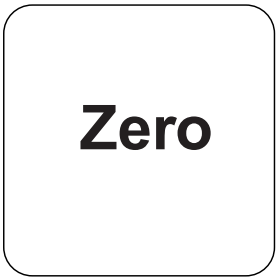
Fill 24 mm vial with **10 mL sample**.



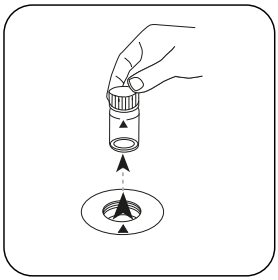
Close vial(s).



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



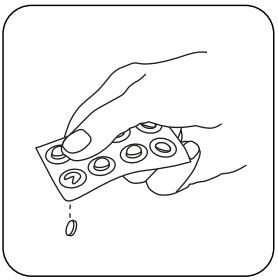
Press the **ZERO** button.



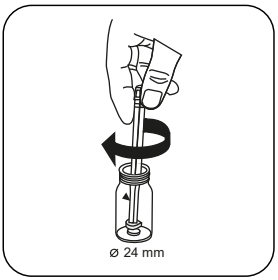
Remove the vial from the sample chamber.

Empty vial except for a few drops.

EN

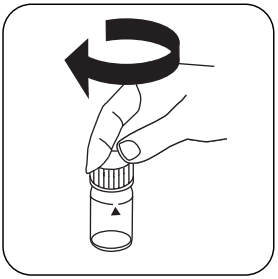


Add **DPD No. 1 HR tablet**.

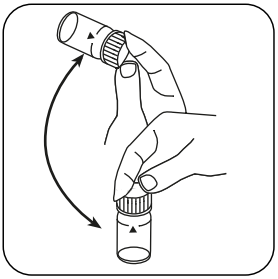


Crush tablet(s) by rotating slightly.

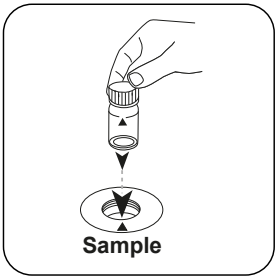
Fill up vial with **sample** to the **10 mL mark**.



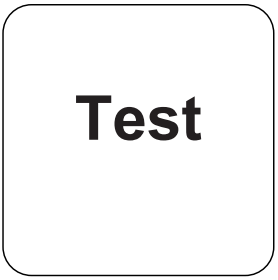
Close vial(s).



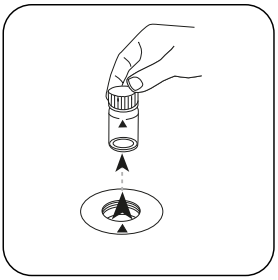
Dissolve tablet(s) by inverting.



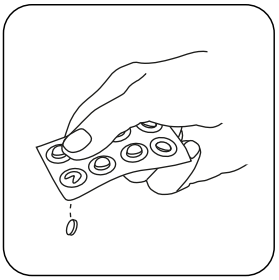
Place **sample vial** in the sample chamber. Pay attention to the positioning.



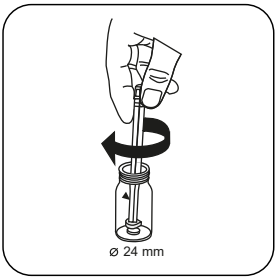
Press the **TEST** (XD: **START**)button.



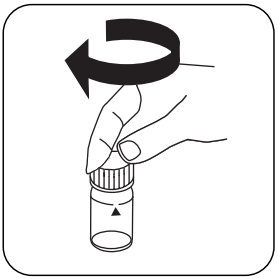
Remove the vial from the sample chamber.



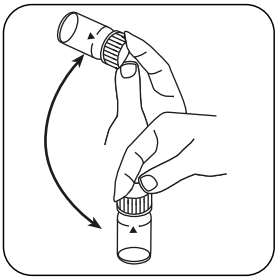
Add **DPD No. 3 HR tablet**.



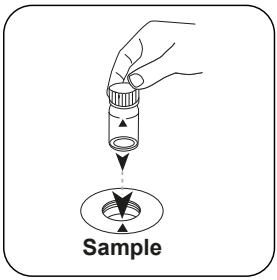
Crush tablet(s) by rotating slightly.



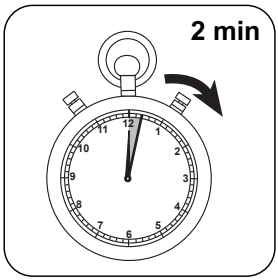
Close vial(s).



Dissolve tablet(s) by inverting.



Test



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

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

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

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

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

Chemical Method

DPD

Appendix

EN

Interferences

Persistant 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 | [e)] 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 Cl_2 [a] CL2

DPD

EN

Material

Required material (partly optional):

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

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

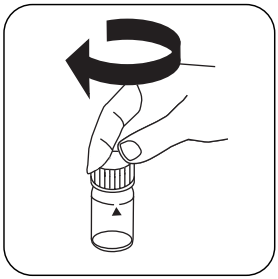
1. Cleaning of vials:
   As many household cleaners (e.g. dishwasher detergent) contain reducing substances, this can lead to lower results with the determination of Chlorine. To avoid measurement errors, the glassware used should be free of chlorine consumption. To achieve this, all glassware should 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

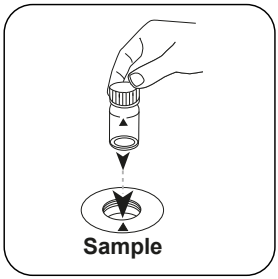
Select the method on the device.

In addition, choose the test: free

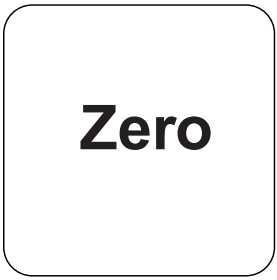
Fill 24 mm vial with **10 mL sample**.



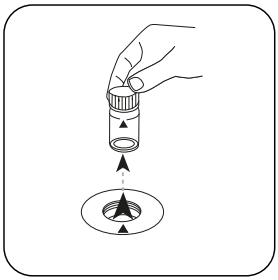
Close vial(s).



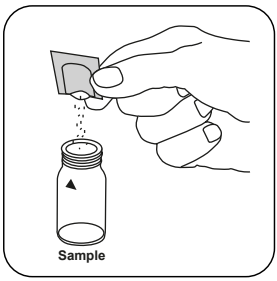
Place **sample vial** in the sample chamber. Pay attention to the positioning.



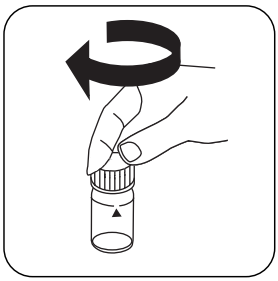
Press the **ZERO** button.



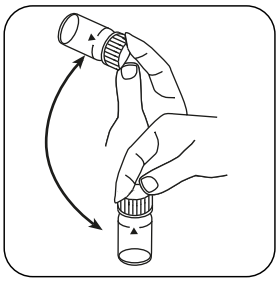
Remove the vial from the sample chamber.



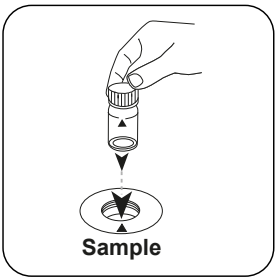
Add **Chlorine FREE-DPD/ F10 powder pack**.



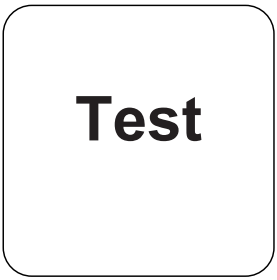
Close vial(s).



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



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



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

EN

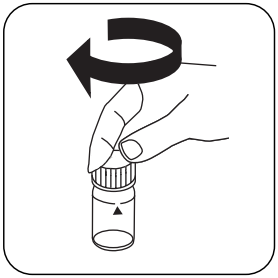
The result in mg/L free chlorine appears on the display.

Determination of totale Chlorine with powder packs

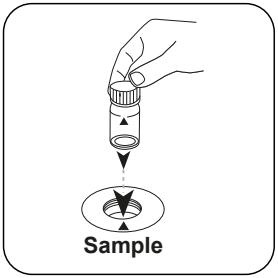
Select the method on the device.

In addition, choose the test: total

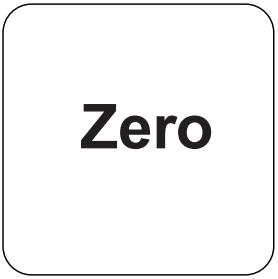
Fill 24 mm vial with **10 mL sample**.



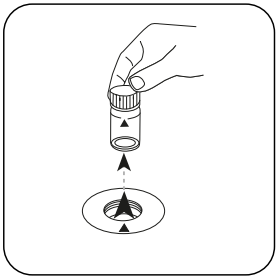
Close vial(s).



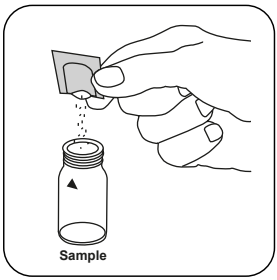
Place **sample vial** in the sample chamber. Pay attention to the positioning.



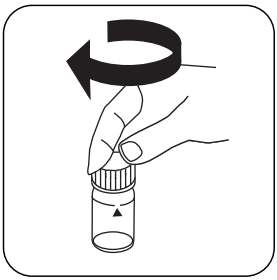
Press the **ZERO** button.



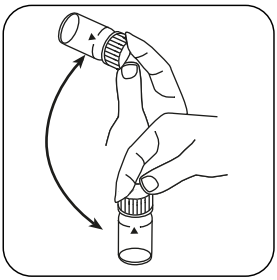
Remove the vial from the sample chamber.



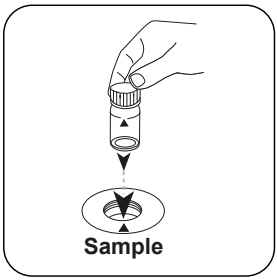
Add **Chlorine TOTAL-DPD/ F10 powder pack**.



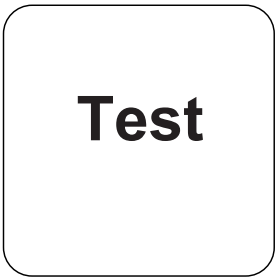
Close vial(s).



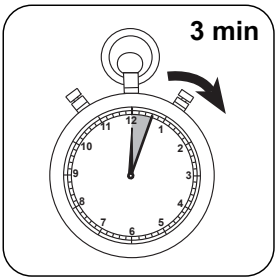
Invert several times to mix the contents (20 sec.).



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



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



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

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

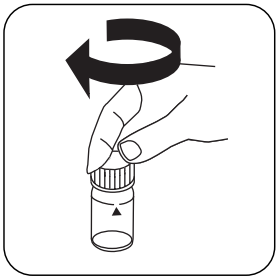
The result in mg/L total Chlorine appears on the display.

Determination of Chlorine differentiated with powder packs

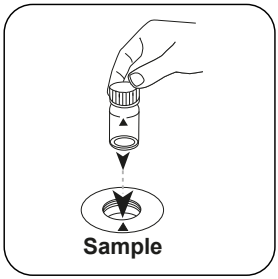
Select the method on the device.

In addition, choose the test: differentiated

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

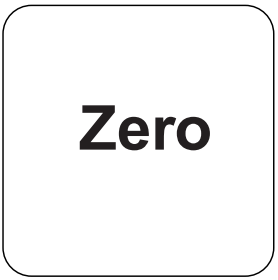


Close vial(s).

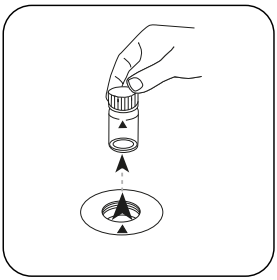


Place **sample vial** in the sample chamber. Pay attention to the positioning.

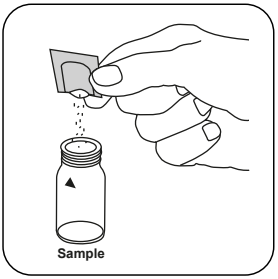
EN



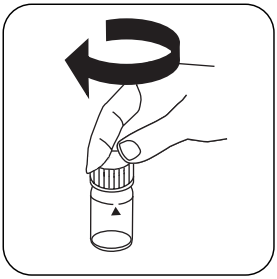
Press the **ZERO** button.



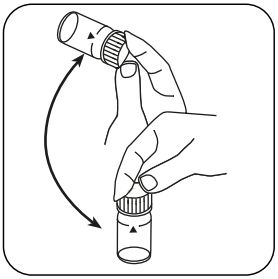
Remove the vial from the sample chamber.



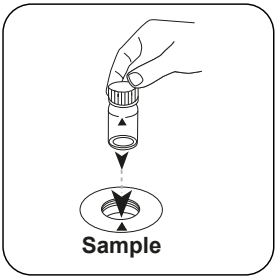
Add **Chlorine FREE-DPD/ F10 powder pack**.



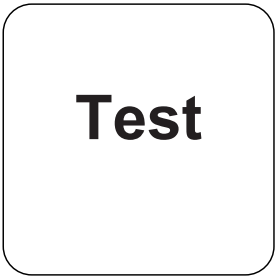
Close vial(s).



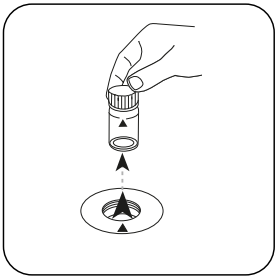
Invert several times to mix the contents (20 sec.).



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



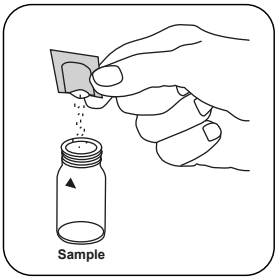
Press the **TEST** (XD: **START**)button.



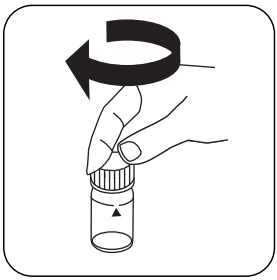
Remove the vial from the sample chamber.

Thoroughly clean the vial and vial cap.

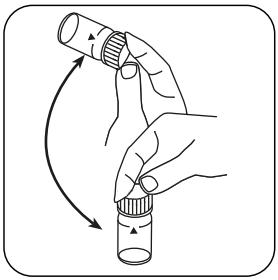
Fill 24 mm vial with **10 mL sample**.



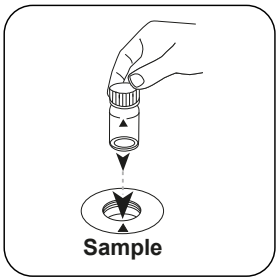
Add **TOTAL-DPD/ F10 powder pack**.



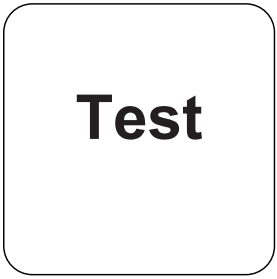
Close vial(s).



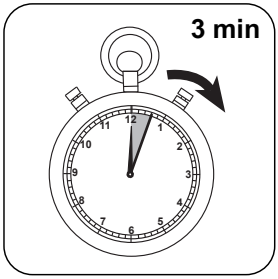
Invert several times to mix the contents (20 sec.).



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



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



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

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

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

Chemical Method

DPD

Appendix

EN

Interferences

Persistant 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

Method Validation

Limit of Detection	0.01 mg/L
Limit of Quantification	0.03 mg/L
End of Measuring Range	2 mg/L
Sensitivity	1.68 mg/L / Abs
Confidence Intervall	0.033 mg/L
Standard Deviation	0.014 mg/L
Variation Coefficient	1.34 %

Conformity

EN ISO 7393-2

[a] determination of free, combined and total

Chlorine HR 2 PP M112

0.1 - 10 mg/L Cl_2

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

Sampling

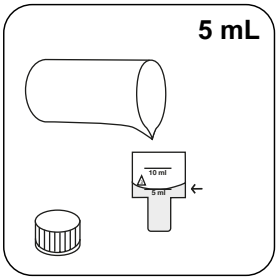
1. When preparing the sample, Chlorine outgassing, e.g. through the pipette or shaking, must be avoided.
2. The analysis must take place immediately after taking the sample.

Preparation

1. Cleaning of vials:
   As many household cleaners (e.g. dishwasher detergent) contain reducing substances, this can lead to lower results with the determination of Chlorine. To avoid measurement errors, the glassware used should be free of chlorine consumption. To achieve this, all glassware should be placed in a sodium hypochlorite solution (0.1 g/L) for one hour and then rinsed thoroughly with deionised water.
2. For individual testing of free and total Chlorine, the use of different sets of glassware is recommended (EN ISO 7393-2, 5.3)
3. The DPD colour development is carried out at a pH value of 6.2 to 6.5. The reagents therefore contain a buffer for the pH adjustment. Strong alkaline or acidic water samples must therefore be adjusted between pH 6 and pH 7 before the analysis (use 0.5 mol/l Sulphuric acid or 1 mol/l Sodium hydroxide).

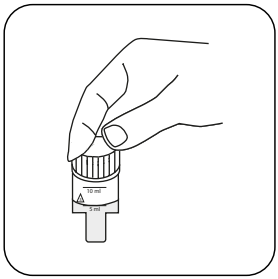
Determination of free chlorine HR 2 with powder packs

Select the method on the device.

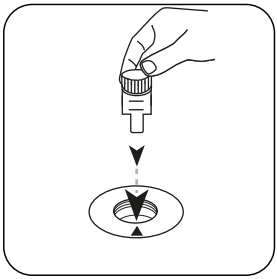


Fill 10 mm vial with **5 mL sample**.

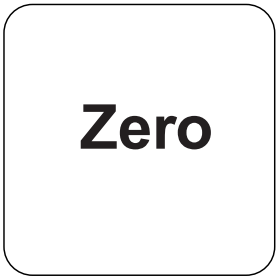
MD50: Fill 24 mm vial with **10 mL sample**.



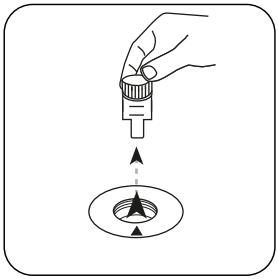
Close vial(s).



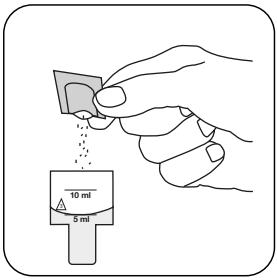
Place **sample vial** in the sample chamber. • Pay attention to the positioning.



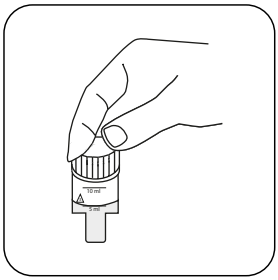
Press the **ZERO** button.



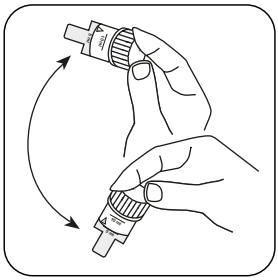
Remove **vial** from the sample chamber.



Add **Vario Chlorine Free / F25 powder pack**.

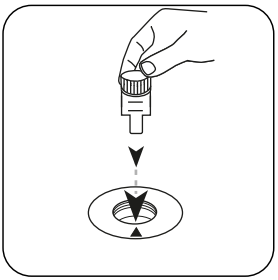


Close vial(s).

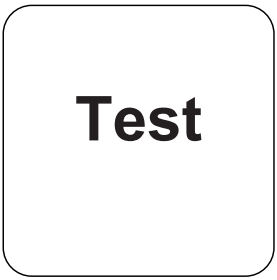


Invert several times to mix the contents (20 sec.).

EN



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

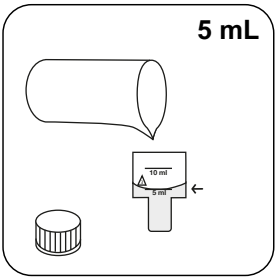


Press the **TEST** (XD: **START**)button.

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

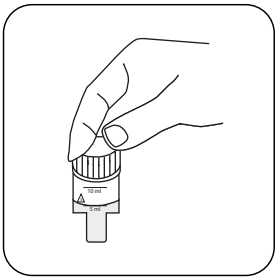
Determination of totale chlorine HR 2 with powder packs

Select the method on the device.

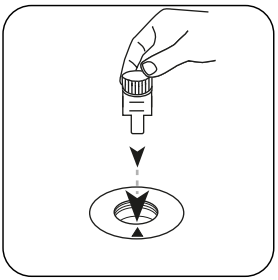


Fill 10 mm vial with **5 mL sample**.

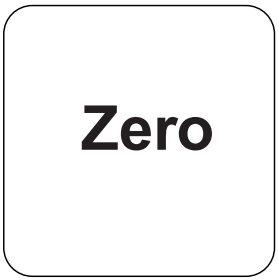
MD50: Fill 24 mm vial with **10 mL sample**.



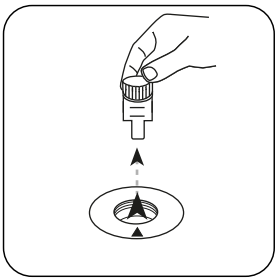
Close vial(s).



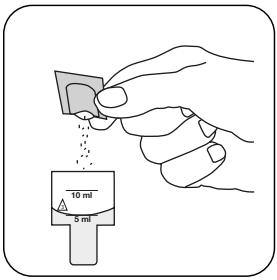
Place **sample vial** in the sample chamber. • Pay attention to the positioning.



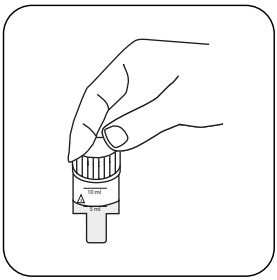
Press the **ZERO** button.



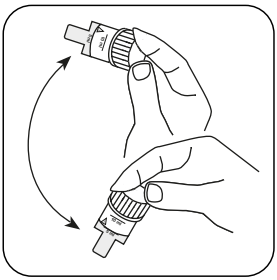
Remove **vial** from the sample chamber.



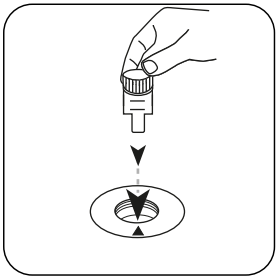
Add **Vario Chlorine Total / F25 powder pack**.



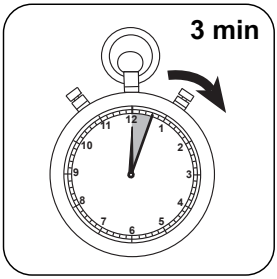
Close vial(s).



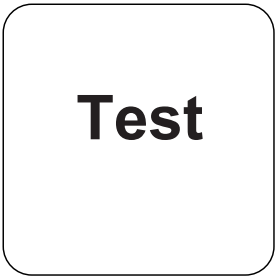
Invert several times to mix the contents (20 sec.).



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



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



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

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

Chemical Method

DPD

Appendix

EN

Interferences

Persistant Interferences

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

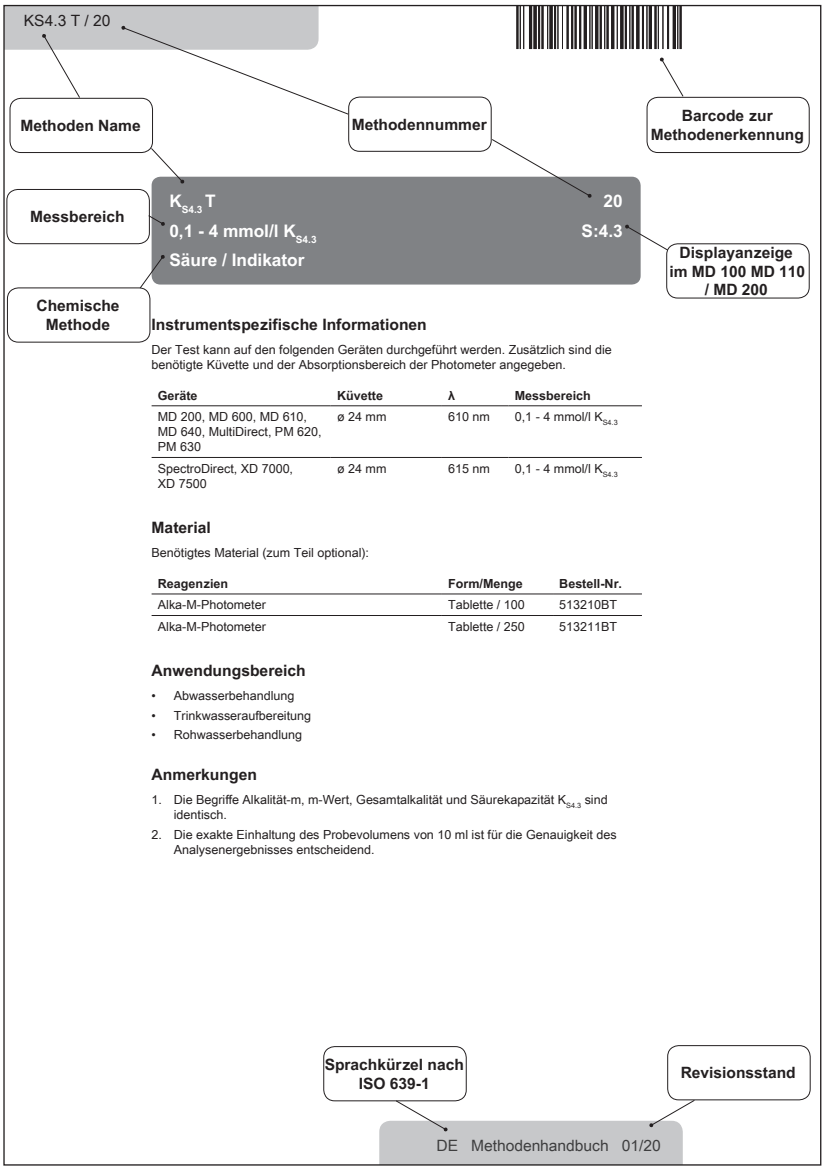
Removeable Interferences

- 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

DE


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
Instrumentspezifische 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
1. Die Begriffe Alkalität-m, m-Wert, Gesamtalkalität und Säurekapazität $K_{S4.3}$ sind identisch.
2. Die exakte Einhaltung des Probevolumens von 10 ml ist für die Genauigkeit des Analysenergebnisses entscheidend.
Sprachkürzel nach ISO 639-1
Revisionsstand
DE Methodenhandbuch 01/20

Durchführung der Messung

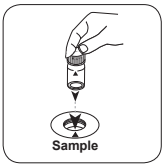
Durchführung der Bestimmung Säurekapazität $K_{S4.3}$ mit Tablette

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.

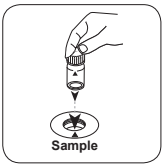
Küvette(n) verschließen.



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 $K_{S4.3}$.

Chlor T M100

0,01 - 6,0 mg/L Cl_2 [a] CL6

DPD

DE

Material

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 [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. 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).

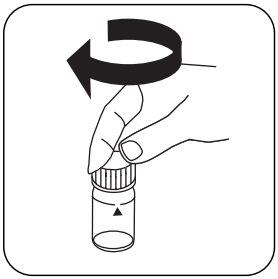
Anmerkungen

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

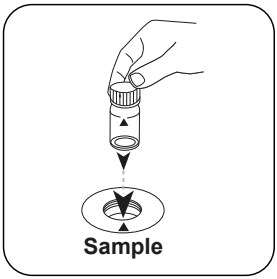
Durchführung der Bestimmung freies Chlor mit Tablette

Die Methode im Gerät auswählen.

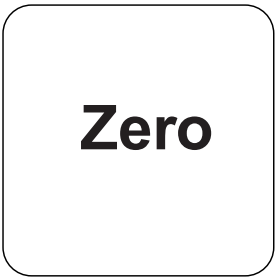
24-mm-Küvette mit **10 mL Probe** füllen.



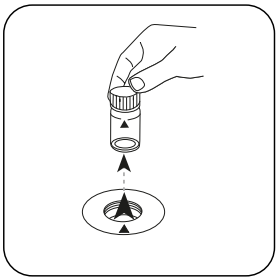
Küvette(n) verschließen.



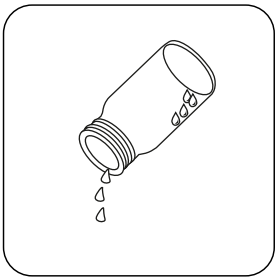
Die **Probenküvette** in den Messschacht stellen. Positionierung beachten.



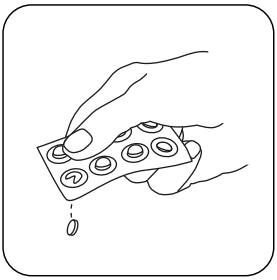
Taste **ZERO** drücken.



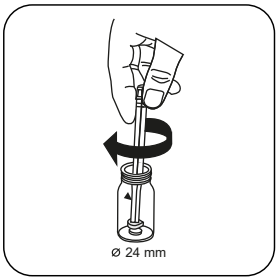
Küvette aus dem Messschacht nehmen.



Die Küvette bis auf einige Tropfen entleeren.

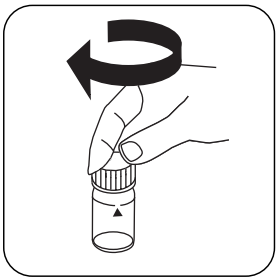


Eine **DPD No. 1 Tablette** zugeben.

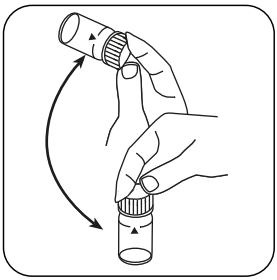


Tablette(n) unter leichter Drehung zerdrücken.

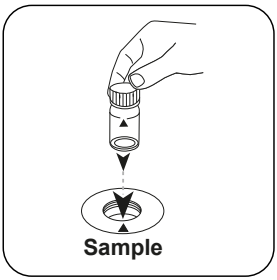
Küvette bis zur **10-mL-Marke** mit der **Probe** auffüllen.



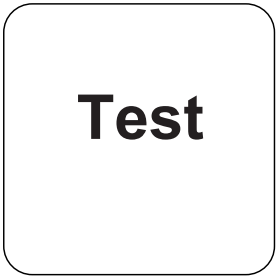
Küvette(n) verschließen.



Tablette(n) durch Umschwenken lösen.



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



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

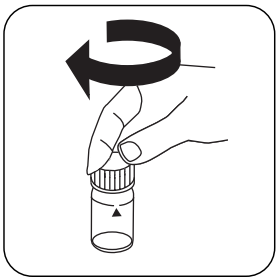
In der Anzeige erscheint das Ergebnis in mg/L freies Chlor.

Durchführung der Bestimmung gesamt Chlor mit Tablette

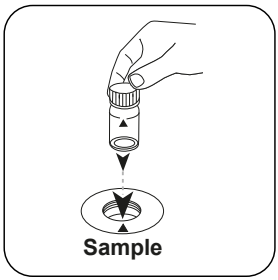
Die Methode im Gerät auswählen.

Wählen Sie zudem die Bestimmung: gesamt

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

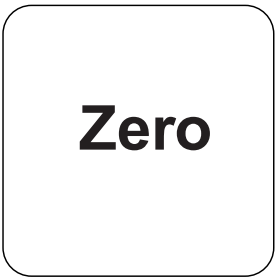


Küvette(n) verschließen.

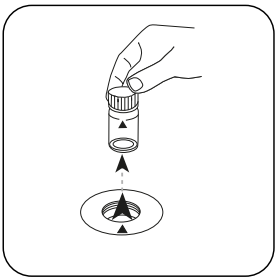


Die **Probenküvette** in den Messschacht stellen. Positionierung beachten.

DE

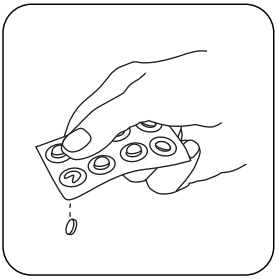


Taste **ZERO** drücken.

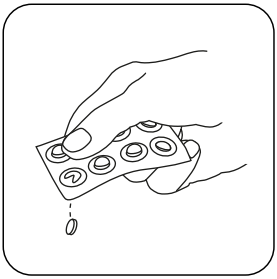


Küvette aus dem Messschacht nehmen.

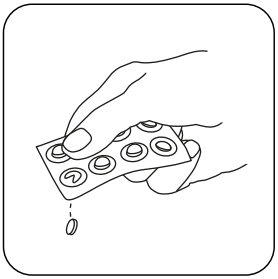
Die Küvette bis auf einige Tropfen entleeren.



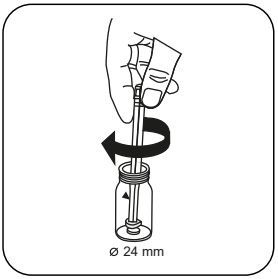
Eine **DPD No. 1 Tablette** zugeben.



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

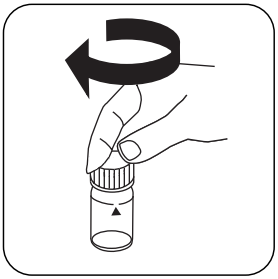


Alternativ zur DPD Nr. 1 und Nr. 3 Tablette kann eine DPD Nr. 4 Tablette zugegeben werden.

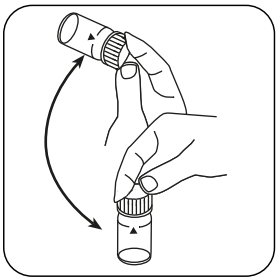


Tablette(n) unter leichter Drehung zerdrücken.

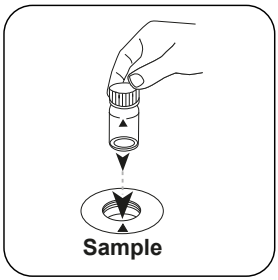
Küvette bis zur **10-mL-Marke** mit der **Probe** auffüllen.



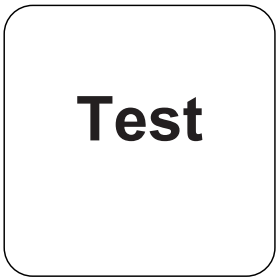
Küvette(n) verschließen.



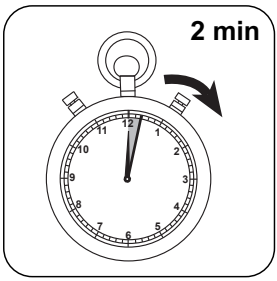
Tablette(n) durch Umschwenken lösen.



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



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



2 Minute(n) Reaktionszeit abwarten.

Nach Ablauf der Reaktionszeit erfolgt automatisch die Messung.

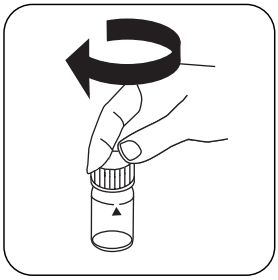
In der Anzeige erscheint das Ergebnis in mg/L Gesamtchlor.

Durchführung der Bestimmung differenziertes Chlor mit Tablette

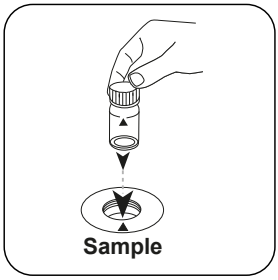
Die Methode im Gerät auswählen.

Wählen Sie zudem die Bestimmung: differenziert

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

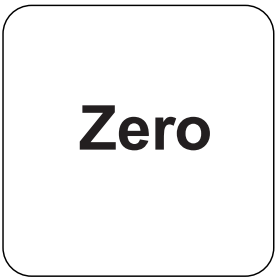


Küvette(n) verschließen.

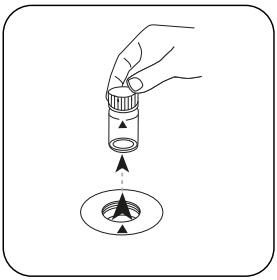


Die **Probenküvette** in den Messschacht stellen. Positionierung beachten.

DE

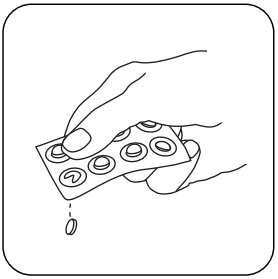


Taste **ZERO** drücken.

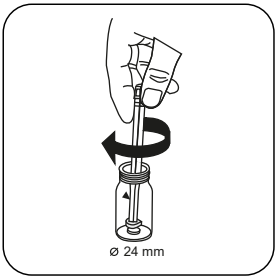


Küvette aus dem Messschacht nehmen.

Die Küvette bis auf einige Tropfen entleeren.



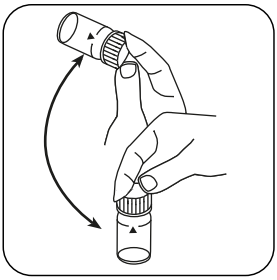
Eine **DPD No. 1 Tablette** zugeben.



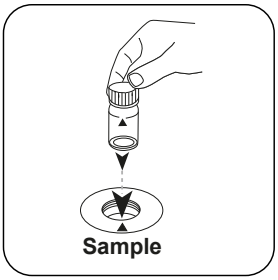
Tablette(n) unter leichter Drehung zerdrücken.

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

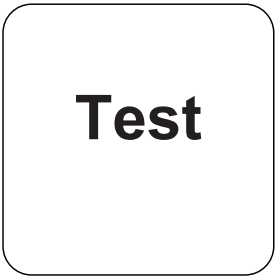
Küvette(n) verschließen.



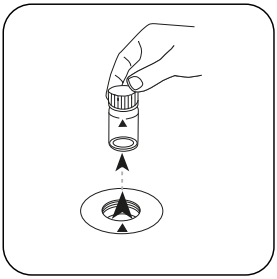
Tablette(n) durch Umschwenken lösen.



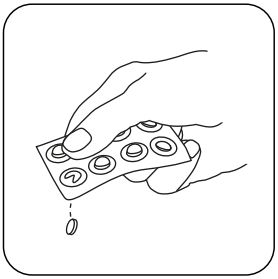
Die **Probenküvette** in den Messschacht stellen. Positionierung beachten.



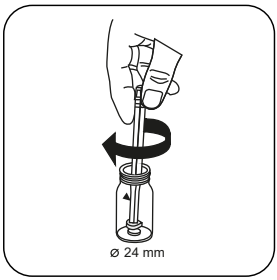
Taste **TEST** (XD: **START**) drücken.



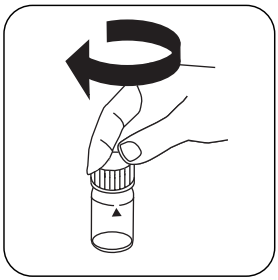
Küvette aus dem Messschacht nehmen.



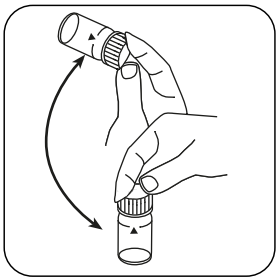
Eine **DPD No. 3 Tablette** zugeben.



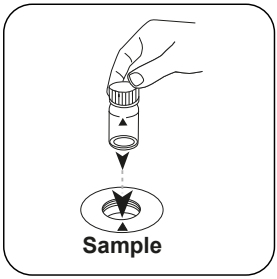
Tablette(n) unter leichter Drehung zerdrücken.



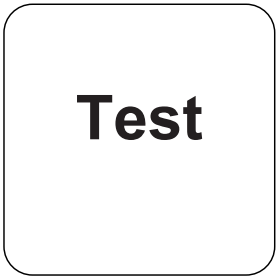
Küvette(n) verschließen.



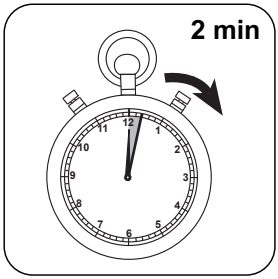
Tablette(n) durch Umschwenken lösen.



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



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



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

Methodenvalidierung

Nachweisgrenze	0.02 mg/L
Bestimmungsgrenze	0.06 mg/L
Messbereichsende	6 mg/L
Empfindlichkeit	2.05 mg/L / Abs
Vertrauensbereich	0.04 mg/L
Verfahrensstandardabweichung	0.019 mg/L
Verfahrensvariationskoeffizient	0.87 %

Konform

EN ISO 7393-2

[a] Bestimmung von frei, gebunden, gesamt möglich | [e] 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 Cl_2 [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.

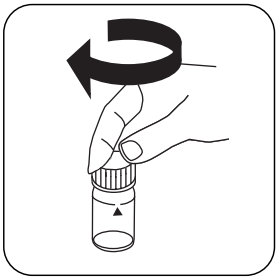
DE

Durchführung der Bestimmung freies Chlor mit Flüssigreagenz

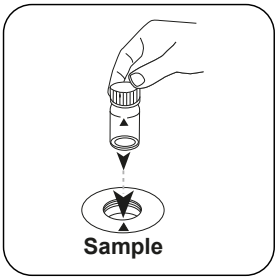
Die Methode im Gerät auswählen.

Wählen Sie zudem die Bestimmung: frei

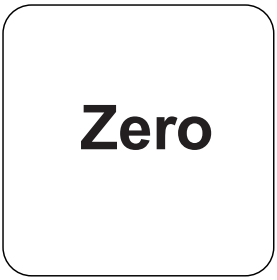
24-mm-Küvette mit **10 mL Probe** füllen.



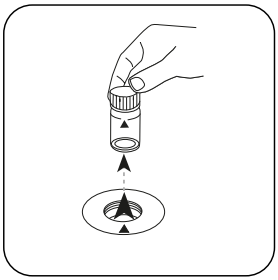
Küvette(n) verschließen.



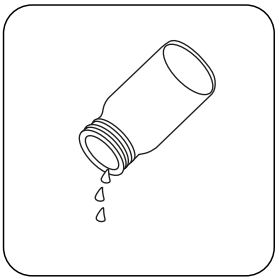
Die **Probenküvette** in den Messschacht stellen. Positionierung beachten.



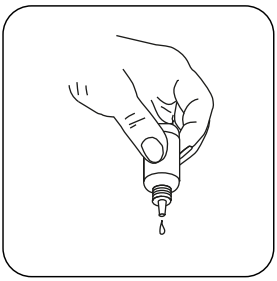
Taste **ZERO** drücken.



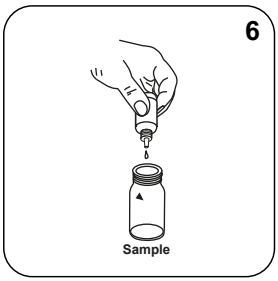
Küvette aus dem Messschacht nehmen.



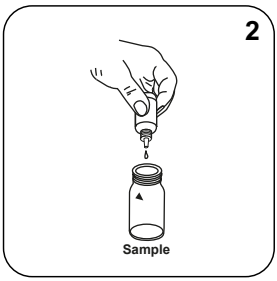
Küvette entleeren.



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

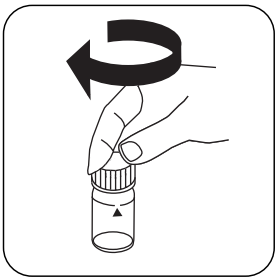


6 Tropfen DPD 1 Puffer-Lösung in die **Probenküvette** geben.

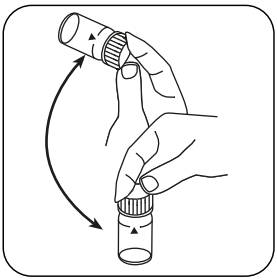


2 Tropfen DPD 1 Reagenz-Lösung in die **Probenküvette** geben.

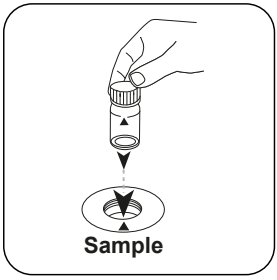
Küvette bis zur **10-mL-Marke** mit der **Probe** auffüllen.



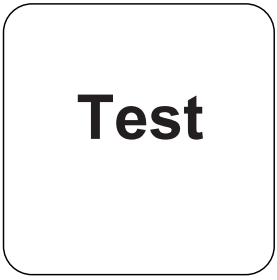
Küvette(n) verschließen.



Inhalt durch Umschwenken mischen.



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



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

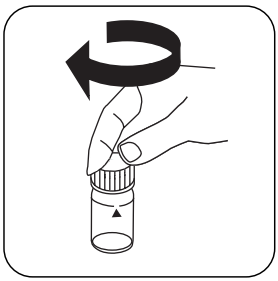
In der Anzeige erscheint das Ergebnis in mg/L freies Chlor.

Durchführung der Bestimmung gesamtes Chlor mit Flüssigreagenz

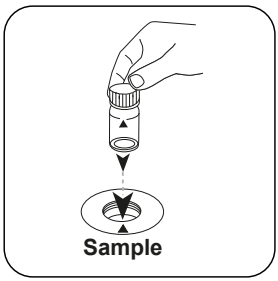
Die Methode im Gerät auswählen.

Wählen Sie zudem die Bestimmung: gesamt

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

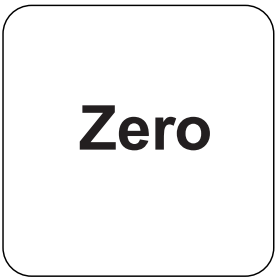


Küvette(n) verschließen.

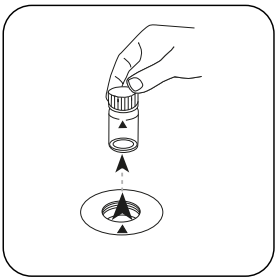


Die **Probenküvette** in den Messschacht stellen. Positionierung beachten.

DE

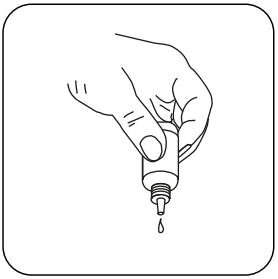


Taste **ZERO** drücken.

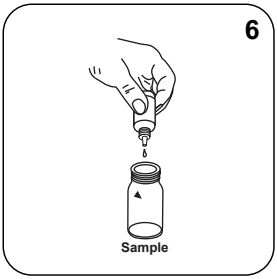


Küvette aus dem Messschacht nehmen.

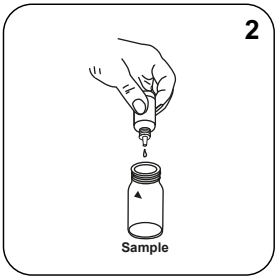
Küvette entleeren.



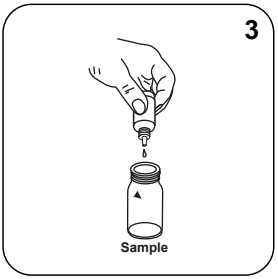
Die Tropfflaschen senkrecht halten und durch langsames Drücken gleich große Tropfen zugeben.



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

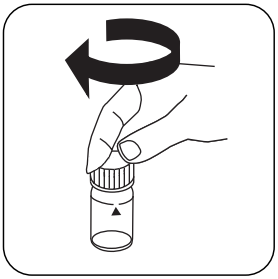


2 Tropfen DPD 1 Reagenz-Lösung in die **Probenküvette** geben.

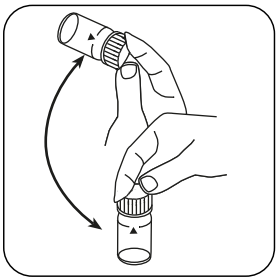


3 Tropfen DPD 3 Lösung in die **Probenküvette** geben.

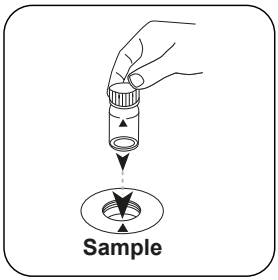
Küvette bis zur **10-mL-Marke** mit der **Probe** auffüllen.



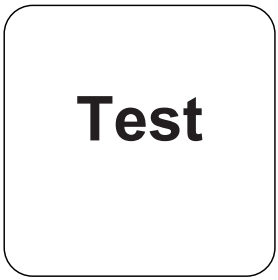
Küvette(n) verschließen.



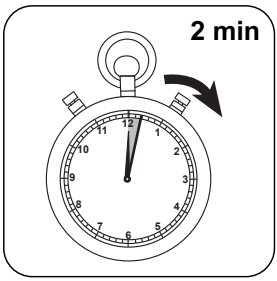
Inhalt durch Umschwenken mischen.



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



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



2 Minute(n) Reaktionszeit abwarten.

Nach Ablauf der Reaktionszeit erfolgt automatisch die Messung.

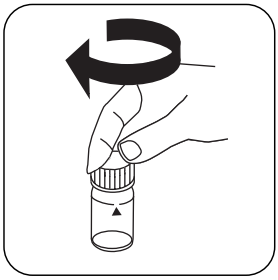
In der Anzeige erscheint das Ergebnis in mg/L Gesamtchlor.

Durchführung der Bestimmung differenziertes Chlor mit Flüssigreagenz

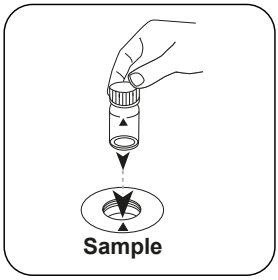
Die Methode im Gerät auswählen.

Wählen Sie zudem die Bestimmung: differenziert

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

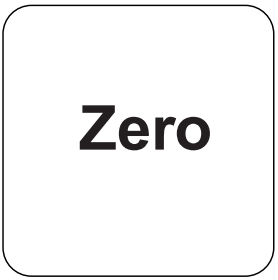


Küvette(n) verschließen.

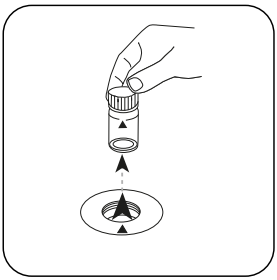


Die **Probenküvette** in den Messschacht stellen. Positionierung beachten.

DE

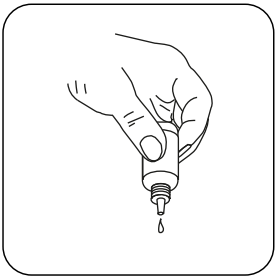


Taste **ZERO** drücken.

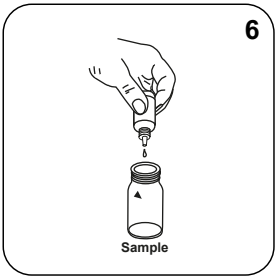


Küvette aus dem Messschacht nehmen.

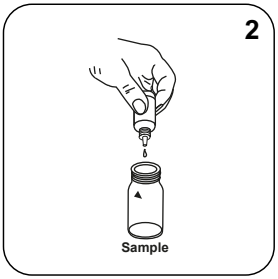
Küvette entleeren.



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

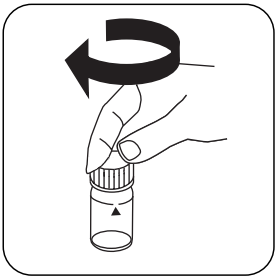


6 Tropfen DPD
1 Puffer-Lösung in die **Probenküvette** geben.

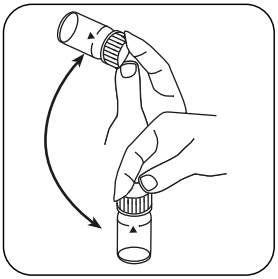


2 Tropfen DPD
1 Reagenz-Lösung in die **Probenküvette** geben.

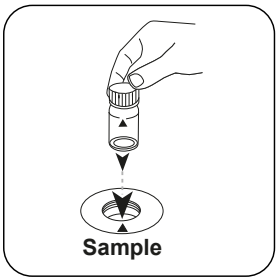
Küvette bis zur **10-mL-Marke** mit der **Probe** auffüllen.



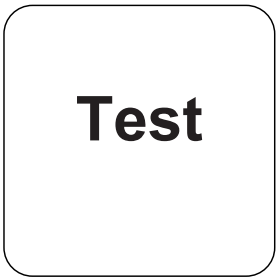
Küvette(n) verschließen.



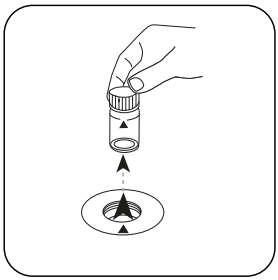
Inhalt durch Umschwenken mischen.



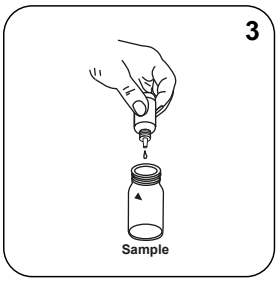
Die **Probenküvette** in den Messschacht stellen. Positionierung beachten.



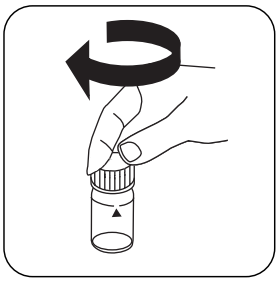
Taste **TEST** (XD: **START**) drücken.



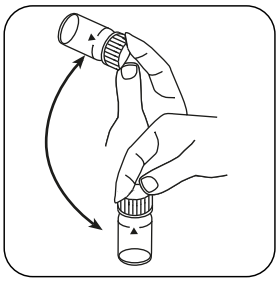
Küvette aus dem Messschacht nehmen.



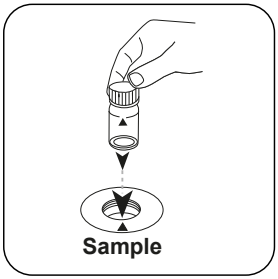
3 Tropfen DPD 3 Lösung in die **Probenküvette** geben.



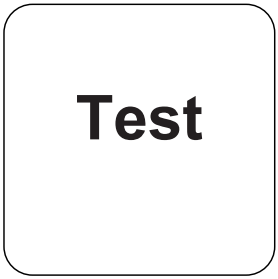
Küvette(n) verschließen.



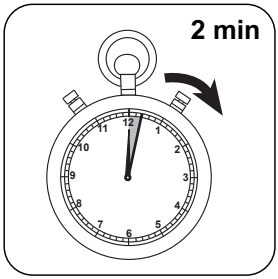
Inhalt durch Umschwenken mischen.



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



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



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 Cl_2 [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

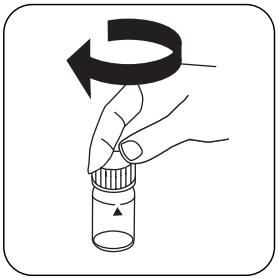
1. Evo-Tabletten können alternativ zu der entsprechenden Standard-Tablette verwendet werden (z.B. DPD Nr. 3 Evo anstatt DPD Nr. 3).

Durchführung der Bestimmung freies Chlor HR mit Tablette

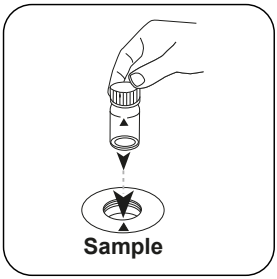
Die Methode im Gerät auswählen.

Wählen Sie zudem die Bestimmung: frei

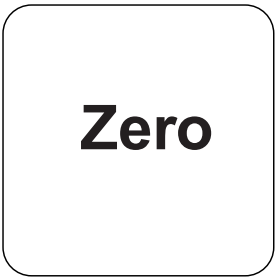
24-mm-Küvette mit **10 mL Probe** füllen.



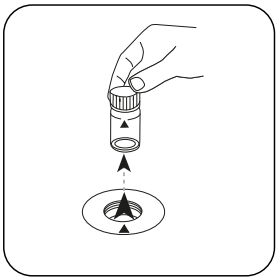
Küvette(n) verschließen.



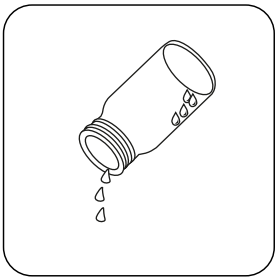
Die **Probenküvette** in den Messschacht stellen. Positionierung beachten.



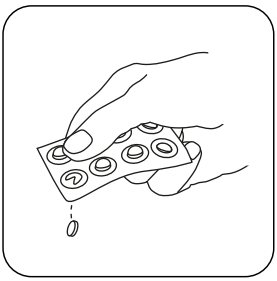
Taste **ZERO** drücken.



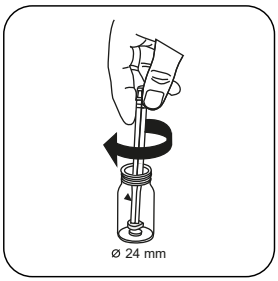
Küvette aus dem Messschacht nehmen.



Die Küvette bis auf einige Tropfen entleeren.

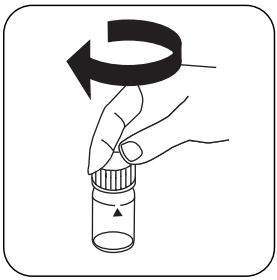


Eine **DPD No. 1 HR Tablette** zugeben.

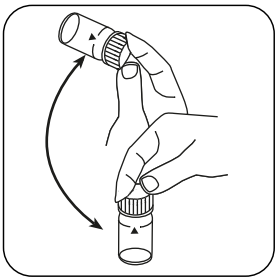


Tablette(n) unter leichter Drehung zerdrücken.

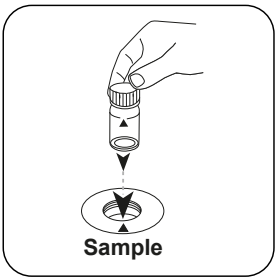
Küvette bis zur **10-mL-Marke** mit der **Probe** auffüllen.



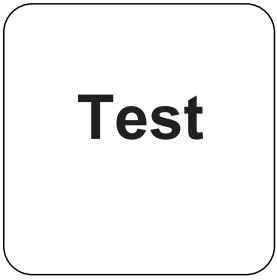
Küvette(n) verschließen.



Tablette(n) durch Umschwenken lösen.



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



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

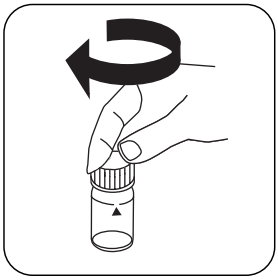
In der Anzeige erscheint das Ergebnis in mg/L freies Chlor.

Durchführung der Bestimmung gesamtes Chlor HR mit Tablette

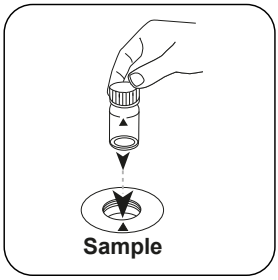
Die Methode im Gerät auswählen.

Wählen Sie zudem die Bestimmung: gesamt

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

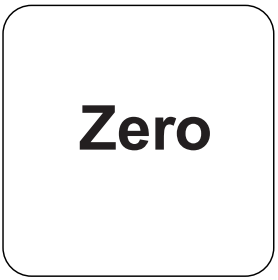


Küvette(n) verschließen.

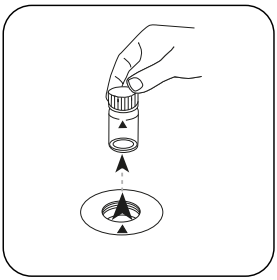


Die **Probenküvette** in den Messschacht stellen. Positionierung beachten.

DE

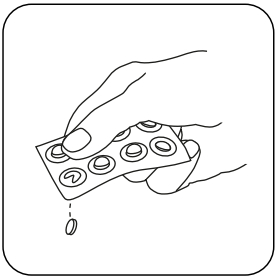


Taste **ZERO** drücken.

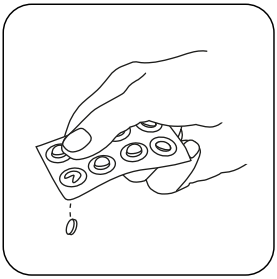


Küvette aus dem Messschacht nehmen.

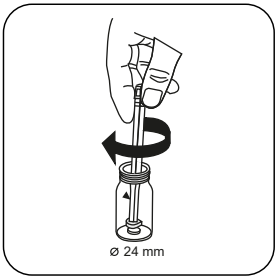
Die Küvette bis auf einige Tropfen entleeren.



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

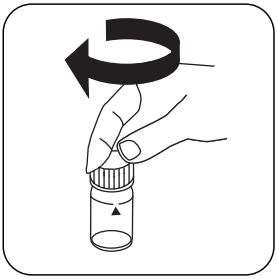


Eine **DPD No. 3 HR Tablette** zugeben.

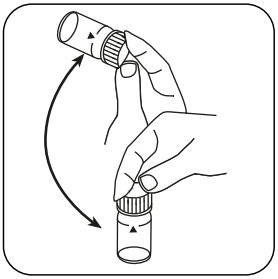


Tablette(n) unter leichter Drehung zerdrücken.

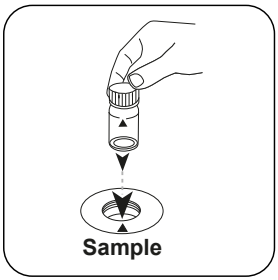
Küvette bis zur **10-mL-Marke** mit der **Probe** auffüllen.



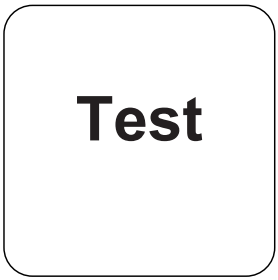
Küvette(n) verschließen.



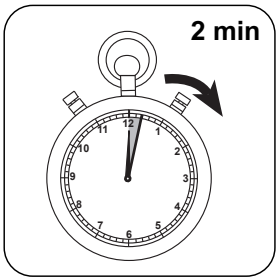
Tablette(n) durch Umschwenken lösen.



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



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



2 Minute(n) Reaktionszeit abwarten.

Nach Ablauf der Reaktionszeit erfolgt automatisch die Messung.

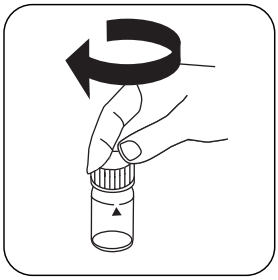
In der Anzeige erscheint das Ergebnis in mg/L Gesamtchlor.

Durchführung der Bestimmung differenziertes Chlor HR mit Tablette

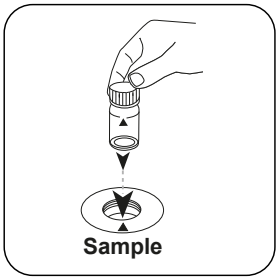
Die Methode im Gerät auswählen.

Wählen Sie zudem die Bestimmung: differenziert

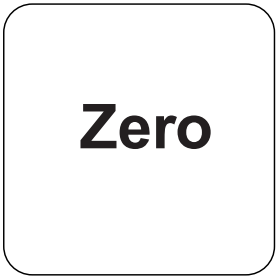
24-mm-Küvette mit **10 mL Probe** füllen.



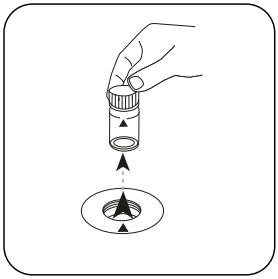
Küvette(n) verschließen.



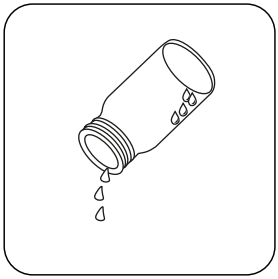
Die **Probenküvette** in den Messschacht stellen. Positionierung beachten.



Taste **ZERO** drücken.

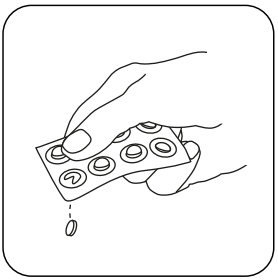


Küvette aus dem Messschacht nehmen.

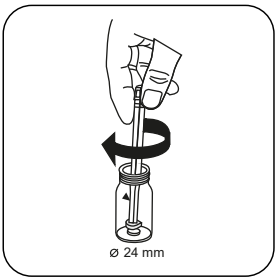


Die Küvette bis auf einige Tropfen entleeren.

DE



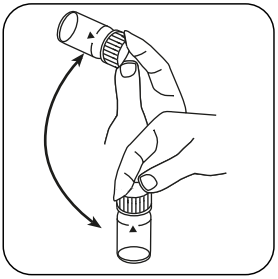
Eine **DPD No. 1 HR Tablette** zugeben.



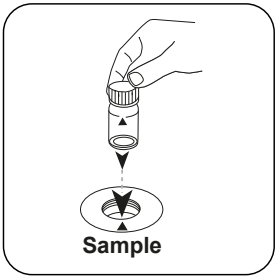
Tablette(n) unter leichter Drehung zerdrücken.

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

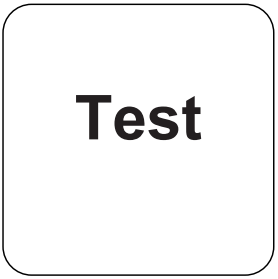
Küvette(n) verschließen.



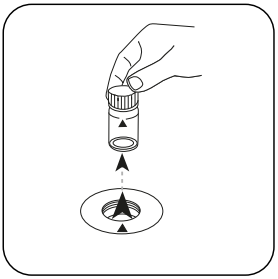
Tablette(n) durch Umschwenken lösen.



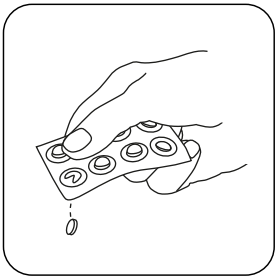
Die **Probenküvette** in den Messschacht stellen. Positionierung beachten.



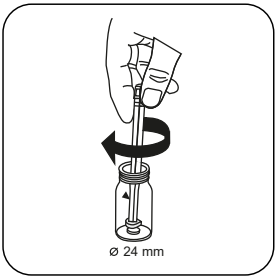
Taste **TEST** (XD: **START**) drücken.



Küvette aus dem Messschacht nehmen.

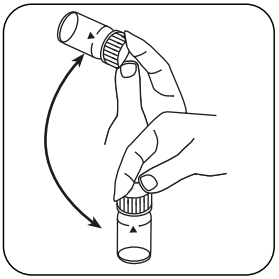


Eine **DPD No. 3 HR Tablette** zugeben.

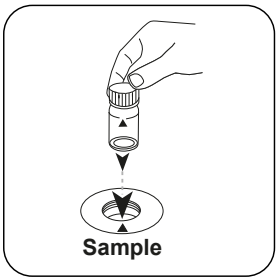


Tablette(n) unter leichter Drehung zerdrücken.

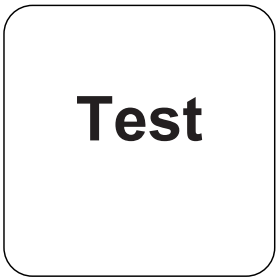
Küvette(n) verschließen.



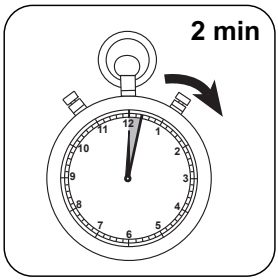
Tablette(n) durch Umschwenken lösen.



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



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



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 | [e)] 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 Cl_2 [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

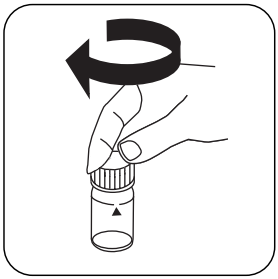
1. Reinigung der Küvetten:
   Da viele Haushaltsreiniger (z.B. Geschirrspülmittel) reduzierende Stoffe enthalten, kann es bei der Bestimmung von Chlor zu Minderbefunden kommen. Um diesen Messfehler auszuschließen, sollten die Glasgeräte chlorzehrungsfrei sein. Dazu werden die Glasgeräte für eine Stunde 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

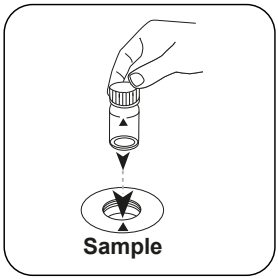
Die Methode im Gerät auswählen.

Wählen Sie zudem die Bestimmung: frei

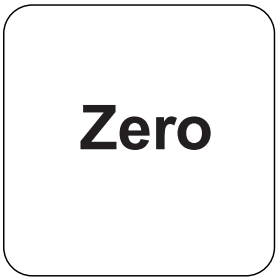
24-mm-Küvette mit **10 mL Probe** füllen.



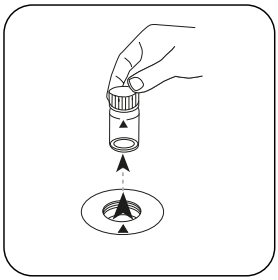
Küvette(n) verschließen.



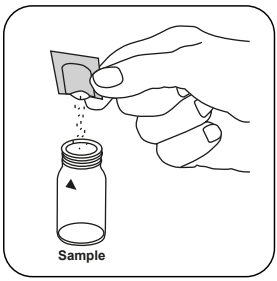
Die **Probenküvette** in den Messschacht stellen. Positionierung beachten.



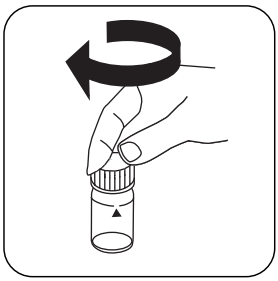
Taste **ZERO** drücken.



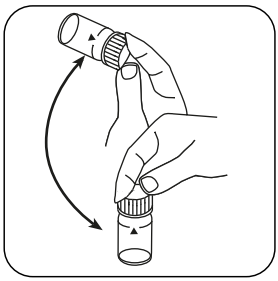
Küvette aus dem Messschacht nehmen.



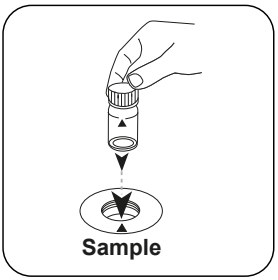
Ein **Chlorine FREE-DPD/ F10 Pulverpäckchen** zugeben.



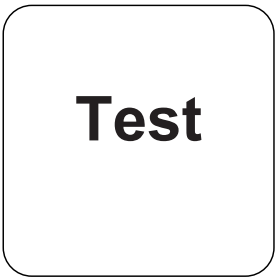
Küvette(n) verschließen.



Inhalt durch Umschwenken mischen (20 Sek.).



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



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

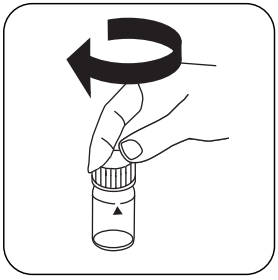
In der Anzeige erscheint das Ergebnis in mg/L freies Chlor.

Durchführung der Bestimmung gesamtes Chlor mit Pulverpäckchen

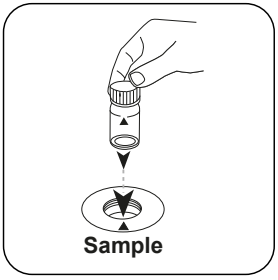
Die Methode im Gerät auswählen.

Wählen Sie zudem die Bestimmung: gesamt

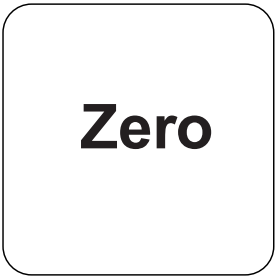
24-mm-Küvette mit **10 mL Probe** füllen.



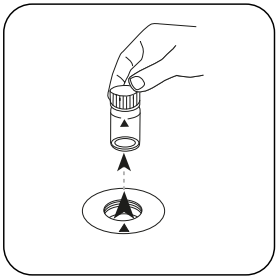
Küvette(n) verschließen.



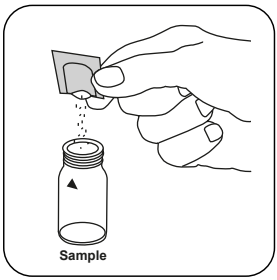
Die **Probenküvette** in den Messschacht stellen. Positionierung beachten.



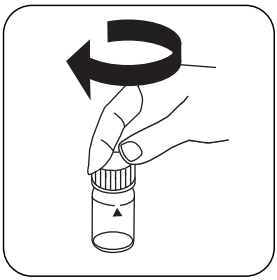
Taste **ZERO** drücken.



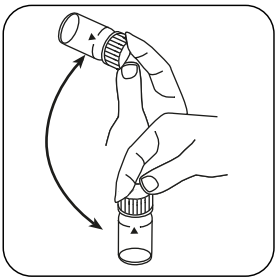
Küvette aus dem Messschacht nehmen.



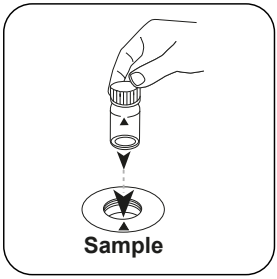
Ein **Chlorine TOTAL-DPD/ F10 Pulverpäckchen** zugeben.



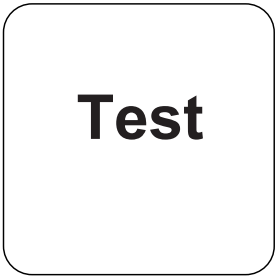
Küvette(n) verschließen.



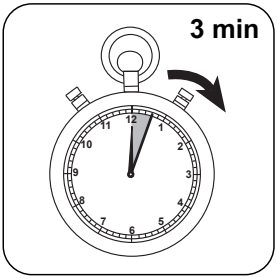
Inhalt durch Umschwenken mischen (20 Sek.).



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



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



3 Minute(n) Reaktionszeit abwarten.

Nach Ablauf der Reaktionszeit erfolgt automatisch die Messung.

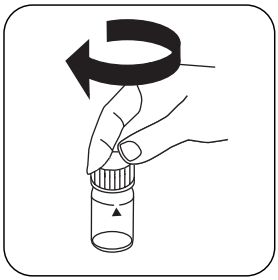
In der Anzeige erscheint das Ergebnis in mg/L Gesamtchlor.

Durchführung der Bestimmung differenziertes Chlor mit Pulverpäckchen

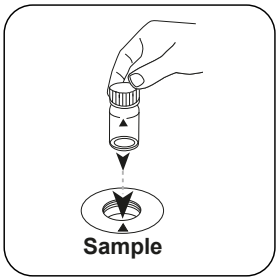
Die Methode im Gerät auswählen.

Wählen Sie zudem die Bestimmung: differenziert

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

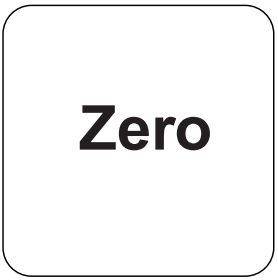


Küvette(n) verschließen.

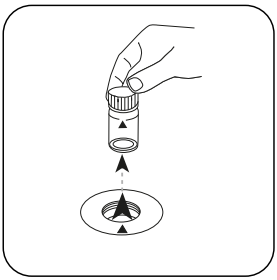


Die **Probenküvette** in den Messschacht stellen. Positionierung beachten.

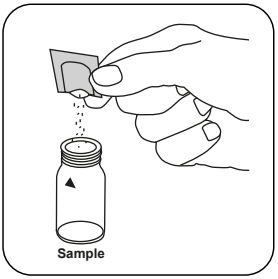
DE



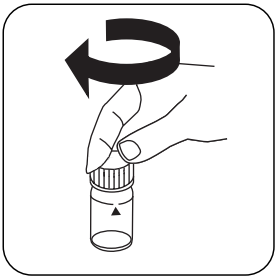
Taste **ZERO** drücken.



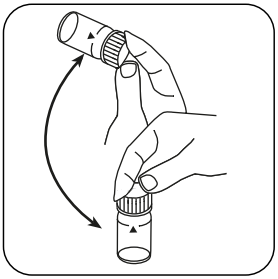
Küvette aus dem Messschacht nehmen.



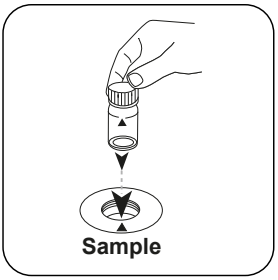
Ein **Chlorine FREE-DPD/ F10 Pulverpäckchen** zugeben.



Küvette(n) verschließen.

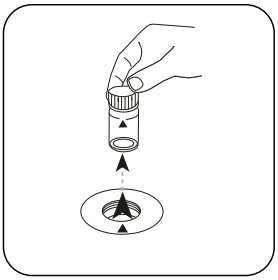


Inhalt durch Umschwenken mischen (20 Sek.).



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

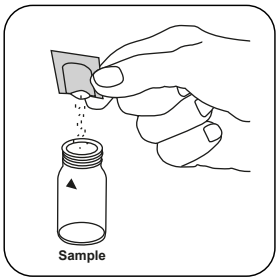
Taste **TEST** (XD: **START**) drücken.



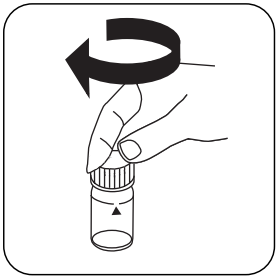
Küvette aus dem Messschacht nehmen.

Die Küvette und den Küvettendeckel gründlich reinigen.

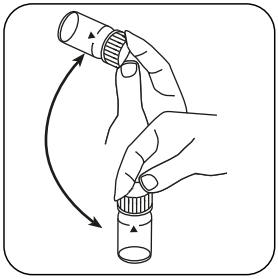
24-mm-Küvette mit **10 mL Probe** füllen.



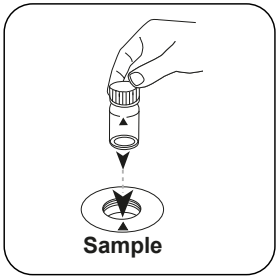
Ein **TOTAL-DPD/ F10 Pulverpäckchen** zugeben.



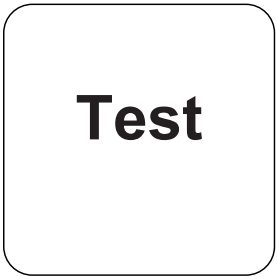
Küvette(n) verschließen.



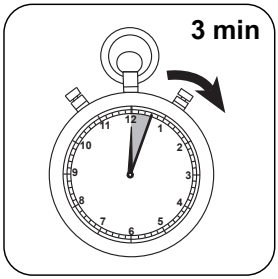
Inhalt durch Umschwenken mischen (20 Sek.).



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



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



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

Methodenvalidierung

Nachweisgrenze	0.01 mg/L
Bestimmungsgrenze	0.03 mg/L
Messbereichsende	2 mg/L
Empfindlichkeit	1.68 mg/L / Abs
Vertrauensbereich	0.033 mg/L
Verfahrensstandardabweichung	0.014 mg/L
Verfahrensvariationskoeffizient	1.34 %

Konform

EN ISO 7393-2

[a] Bestimmung von frei, gebunden, gesamt möglich

Chlor HR 2 PP M112

0,1 - 10 mg/L Cl_2

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

Probenahme

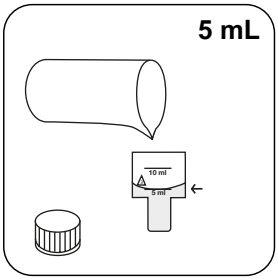
1. Bei der Probenvorbereitung muss das Ausgasen von Chlor, z.B. durch Pipettieren und Schütteln, vermieden werden.
2. Die Analyse muss unmittelbar nach der Probenahme erfolgen.

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).

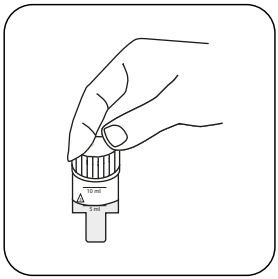
Durchführung der Bestimmung freies Chlor HR 2, mit Pulverpäckchen

Die Methode im Gerät auswählen.

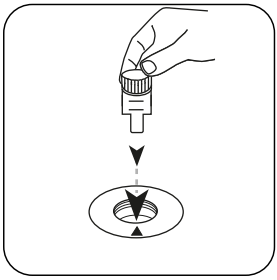


10-mm-Küvette mit **5 mL Probe** füllen.

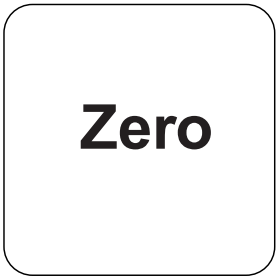
MD50: 24-mm-Küvette mit **5 mL Probe** füllen.



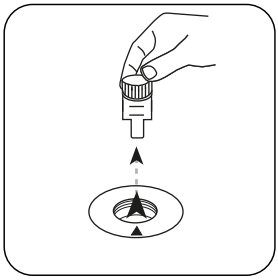
Küvette(n) verschließen.



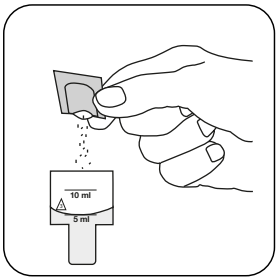
Die **Probenküvette** in den Messschacht stellen. Positionierung beachten.



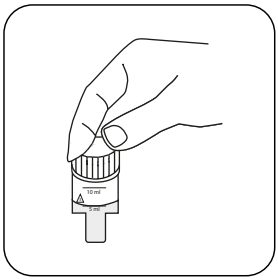
Taste **ZERO** drücken.



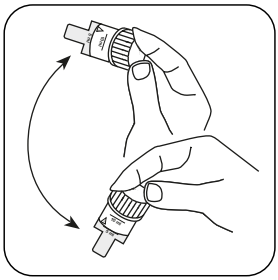
Die **Küvette** aus dem Messschacht nehmen.



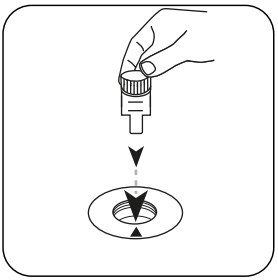
Ein **Vario Chlorine Free / F25 Pulverpäckchen** zugeben.



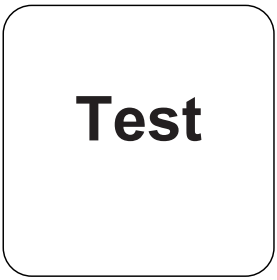
Küvette(n) verschließen.



Inhalt durch Umschwenken mischen (20 Sek.).



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

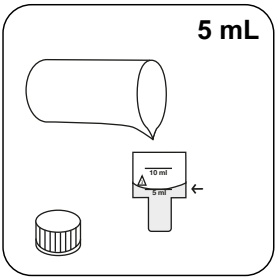


Taste **TEST** (XD: **START**) drücken.

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

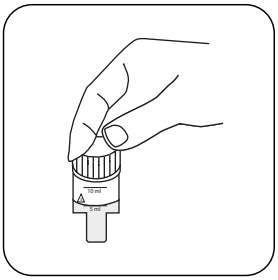
Durchführung der Bestimmung gesamtes Chlor HR 2, mit Pulverpäckchen

Die Methode im Gerät auswählen.

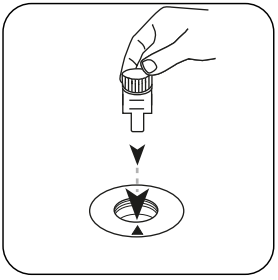


10-mm-Küvette mit **5 mL Probe** füllen.

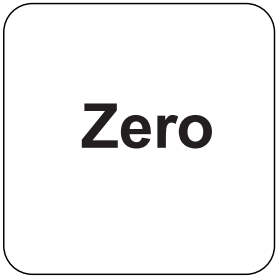
MD50: 24-mm-Küvette mit **10 mL Probe** füllen.



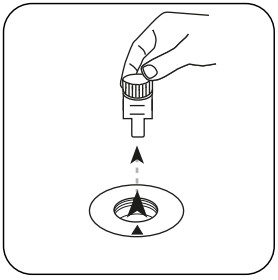
Küvette(n) verschließen.



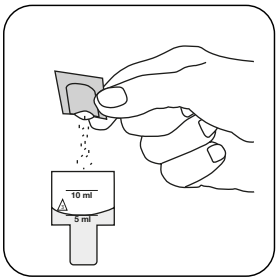
Die **Probenküvette** in den Messschacht stellen. Positionierung beachten.



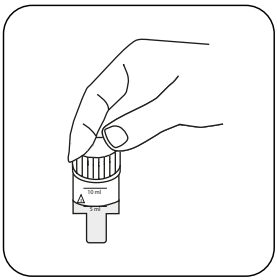
Taste **ZERO** drücken.



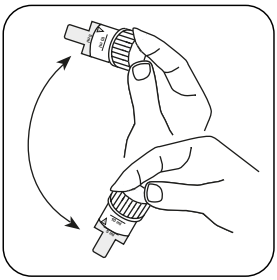
Die **Küvette** aus dem Messschacht nehmen.



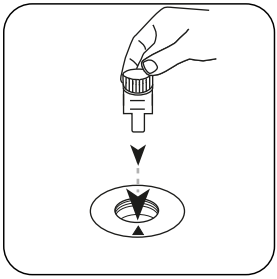
Ein **Vario Chlorine Total / F25 Pulverpäckchen** zugeben.



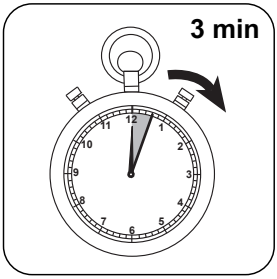
Küvette(n) verschließen.



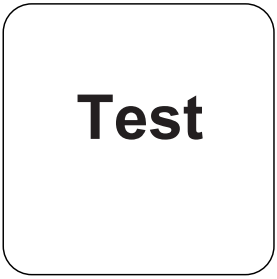
Inhalt durch Umschwenken mischen (20 Sek.).



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



3 Minute(n) Reaktionszeit abwarten.



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

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

Chemische Methode

DPD

Appendix

DE

Störungen

Permanente Störungen

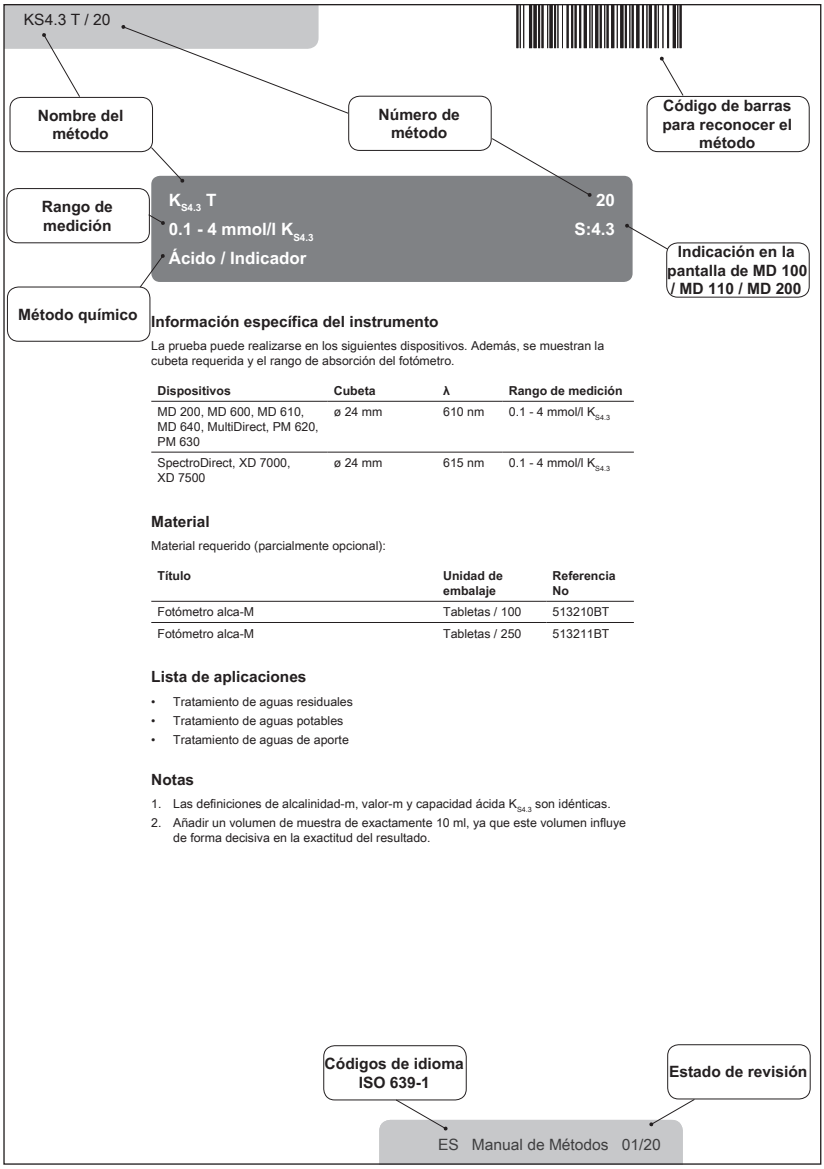
- Alle in den Proben vorhandenen Oxidationsmittel reagieren wie Chlor, was zu Mehrbefunden führt.

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


KS4.3 T / 20
Nombre del método
Número de método
Código de barras para reconocer el método
Rango de medición
$K_{S4.3}$ T
20
0.1 - 4 mmol/l $K_{S4.3}$
S:4.3
Ácido / Indicador
Indicación en la pantalla de MD 100 / MD 110 / MD 200
Método químico
Información específica del instrumento
La prueba puede realizarse en los siguientes dispositivos. Además, se muestran la cubeta requerida y el rango de absorción del fotómetro.
Dispositivos | Cubeta | λ | Rango de medición
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
Material requerido (parcialmente opcional):
Título | Unidad de embalaje | Referencia No
Fotómetro alca-M | Tabletas / 100 | 513210BT
Fotómetro alca-M | Tabletas / 250 | 513211BT
Lista de aplicaciones
• Tratamiento de aguas residuales
• Tratamiento de aguas potables
• Tratamiento de aguas de aporte
Notas
1. Las definiciones de alcalinidad-m, valor-m y capacidad ácida $K_{S4.3}$ son idénticas.
2. Añadir un volumen de muestra de exactamente 10 ml, ya que este volumen influye de forma decisiva en la exactitud del resultado.
Códigos de idioma ISO 639-1
Estado de revisión
ES Manual de Métodos 01/20

Realización de la determinación

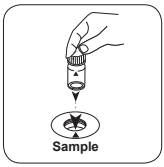
Ejecución de la determinación Capacidad ácida $K_{S4.3}$ con tableta

Seleccionar el método en el aparato.

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

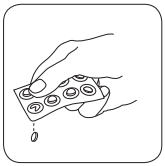
Llenar la cubeta de 24 mm con **10 ml de muestra** .

Cerrar la(s) cubeta(s).

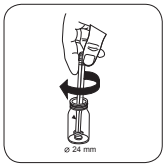


Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!

• • •



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 Cl_2 [a] CL6

DPD

ES

Material

Material requerido (parcialmente opcional):

Reactivos	Unidad de embalaje	No. de referencia
DPD nº1	Tabletas / 100	511050BT
DPD nº 1	Tabletas / 250	511051BT
DPD nº 1	Tabletas / 500	511052BT
DPD nº 3	Tabletas / 100	511080BT
DPD nº 3	Tabletas / 250	511081BT
DPD nº 3	Tabletas / 500	511082BT
DPD nº 1 High Calcium [e]	Tabletas / 100	515740BT
DPD nº 1 High Calcium [e]	Tabletas / 250	515741BT
DPD nº 1 High Calcium [e]	Tabletas / 500	515742BT
DPD nº 3 High Calcium [e]	Tabletas / 100	515730BT
DPD nº 3 High Calcium [e]	Tabletas / 250	515731BT
DPD nº 3 High Calcium [e]	Tabletas / 500	515732BT
DPD nº 4	Tabletas / 100	511220BT
DPD nº 4	Tabletas / 250	511221BT
DPD nº 4	Tabletas / 500	511222BT
DPD nº 3 Evo	Tabletas / 100	511420BT
DPD nº 3 Evo	Tabletas / 250	511421BT
DPD nº 3 Evo	Tabletas / 500	511422BT
DPD nº4 Evo	Tabletas / 100	511970BT
DPD nº 4 Evo	Tabletas / 250	511971BT
DPD nº 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).

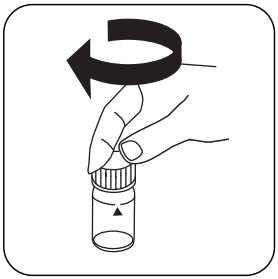
Notas

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).

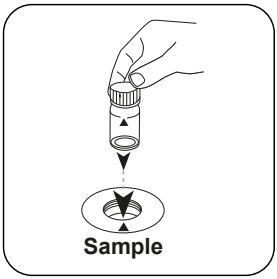
Ejecución de la determinación Cloro libre con tableta

Seleccionar el método en el aparato.

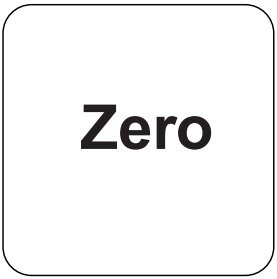
Llenar la cubeta de 24 mm con **10 mL de muestra** .



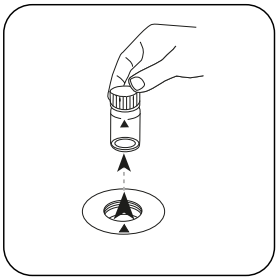
Cerrar la(s) cubeta(s).



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

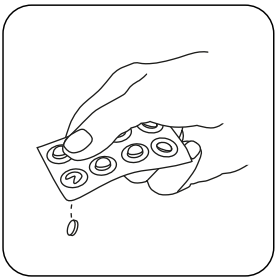


Pulsar la tecla **ZERO**.

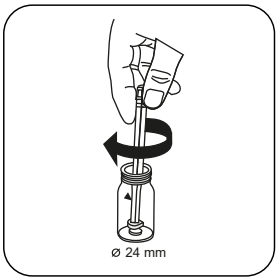


Extraer la cubeta del compartimiento de medición.

Vaciar la cubeta excepto algunas gotas.

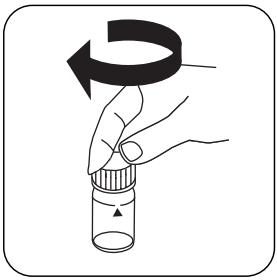


Añadir **tableta DPD No. 1**.

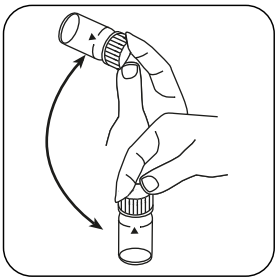


Triturar la(s) tableta(s) girando ligeramente.

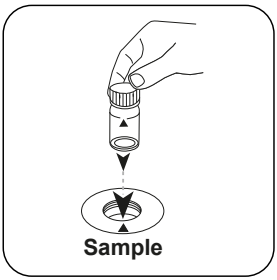
Llenar la cubeta con la **muestra** hasta la **marca de 10 mL** .



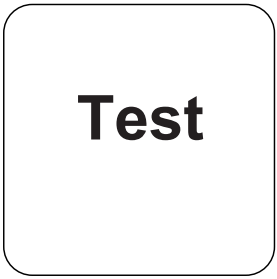
Cerrar la(s) cubeta(s).



Disolver la(s) tableta(s) girando.



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



Pulsar la tecla **TEST** (XD: **START**).

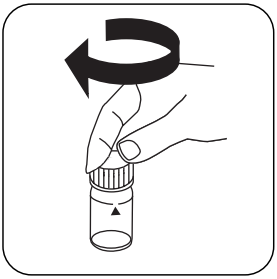
A continuación se visualizará el resultado en mg/L Cloro libre.

Ejecución de la determinación Cloro total con tableta

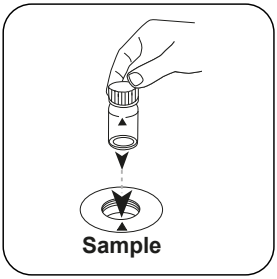
Seleccionar el método en el aparato.

Seleccione además la determinación: total

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

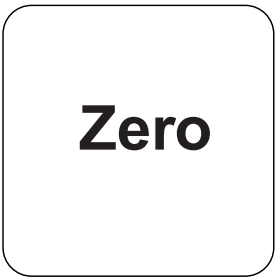


Cerrar la(s) cubeta(s).

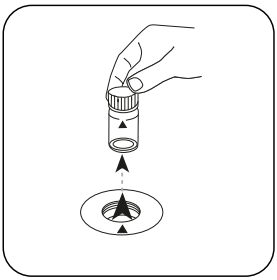


Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!

ES

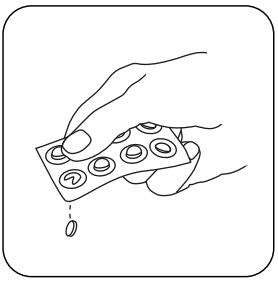


Pulsar la tecla **ZERO**.

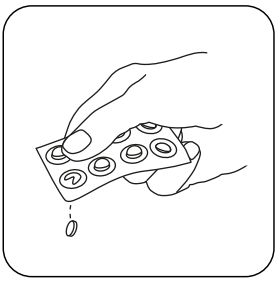


Extraer la cubeta del compartimiento de medición.

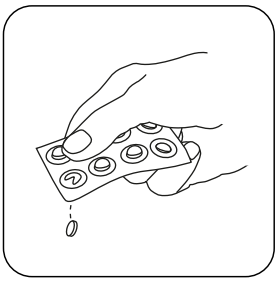
Vaciar la cubeta excepto algunas gotas.



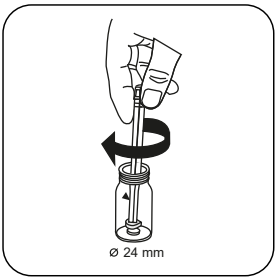
Añadir **tableta DPD No. 1**.



Añadir **tableta DPD No. 3**.

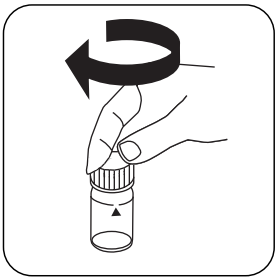


Alternativa a la tableta DPD No 1 y No 3, se puede agregar una tableta DPD No. 4.

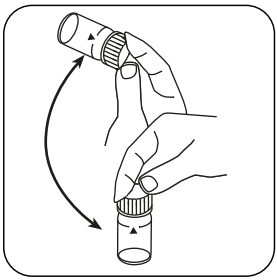


Triturar la(s) tableta(s) girando ligeramente.

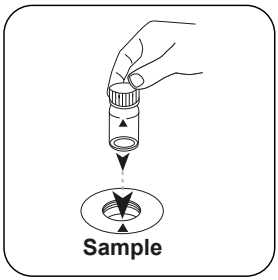
Llenar la cubeta con la **muestra** hasta la **marca de 10 mL** .



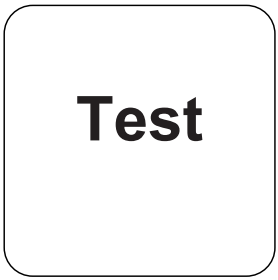
Cerrar la(s) cubeta(s).



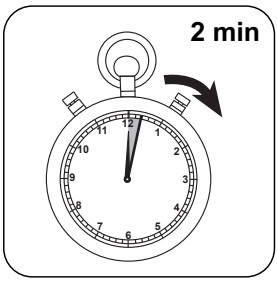
Disolver la(s) tableta(s) girando.



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



Pulsar la tecla **TEST** (XD: **START**).



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

Finalizado el periodo de reacción se realizará la determinación automáticamente.

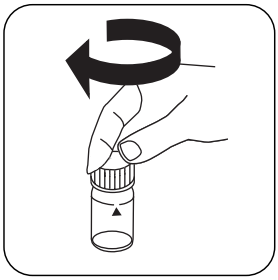
A continuación se visualizará el resultado en mg/L Cloro total.

Ejecución de la determinación Cloro, determinación diferenciada con tableta

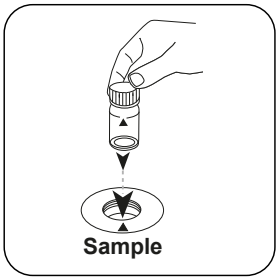
Seleccionar el método en el aparato.

Seleccione además la determinación: diferenciada

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

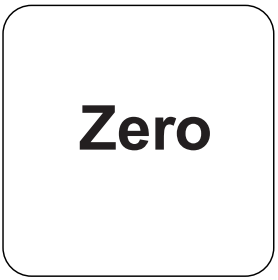


Cerrar la(s) cubeta(s).

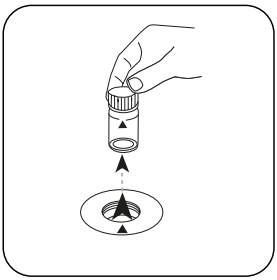


Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!

ES

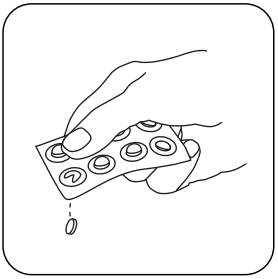


Pulsar la tecla **ZERO**.

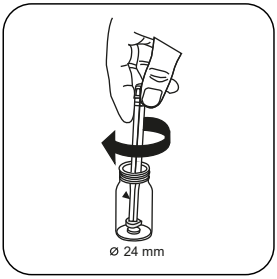


Extraer la cubeta del compartimiento de medición.

Vaciar la cubeta excepto algunas gotas.

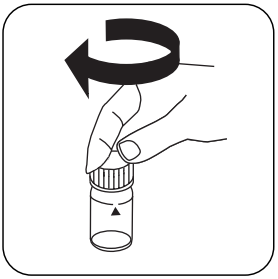


Añadir **tableta DPD No. 1**.

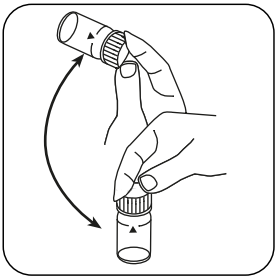


Triturar la(s) tableta(s) girando ligeramente.

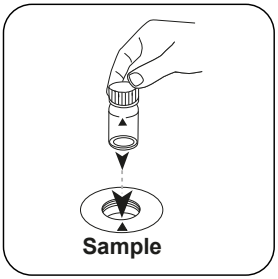
Llenar la cubeta con la **muestra** hasta la **marca de 10 mL** .



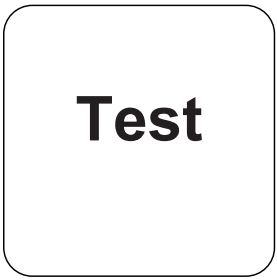
Cerrar la(s) cubeta(s).



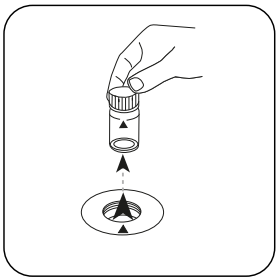
Disolver la(s) tableta(s) girando.



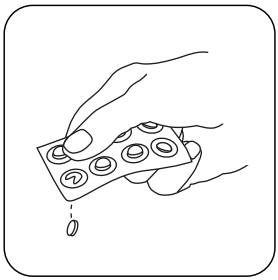
Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!



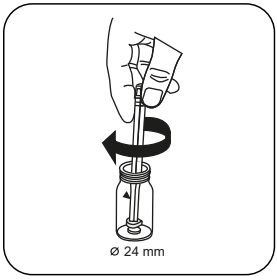
Pulsar la tecla **TEST** (XD: **START**).



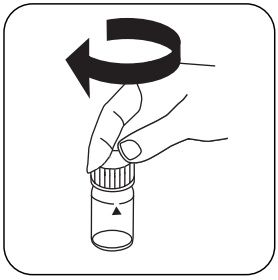
Extraer la cubeta del compartimiento de medición.



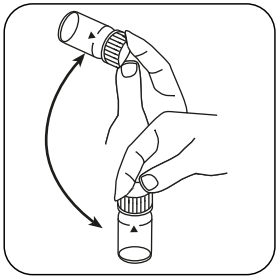
Añadir **tableta DPD No. 3**.



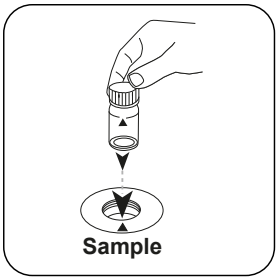
Triturar la(s) tableta(s) girando ligeramente.



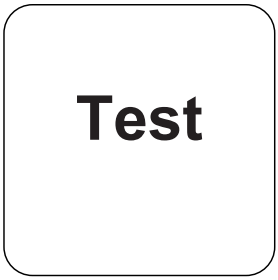
Cerrar la(s) cubeta(s).



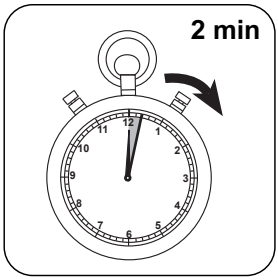
Disolver la(s) tableta(s) girando.



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



Pulsar la tecla **TEST** (XD: **START**).



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 extraibles

- 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

Validación del método

Límite de detección	0.02 mg/L
Límite de determinación	0.06 mg/L
Límite del rango de medición	6 mg/L
Sensibilidad	2.05 mg/L / Abs
Intervalo de confianza	0.04 mg/L
Desviación estándar	0.019 mg/L
Coeficiente de variación	0.87 %

Conforme a

EN ISO 7393-2

[a] Posible determinación de libre, combinado, total | [e] 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 Cl_2 [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

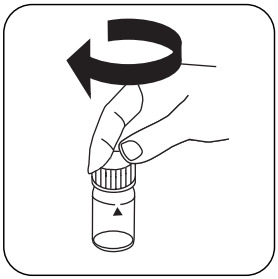
1. Después de usarlas, las botellas cuentagotas deben cerrarse de nuevo inmediatamente con la tapa roscada del mismo color, respectivamente.
2. Guardar el set reactivo a una temperatura entre +6 °C y +10 °C.

Ejecución de la determinación Cloro libre con reactivos líquidos

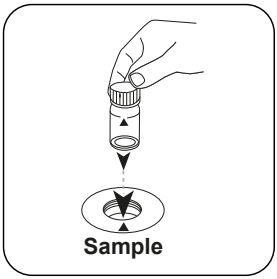
Seleccionar el método en el aparato.

Seleccione además la determinación: libre

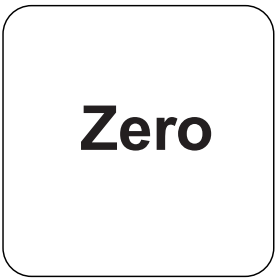
Llenar la cubeta de 24 mm con **10 mL de muestra** .



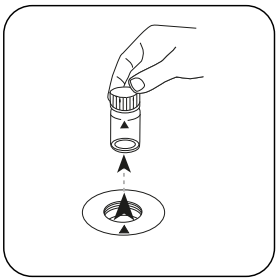
Cerrar la(s) cubeta(s).



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

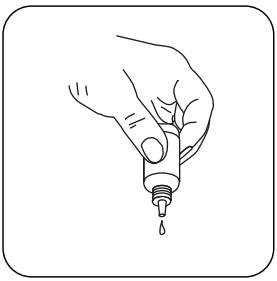


Pulsar la tecla **ZERO**.

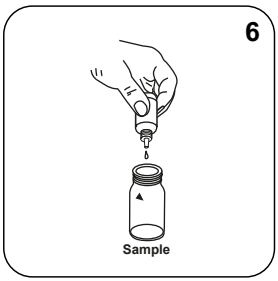


Extraer la cubeta del compartimiento de medición.

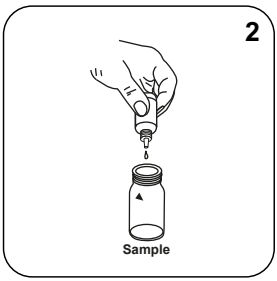
Vaciar la cubeta.



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

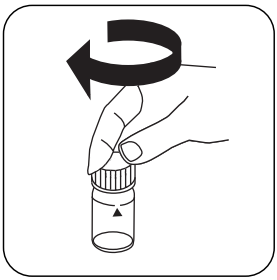


Añadir **6 gotas de DPD 1 Buffer Solution** en la cubeta con la muestra.

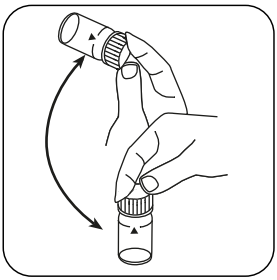


Añadir **2 gotas de DPD 1 Reagent Solution** en la cubeta con la muestra.

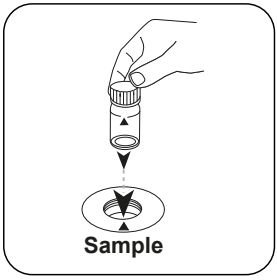
Llenar la cubeta con la **muestra** hasta la **marca de 10 mL** .



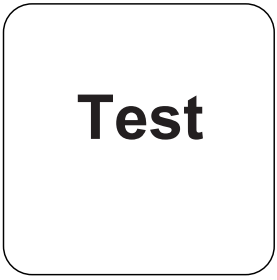
Cerrar la(s) cubeta(s).



Mezclar el contenido girando.



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



Pulsar la tecla **TEST** (XD: **START**).

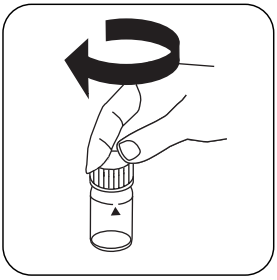
A continuación se visualizará el resultado en mg/L Cloro libre.

Ejecución de la determinación Cloro total con reactivos líquidos

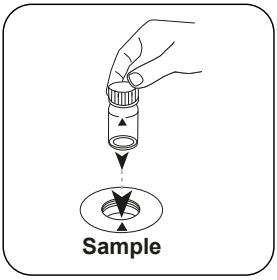
Seleccionar el método en el aparato.

Seleccione además la determinación: total

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

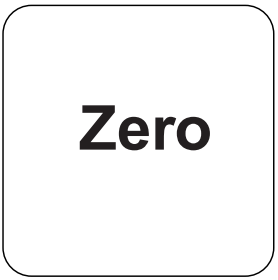


Cerrar la(s) cubeta(s).

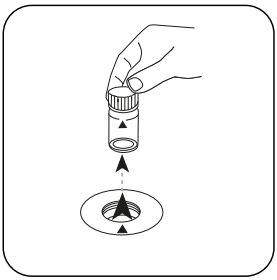


Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!

ES

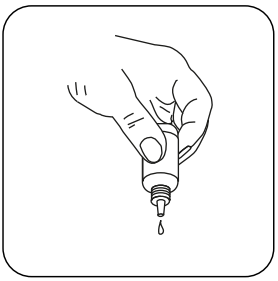


Pulsar la tecla **ZERO**.

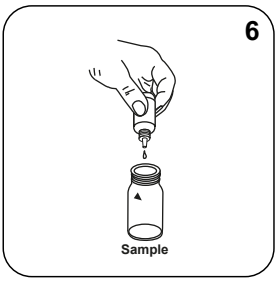


Extraer la cubeta del compartimiento de medición.

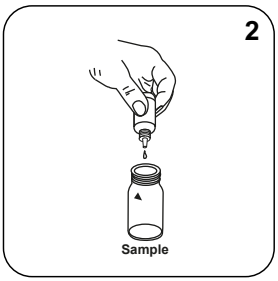
Vaciar la cubeta.



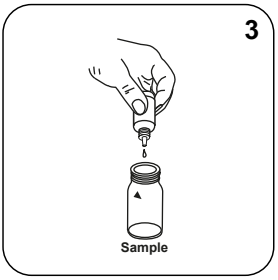
Mantener la botella cuentagotas vertical y añadir gotas del mismo tamaño presionando lentamente.



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

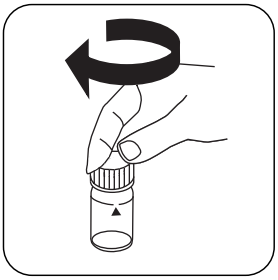


Añadir **2 gotas de DPD 1 Reagent Solution** en la cubeta con la muestra.

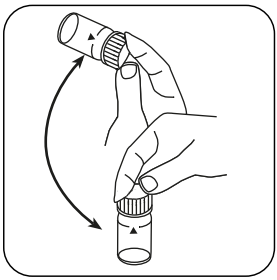


Añadir **3 gotas de DPD 3 Solution** en la cubeta con la muestra.

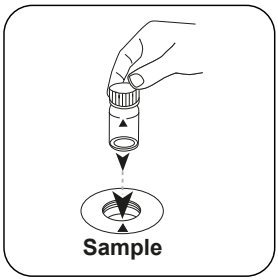
Llenar la cubeta con la **muestra** hasta la **marca de 10 mL** .



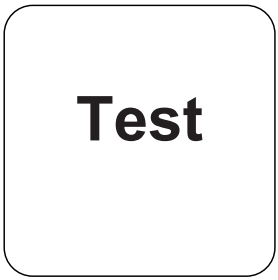
Cerrar la(s) cubeta(s).



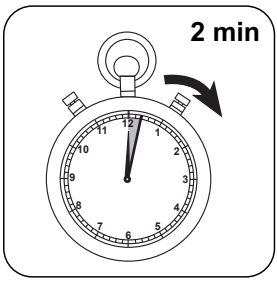
Mezclar el contenido girando.



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



Pulsar la tecla **TEST** (XD: **START**).



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

Finalizado el periodo de reacción se realizará la determinación automáticamente.

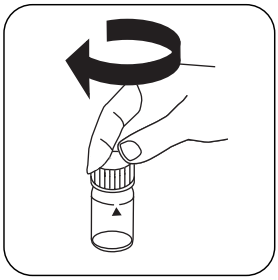
A continuación se visualizará el resultado en mg/L Cloro total.

Ejecución de la determinación Cloro, determinación diferenciada con reactivos líquidos

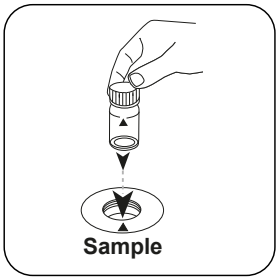
Seleccionar el método en el aparato.

Seleccione además la determinación: diferenciada

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

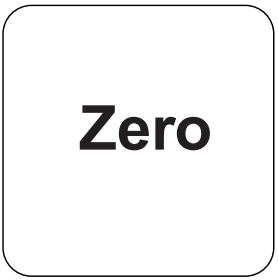


Cerrar la(s) cubeta(s).

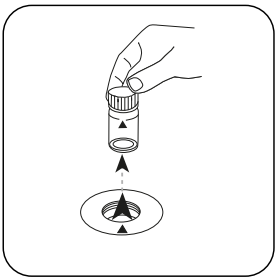


Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!

ES

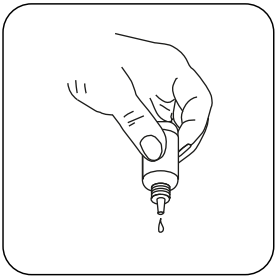


Pulsar la tecla **ZERO**.

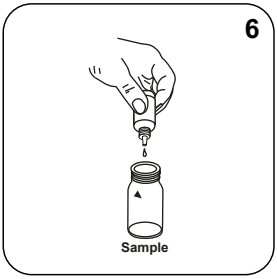


Extraer la cubeta del compartimiento de medición.

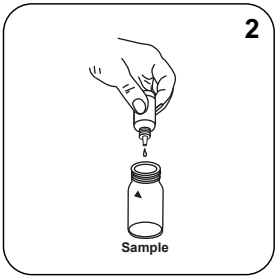
Vaciar la cubeta.



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

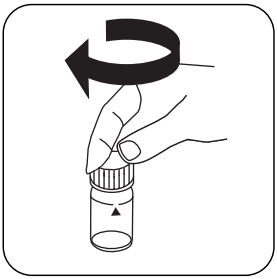


Añadir **6 gotas de DPD 1 Buffer Solution** en la cubeta con la muestra.

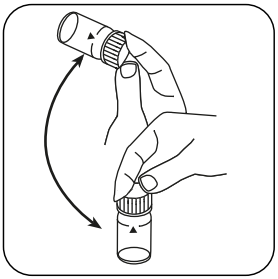


Añadir **2 gotas de DPD 1 Reagent Solution** en la cubeta con la muestra.

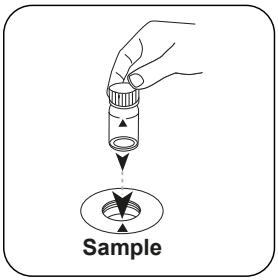
Llenar la cubeta con la **muestra** hasta la **marca de 10 mL** .



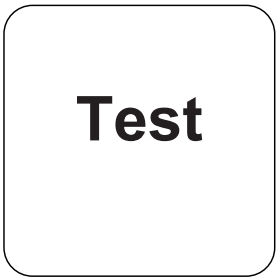
Cerrar la(s) cubeta(s).



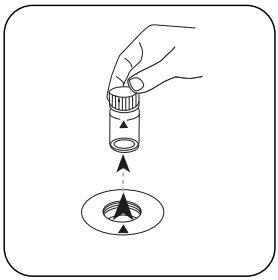
Mezclar el contenido girando.



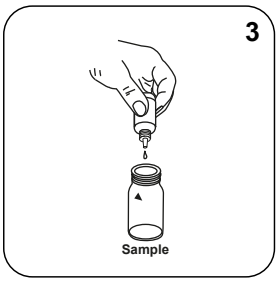
Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!



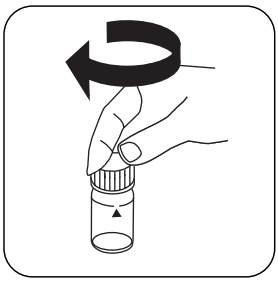
Pulsar la tecla **TEST** (XD: **START**).



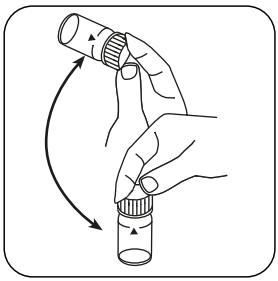
Extraer la cubeta del compartimiento de medición.



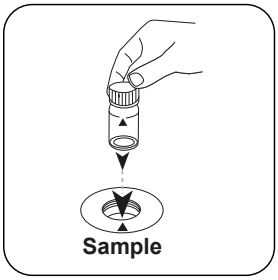
Añadir **3 gotas de DPD 3 Solution** en la cubeta con la muestra.



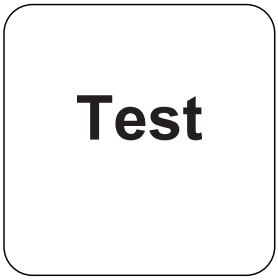
Cerrar la(s) cubeta(s).



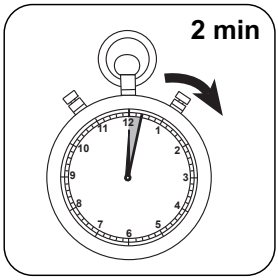
Mezclar el contenido girando.



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



Pulsar la tecla **TEST** (XD: **START**).



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 extraibles

- 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 Cl_2 [a] CL10

DPD

ES

Material

Material requerido (parcialmente opcional):

Reactivos	Unidad de embalaje	No. de referencia
DPD nº 1 HR	Tabletas / 100	511500BT
DPD nº 1 HR	Tabletas / 250	511501BT
DPD nº 1 HR	Tabletas / 500	511502BT
DPD nº 3 HR	Tabletas / 100	511590BT
DPD nº 3 HR	Tabletas / 250	511591BT
DPD nº 3 HR	Tabletas / 500	511592BT
Juego DPD nº 1 HR/nº 3 HR [#]	100 cada	517791BT
Juego DPD nº 1 HR/nº 3 HR [#]	250 cada	517792BT
DPD nº 1 High Calcium [e]	Tabletas / 100	515740BT
DPD nº 1 High Calcium [e]	Tabletas / 250	515741BT
DPD nº 1 High Calcium [e]	Tabletas / 500	515742BT
DPD nº 3 High Calcium [e]	Tabletas / 100	515730BT
DPD nº 3 High Calcium [e]	Tabletas / 250	515731BT
DPD nº 3 High Calcium [e]	Tabletas / 500	515732BT
DPD nº3 HR Evo	Tabletas / 100	511920BT
DPD nº 3 HR Evo	Tabletas / 250	511921BT
DPD nº 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

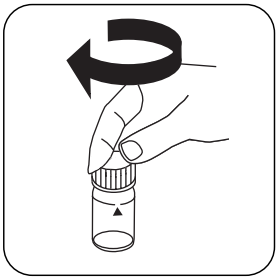
1. Las tabletas Evo pueden utilizarse como alternativa a la tableta estándar correspondiente (por ejemplo, DPD nº 3 Evo en lugar de DPD nº 3).

Ejecución de la determinación Cloro HR libre con tableta

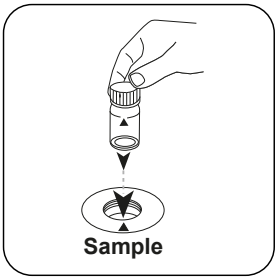
Seleccionar el método en el aparato.

Seleccione además la determinación: libre

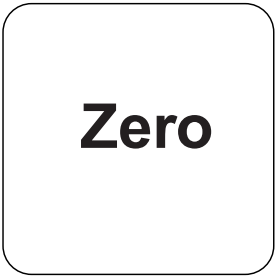
Llenar la cubeta de 24 mm con **10 mL de muestra** .



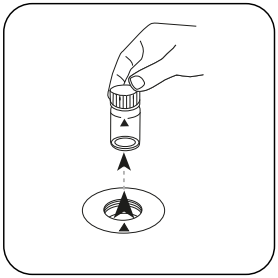
Cerrar la(s) cubeta(s).



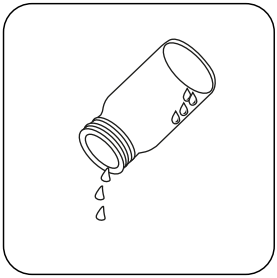
Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!



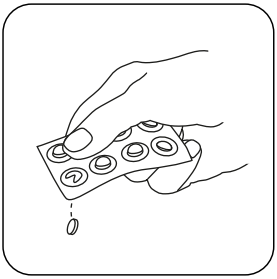
Pulsar la tecla **ZERO**.



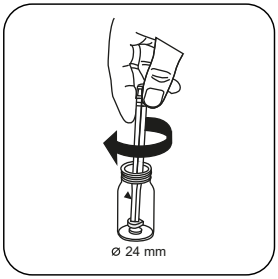
Extraer la cubeta del compartimiento de medición.



Vaciar la cubeta excepto algunas gotas.

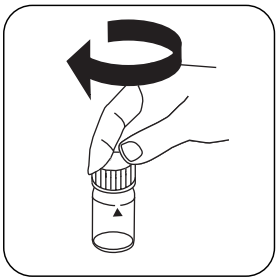


Añadir **tableta DPD No. 1 HR** .

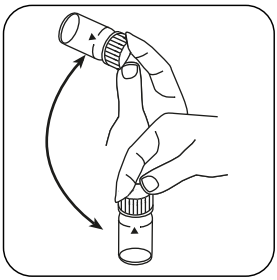


Triturar la(s) tableta(s) girando ligeramente.

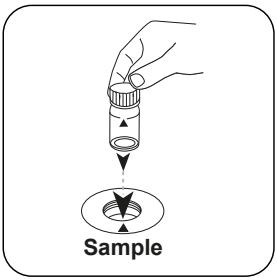
Llenar la cubeta con la **muestra** hasta la **marca de 10 mL** .



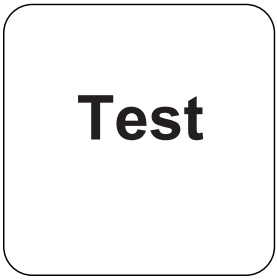
Cerrar la(s) cubeta(s).



Disolver la(s) tableta(s) girando.



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



Pulsar la tecla **TEST** (XD: **START**).

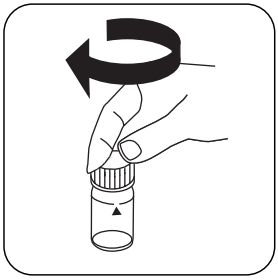
A continuación se visualizará el resultado en mg/L Cloro libre.

Ejecución de la determinación Cloro HR total con tableta

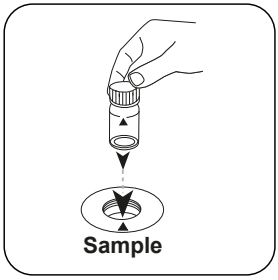
Seleccionar el método en el aparato.

Seleccione además la determinación: total

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

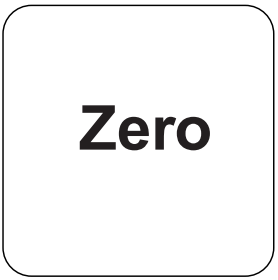


Cerrar la(s) cubeta(s).

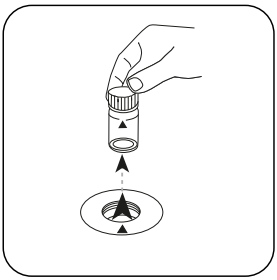


Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!

ES

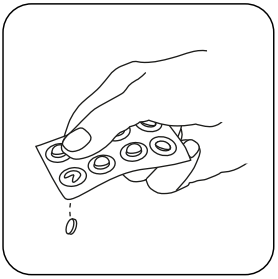


Pulsar la tecla **ZERO**.

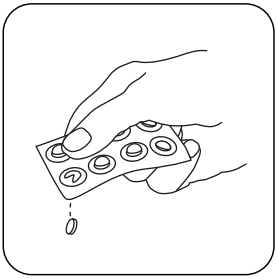


Extraer la cubeta del compartimiento de medición.

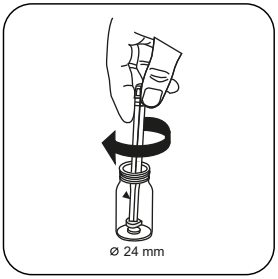
Vaciar la cubeta excepto algunas gotas.



Añadir **tableta DPD No. 1 HR** .



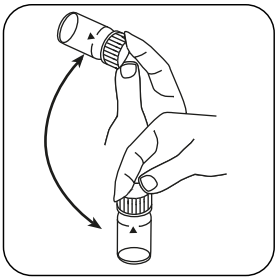
Añadir **tableta DPD No. 3 HR** .



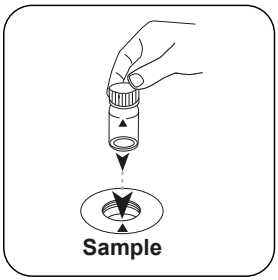
Triturar la(s) tableta(s) girando ligeramente.

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

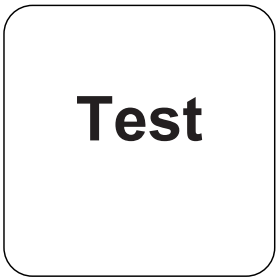
Cerrar la(s) cubeta(s).



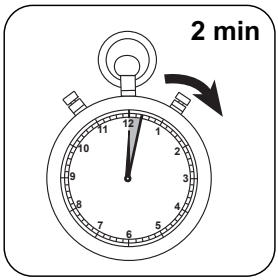
Disolver la(s) tableta(s) girando.



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



Pulsar la tecla **TEST** (XD: **START**).



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

Finalizado el periodo de reacción se realizará la determinación automáticamente.

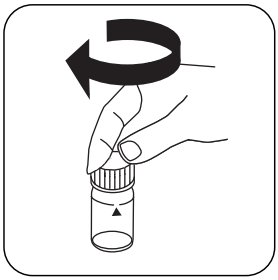
A continuación se visualizará el resultado en mg/L Cloro total.

Ejecución de la determinación Cloro HR, determinación diferenciada con tableta

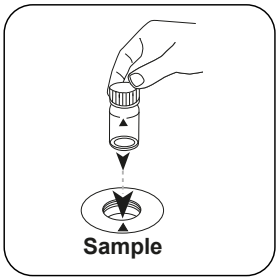
Seleccionar el método en el aparato.

Seleccione además la determinación: diferenciada

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

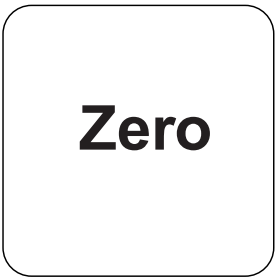


Cerrar la(s) cubeta(s).

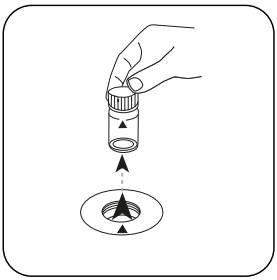


Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!

ES

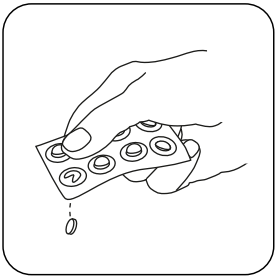


Pulsar la tecla **ZERO**.

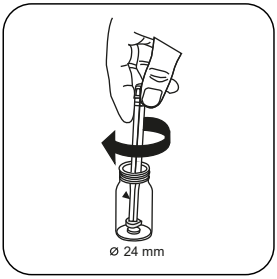


Extraer la cubeta del compartimiento de medición.

Vaciar la cubeta excepto algunas gotas.

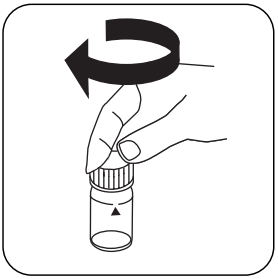


Añadir **tableta DPD No. 1 HR** .

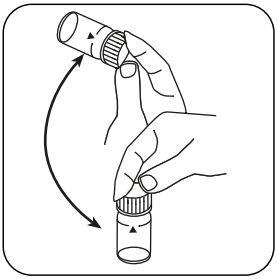


Triturar la(s) tableta(s) girando ligeramente.

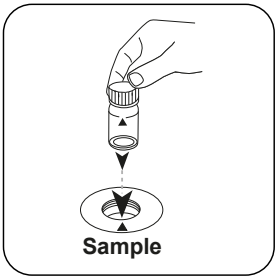
Llenar la cubeta con la **muestra** hasta la **marca de 10 mL** .



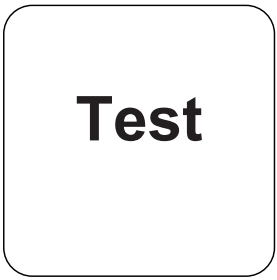
Cerrar la(s) cubeta(s).



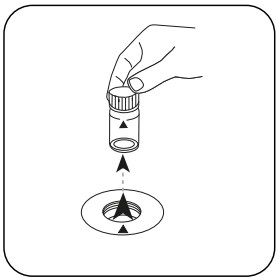
Disolver la(s) tableta(s) girando.



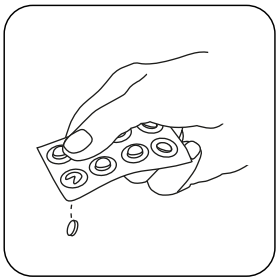
Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!



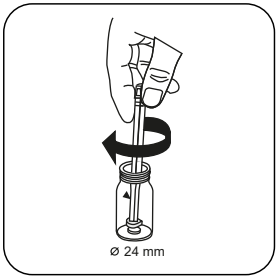
Pulsar la tecla **TEST** (XD: **START**).



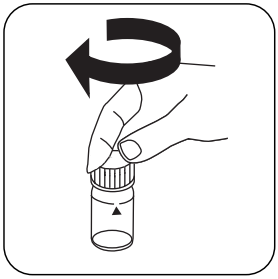
Extraer la cubeta del compartimiento de medición.



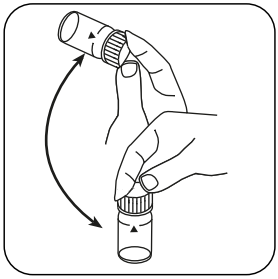
Añadir **tableta DPD No. 3 HR** .



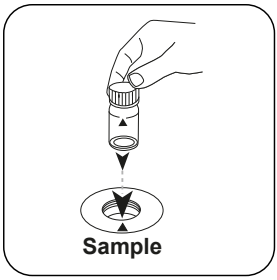
Triturar la(s) tableta(s) girando ligeramente.



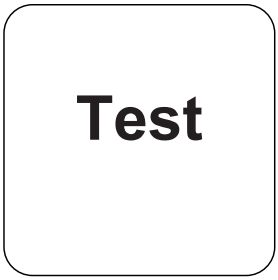
Cerrar la(s) cubeta(s).



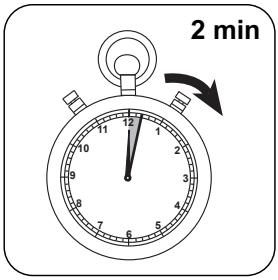
Disolver la(s) tableta(s) girando.



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



Pulsar la tecla **TEST** (XD: **START**).



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 extraibles

- 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 | [e)] 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 Cl_2 [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 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).

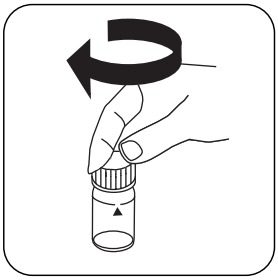
Ejecución de la determinación cloro libre con reactivo Powder Pack

Seleccionar el método en el aparato.

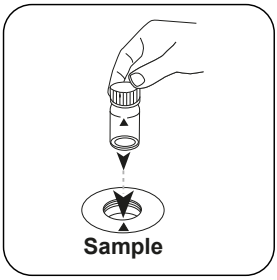
Seleccione además la determinación: libre

ES

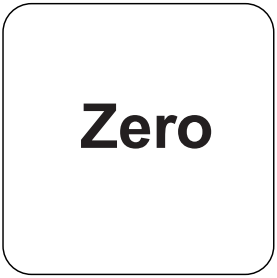
Llenar la cubeta de 24 mm con **10 mL de muestra** .



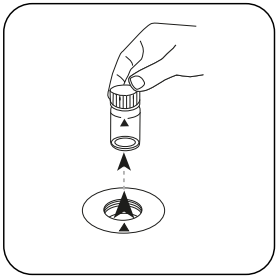
Cerrar la(s) cubeta(s).



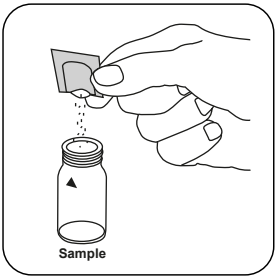
Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!



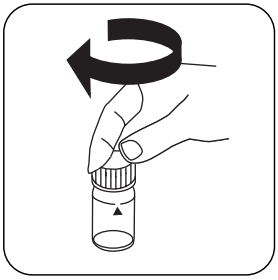
Pulsar la tecla **ZERO**.



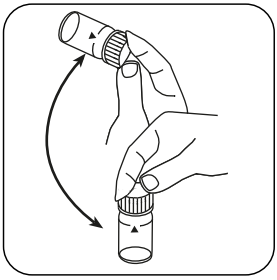
Extraer la cubeta del compartimiento de medición.



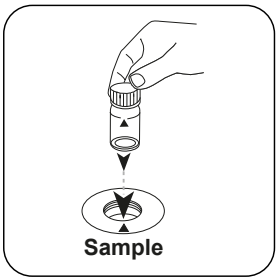
Añadir un **sobre de polvos Chlorine FREE-DPD/ F10** .



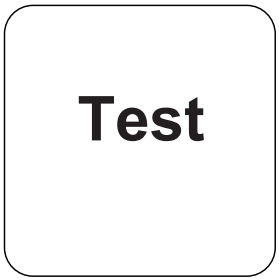
Cerrar la(s) cubeta(s).



Mezclar el contenido girando (20 sec.).



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



Pulsar la tecla **TEST** (XD: **START**).

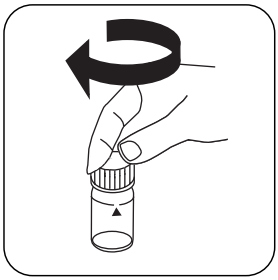
A continuación se visualizará el resultado en mg/L cloro libre.

Ejecución de la determinación cloro total con reactivo Powder Pack

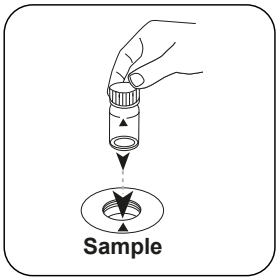
Seleccionar el método en el aparato.

Seleccione además la determinación: total

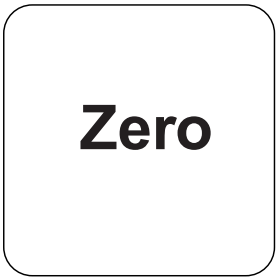
Llenar la cubeta de 24 mm con **10 mL de muestra** .



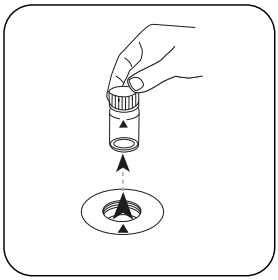
Cerrar la(s) cubeta(s).



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

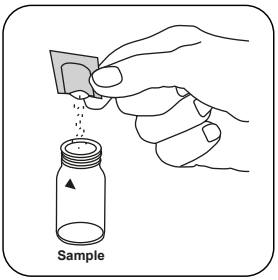


Pulsar la tecla **ZERO**.

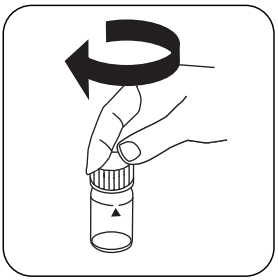


Extraer la cubeta del compartimiento de medición.

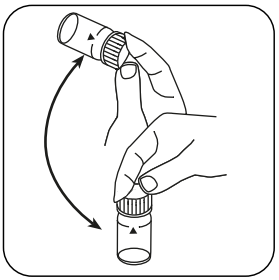
ES



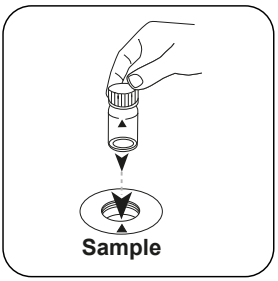
Añadir un **sobre de polvos Chlorine TOTAL-DPD/ F10** .



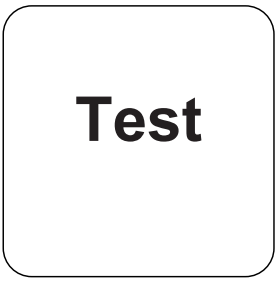
Cerrar la(s) cubeta(s).



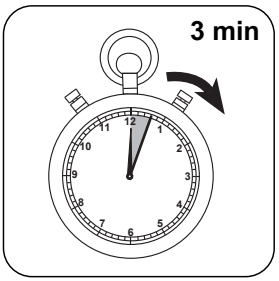
Mezclar el contenido girando (20 sec.).



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



Pulsar la tecla **TEST** (XD: **START**).



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

Finalizado el periodo de reacción se realizará la determinación automáticamente.

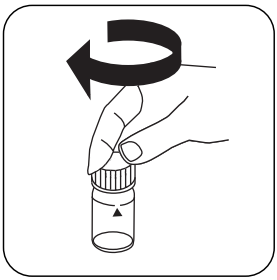
A continuación se visualizará el resultado en mg/L cloro total.

Ejecución de la determinación cloro diferenciado con reactivo Powder Pack

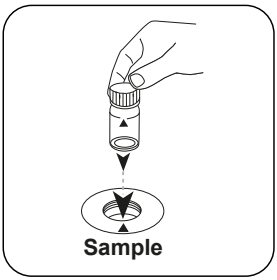
Seleccionar el método en el aparato.

Seleccione además la determinación: diferenciado

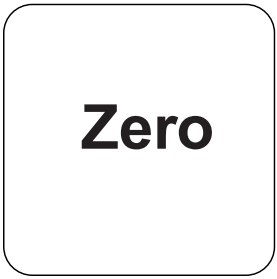
Llenar la cubeta de 24 mm con **10 mL de muestra** .



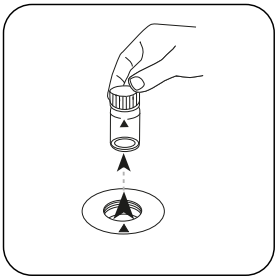
Cerrar la(s) cubeta(s).



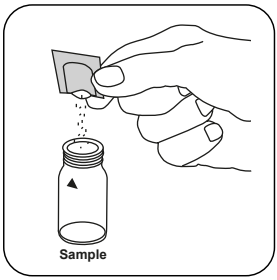
Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!



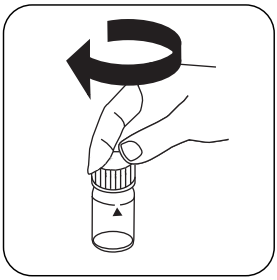
Pulsar la tecla **ZERO**.



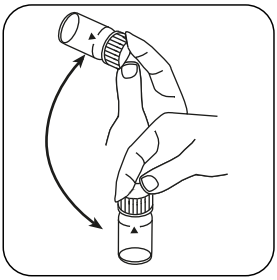
Extraer la cubeta del compartimiento de medición.



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

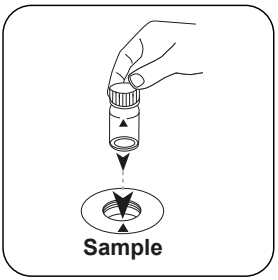


Cerrar la(s) cubeta(s).

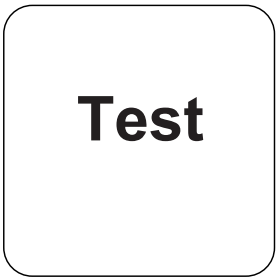


Mezclar el contenido girando (20 sec.).

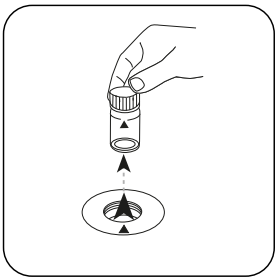
ES



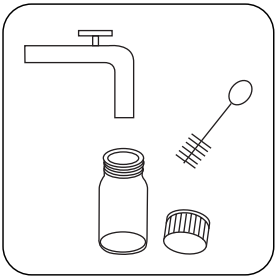
Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!



Pulsar la tecla **TEST** (XD: **START**).

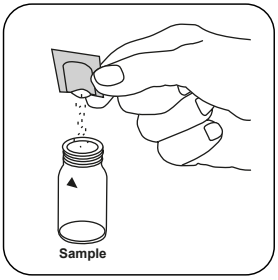


Extraer la cubeta del compartimiento de medición.

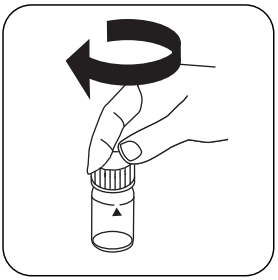


Limpiar a fondo la cubeta y la tapa.

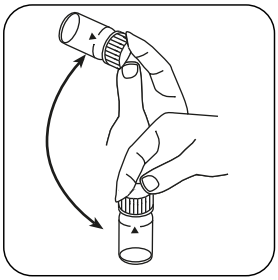
Llenar la cubeta de 24 mm con **10 mL de muestra** .



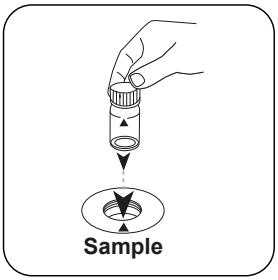
Añadir un **sobre de polvos TOTAL-DPD/ F10** .



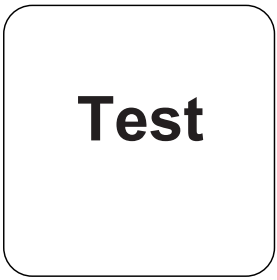
Cerrar la(s) cubeta(s).

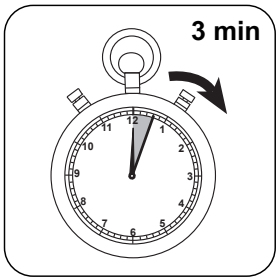


Mezclar el contenido girando (20 sec.).



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





Pulsar la tecla **TEST** (XD: **START**).

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.

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 extraibles

- 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

Validación del método

Límite de detección	0.01 mg/L
Límite de determinación	0.03 mg/L
Límite del rango de medición	2 mg/L
Sensibilidad	1.68 mg/L / Abs
Intervalo de confianza	0.033 mg/L
Desviación estándar	0.014 mg/L
Coeficiente de variación	1.34 %

Conforme a

EN ISO 7393-2

[a] Posible determinación de libre, combinado, total

Cloro HR 2 PP M112

0.1 - 10 mg/L Cl_2

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

Muestreo

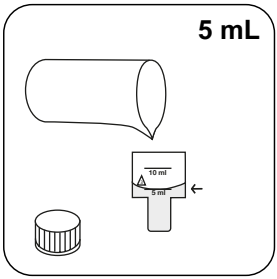
1. Evitar durante la preparación de la muestra la desgasificación de cloro, p. ej., al pipetar o agitar.
2. La determinación se ha de realizar inmediatamente después de la toma de la muestra.

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).

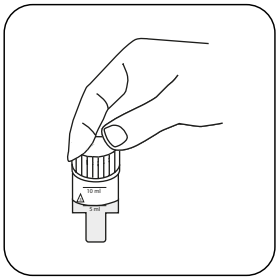
Ejecución de la determinación cloro libre HR 2 con reactivo Powder Pack

Seleccionar el método en el aparato.

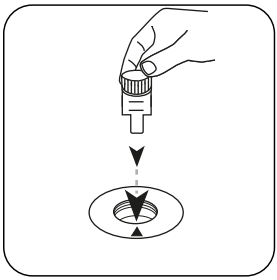


Llenar la cubeta de 10 mm con **5 mL de muestra** .

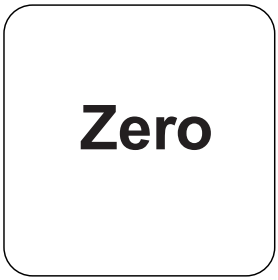
MD50: Llenar la cubeta de 24 mm con **10 mL de muestra** .



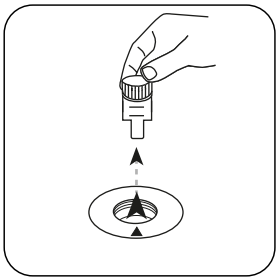
Cerrar la(s) cubeta(s).



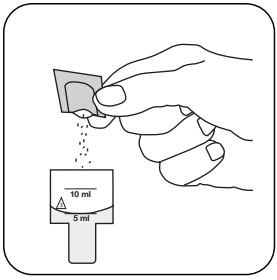
Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!



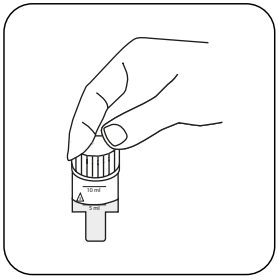
Pulsar la tecla **ZERO**.



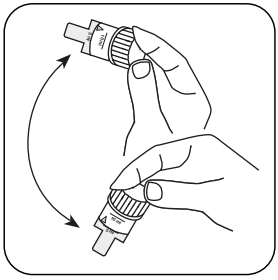
Extraer la **cubeta** del compartimiento de medición.



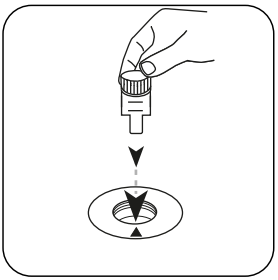
Añadir un **sobre de polvos Vario Chlorine Free / F25** .



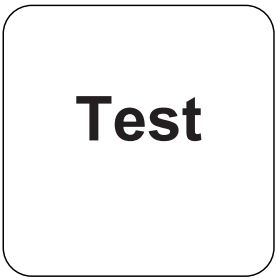
Cerrar la(s) cubeta(s).



Mezclar el contenido girando (20 sec.).



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

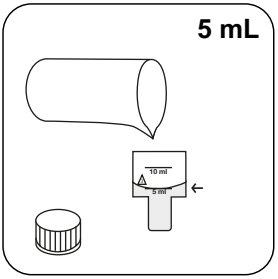


Pulsar la tecla **TEST** (XD: **START**).

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

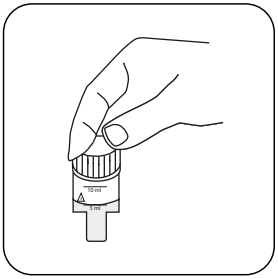
Ejecución de la determinación cloro total HR 2 con reactivo Powder Pack

Seleccionar el método en el aparato.

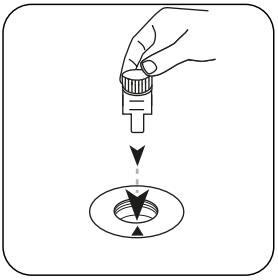


Llenar la cubeta de 10 mm con **5 mL de muestra** .

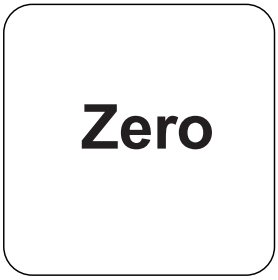
MD50: Llenar la cubeta de 24 mm con **10 mL de muestra** .



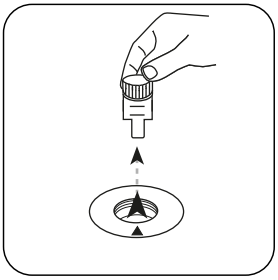
Cerrar la(s) cubeta(s).



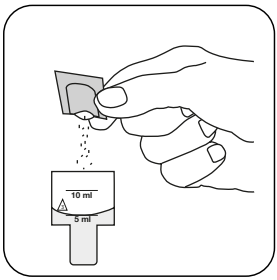
Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!



Pulsar la tecla **ZERO**.

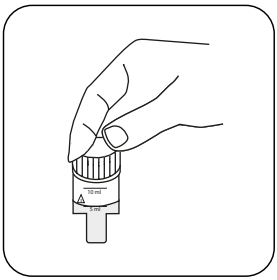


Extraer la **cubeta** del compartimiento de medición.

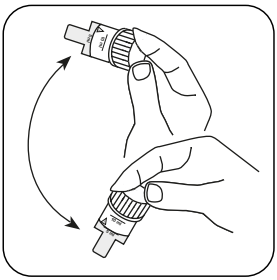


Añadir un **sobre de polvos Vario Chlorine Total / F25**

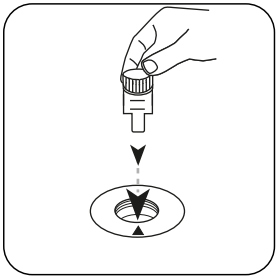
.



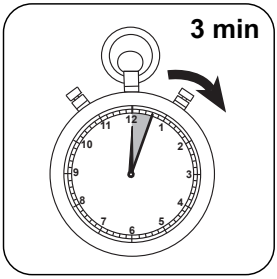
Cerrar la(s) cubeta(s).



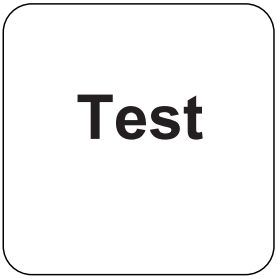
Mezclar el contenido girando (20 sec.).



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



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



Pulsar la tecla **TEST** (XD: **START**).

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

Método químico

DPD

Apéndice

ES

Interferencia

Interferencias persistentes

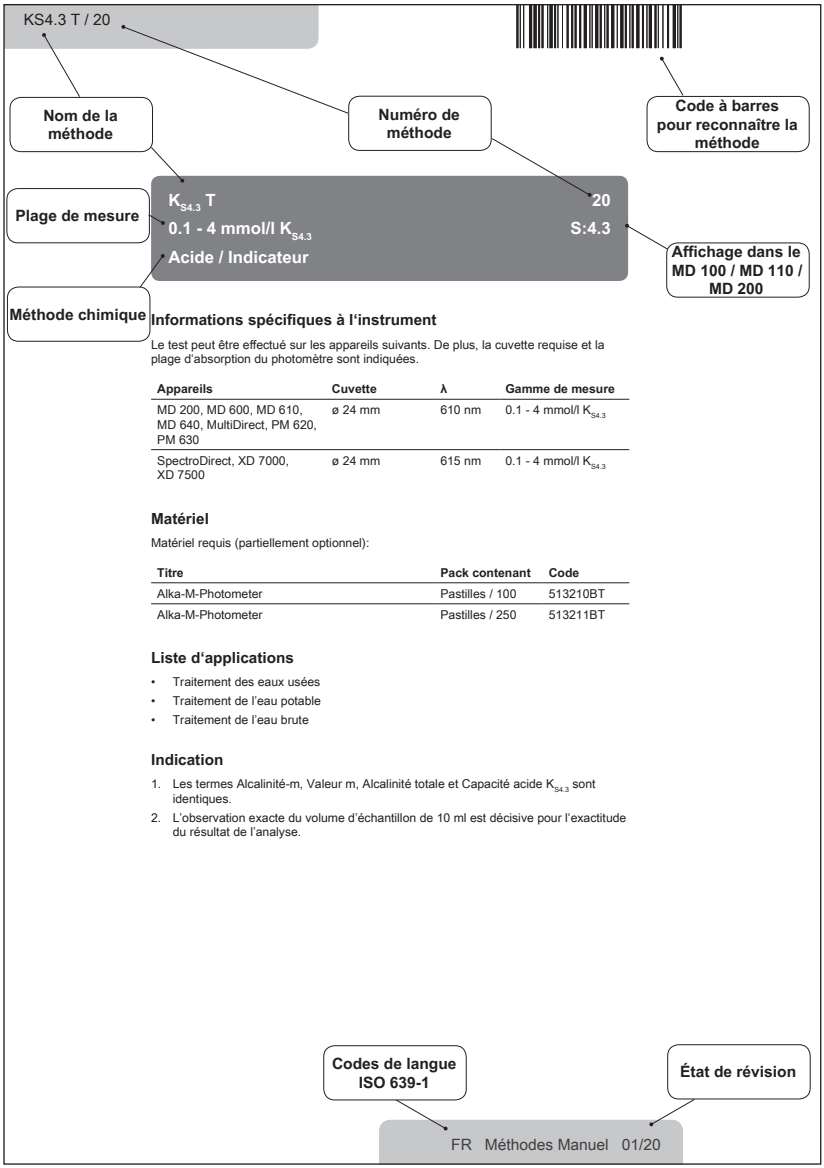
- Todos los elementos oxidantes existentes en la muestra reaccionan como el cloro, lo que produce un resultado más elevado.

Interferencias extraibles

- 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


KS4.3 T / 20
Nom de la méthode
Numéro de méthode
Code à barres pour reconnaître la méthode
Plage de mesure
$K_{S4.3}$ T
20
0.1 - 4 mmol/l $K_{S4.3}$
S:4.3
Acide / Indicateur
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

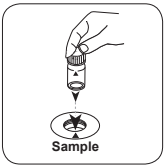
Réalisation de la quantification Capacité acide $K_{S4.3}$ avec pastille

Sélectionnez la méthode sur l'appareil.

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

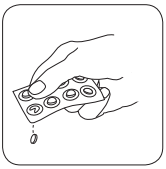
Remplissez une cuvette de 24 mm de **10 ml d'échantillon**.

Fermez la(les) cuvette(s).

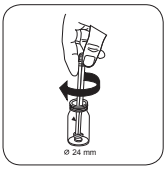


Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.

• • •



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 Cl_2 [a] CL6

DPD

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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).

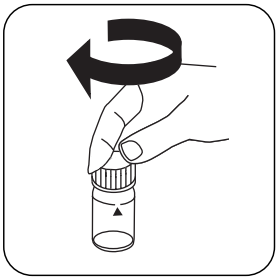
Indication

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).

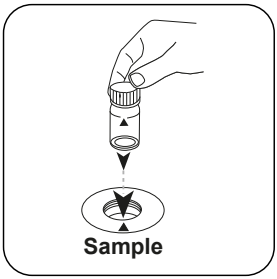
Réalisation de la quantification Chlore libre avec pastilles

Sélectionnez la méthode sur l'appareil.

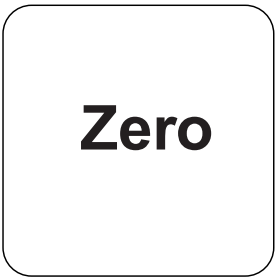
Remplissez une cuvette de 24 mm de **10 mL d'échantillon**.



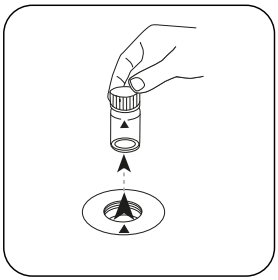
Fermez la(les) cuvette(s).



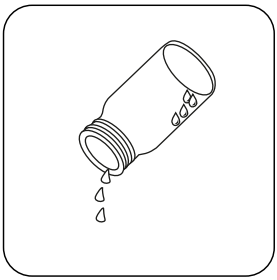
Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.



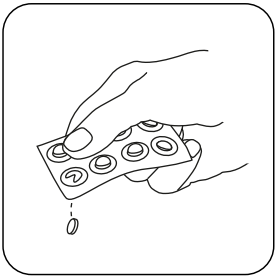
Appuyez sur la touche **ZERO**.



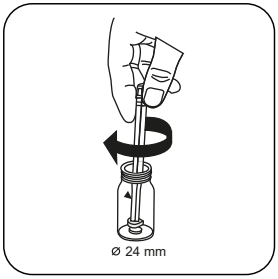
Retirez la cuvette de la chambre de mesure.



Videz pratiquement la cuvette en y laissant quelques gouttes.

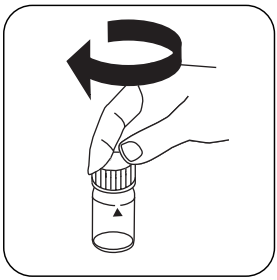


Ajoutez une **pastille de DPD No. 1**.

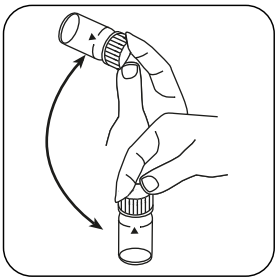


Écrasez la(les) pastille(s) en la(les) tournant un peu.

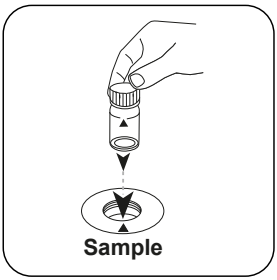
Remplissez la cuvette jusqu'au **repère de 10 mL** en y versant l'**échantillon**.



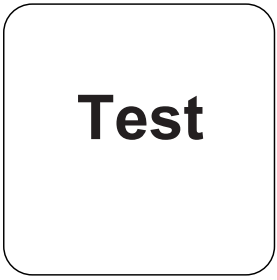
Fermez la(les) cuvette(s).



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.



Appuyez sur la touche **TEST** (XD: **START**).

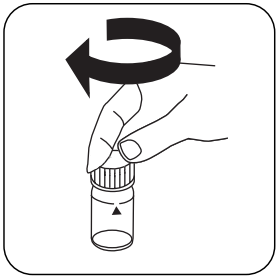
Le résultat s'affiche à l'écran en mg/L chlore libre.

Réalisation de la quantification Chlore total avec pastilles

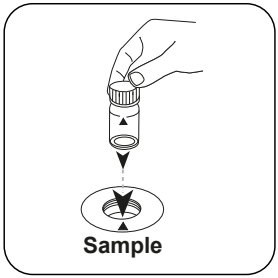
Sélectionnez la méthode sur l'appareil.

Sélectionnez également la quantification : total

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.

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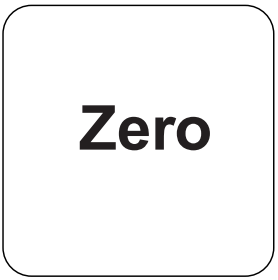
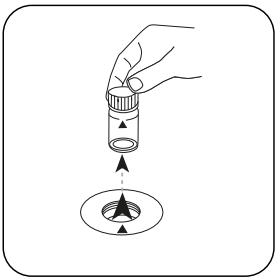
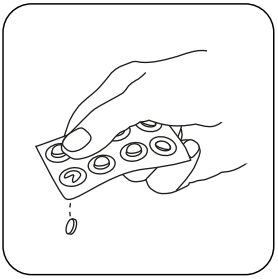


Appuyez sur la touche **ZERO**.

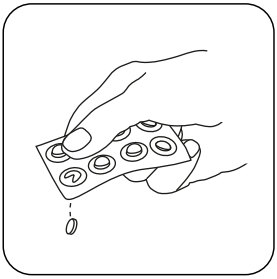


Retirez la cuvette de la chambre de mesure.

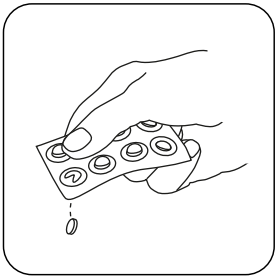
Videz pratiquement la cuvette en y laissant quelques gouttes.



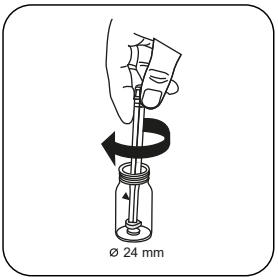
Ajoutez une **pastille de DPD No. 1**.



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

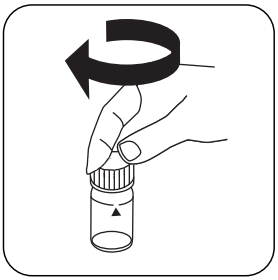


En alternative aux comprimés DPD n ° 1 et n ° 3, un comprimé DPD n ° 4 peut être ajouté.

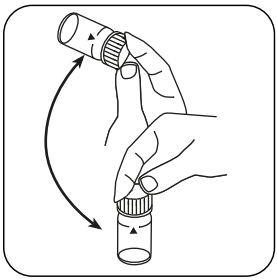


Écrasez la(les) pastille(s) en la(les) tournant un peu.

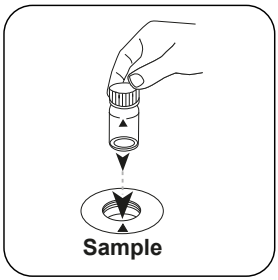
Remplissez la cuvette jusqu'au **repère de 10 mL** en y versant l'**échantillon**.



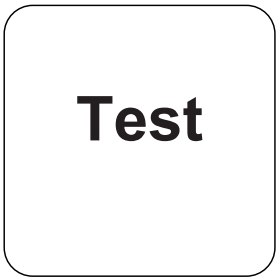
Fermez la(les) cuvette(s).



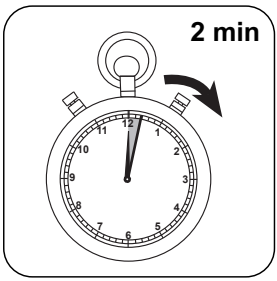
Dissolvez la(les) pastille(s) en mettant le tube plusieurs fois à l'envers.



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



Appuyez sur la touche **TEST** (XD: **START**).



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

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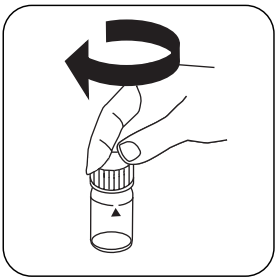
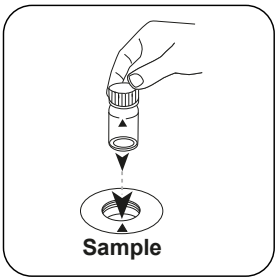
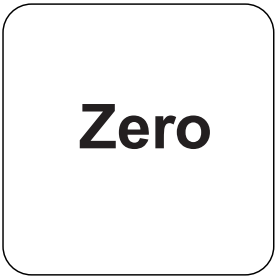
Remplissez une cuvette de 24 mm de **10 mL d'échantillon**.



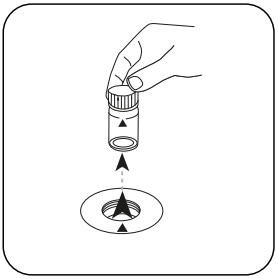
Fermez la(les) cuvette(s).



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

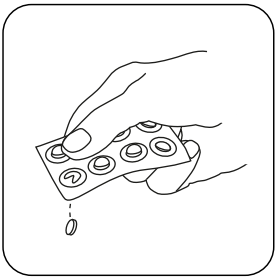


Appuyez sur la touche **ZERO**.

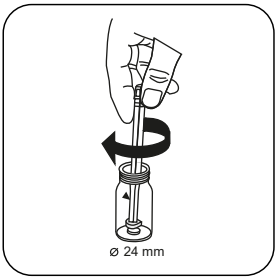


Retirez la cuvette de la chambre de mesure.

Videz pratiquement la cuvette en y laissant quelques gouttes.

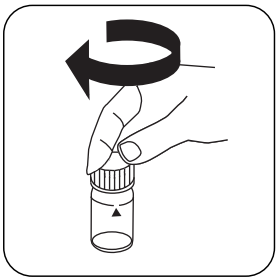


Ajoutez une **pastille de DPD No. 1**.

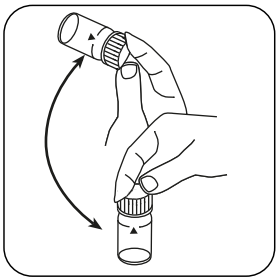


Écrasez la(les) pastille(s) en la(les) tournant un peu.

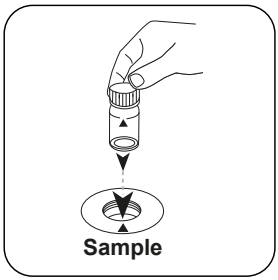
Remplissez la cuvette jusqu'au **repère de 10 mL** en y versant l'**échantillon**.



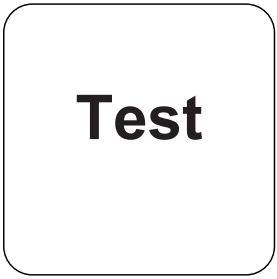
Fermez la(les) cuvette(s).



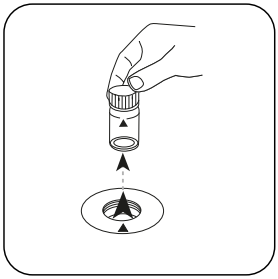
Dissolvez la(les) pastille(s) en mettant le tube plusieurs fois à l'envers.



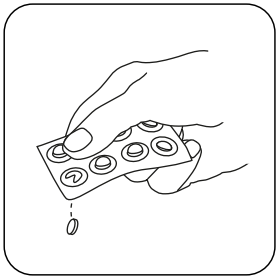
Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.



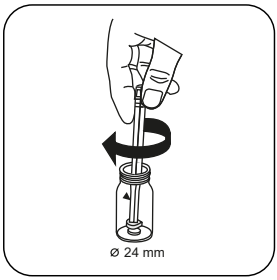
Appuyez sur la touche **TEST** (XD: **START**).



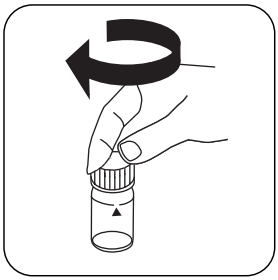
Retirez la cuvette de la chambre de mesure.



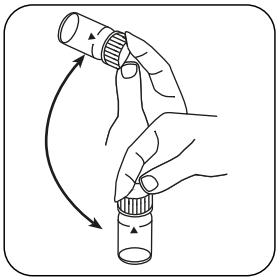
Ajoutez une **pastille de DPD No. 3**.



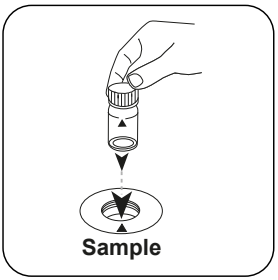
Écrasez la(les) pastille(s) en la(les) tournant un peu.

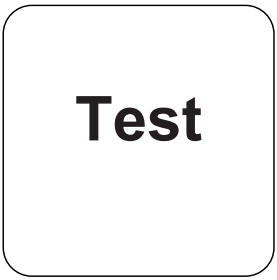


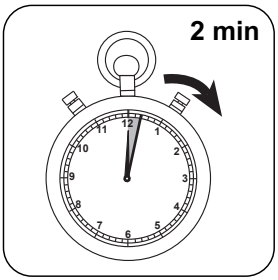
Fermez la(les) cuvette(s).



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.

Appuyez sur la touche **TEST** (XD: **START**).

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

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

Méthode Validation

Limite de détection	0.02 mg/L
Limite de détermination	0.06 mg/L
Fin de la gamme de mesure	6 mg/L
Sensibilité	2.05 mg/L / Abs
Intervalle de confiance	0.04 mg/L
Déviation standard	0.019 mg/L
Coefficient de variation	0.87 %

Conformité

EN ISO 7393-2

[a] Détermination du libre, combiné et total | [e] 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

Chlore L M101

0.02 - 4.0 mg/L Cl_2 [a] CL6

DPD

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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.

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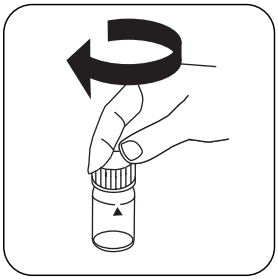
Réalisation de la quantification Chlore libre avec réactifs liquides

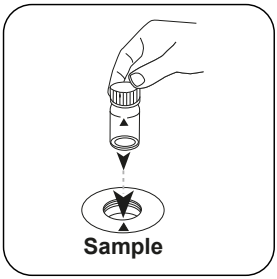
Sélectionnez la méthode sur l'appareil.

Sélectionnez également la quantification : libre

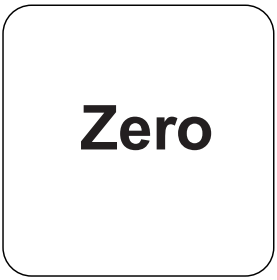
Remplissez une cuvette de 24 mm de **10 mL d'échantillon**.



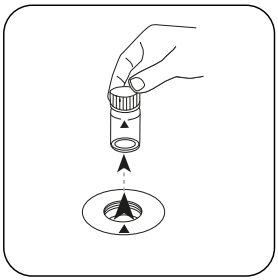
Fermez la(les) cuvette(s).



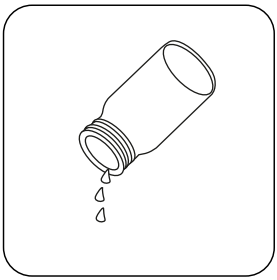
Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.



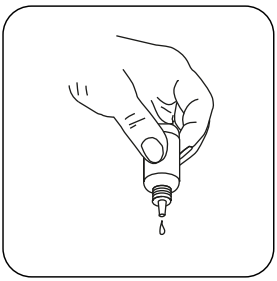
Appuyez sur la touche **ZERO**.



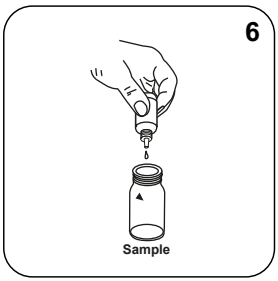
Retirez la cuvette de la chambre de mesure.



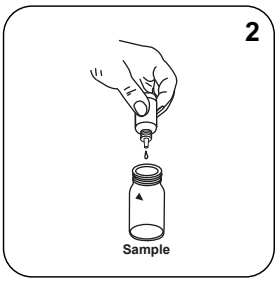
Videz la cuvette.



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

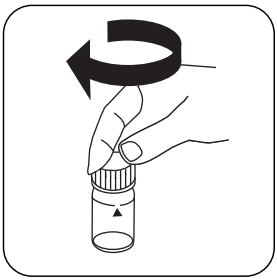


Ajoutez **6 gouttes de DPD 1 Buffer Solution** dans la cuvette réservée à l'échantillon.

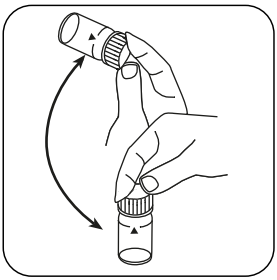


Ajoutez **2 gouttes de DPD 1 Reagent Solution** dans la cuvette réservée à l'échantillon.

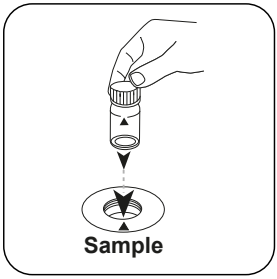
Remplissez la cuvette jusqu'au **repère de 10 mL** en y versant l'**échantillon**.



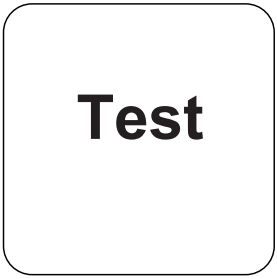
Fermez la(les) cuvette(s).



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.



Appuyez sur la touche **TEST** (XD: **START**).

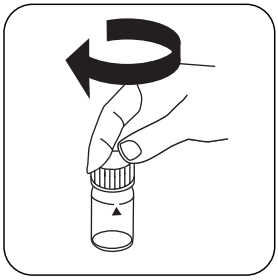
Le résultat s'affiche à l'écran en mg/L chlore libre.

Réalisation de la quantification Chlore total avec réactifs liquides

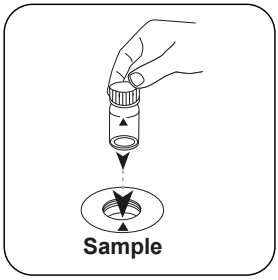
Sélectionnez la méthode sur l'appareil.

Sélectionnez également la quantification : total

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.

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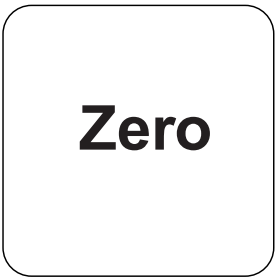
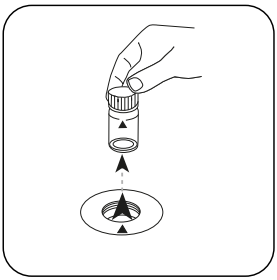
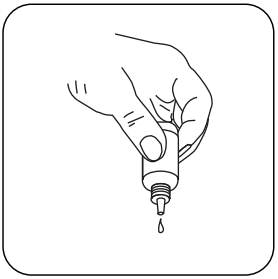


Appuyez sur la touche **ZERO**.

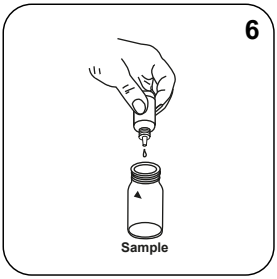


Retirez la cuvette de la chambre de mesure.

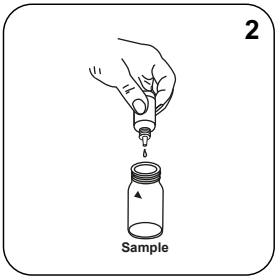
Videz la cuvette.



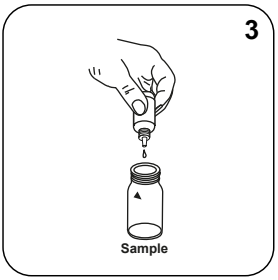
Tenez les flacons compte-goutte à la verticale et ajoutez des gouttes uniformes en appuyant lentement.



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

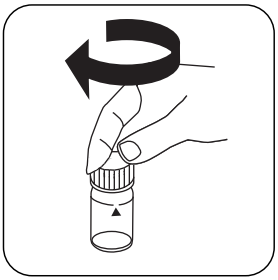


Ajoutez **2 gouttes de DPD 1 Reagent Solution** dans la cuvette réservée à l'échantillon.

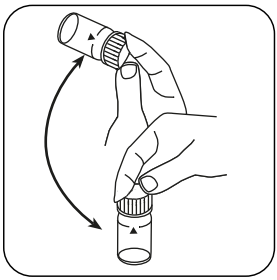


Ajoutez **3 gouttes de DPD 3 Solution** dans la cuvette réservée à l'échantillon.

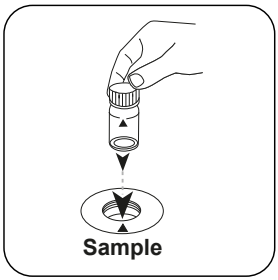
Remplissez la cuvette jusqu'au **repère de 10 mL** en y versant l'**échantillon**.



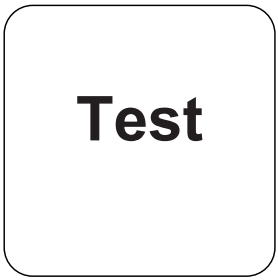
Fermez la(les) cuvette(s).



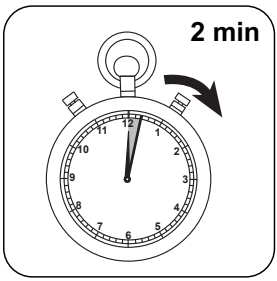
Mélangez le contenu en mettant le tube plusieurs fois à l'envers puis à l'endroit.



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



Appuyez sur la touche **TEST** (XD: **START**).



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.

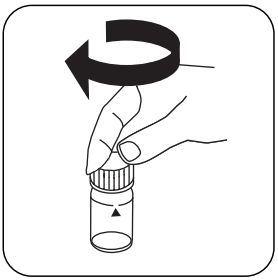
Réalisation de la quantification Chlore détermination différenciée avec réactifs liquides

Sélectionnez la méthode sur l'appareil.

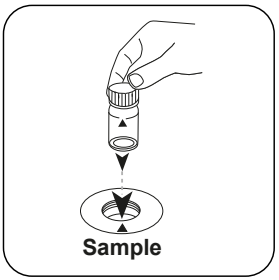
Sélectionnez également la quantification : différenciée

FR

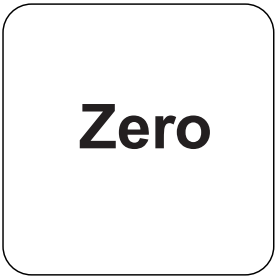
Remplissez une cuvette de 24 mm de **10 mL d'échantillon**.



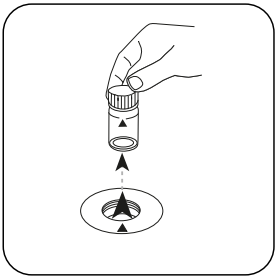
Fermez la(les) cuvette(s).



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

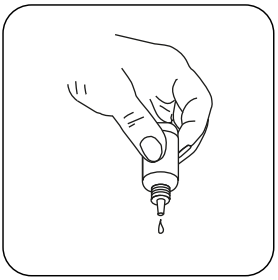


Appuyez sur la touche **ZERO**.

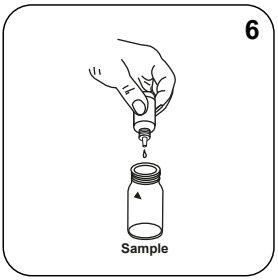


Retirez la cuvette de la chambre de mesure.

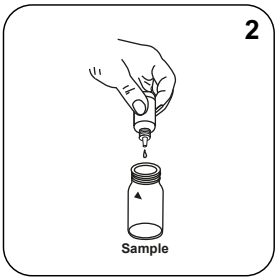
Videz la cuvette.



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

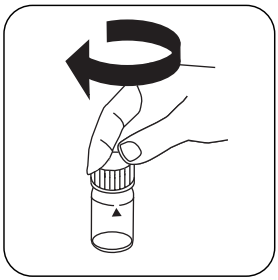


Ajoutez **6 gouttes de DPD 1 Buffer Solution** dans la cuvette réservée à l'échantillon.

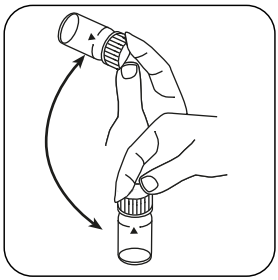


Ajoutez **2 gouttes de DPD 1 Reagent Solution** dans la cuvette réservée à l'échantillon.

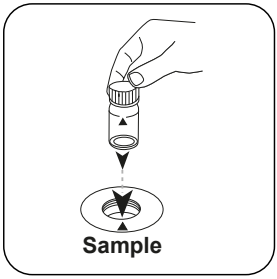
Remplissez la cuvette jusqu'au **repère de 10 mL** en y versant l'**échantillon**.



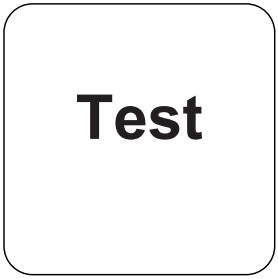
Fermez la(les) cuvette(s).



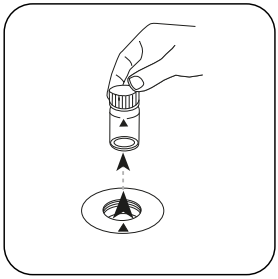
Mélangez le contenu en mettant le tube plusieurs fois à l'envers puis à l'endroit.



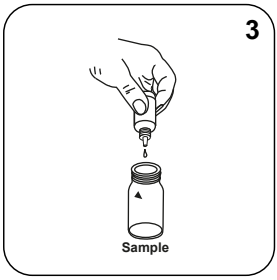
Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.



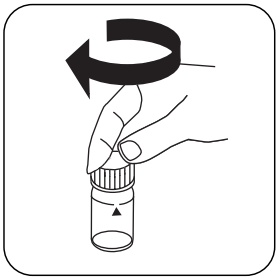
Appuyez sur la touche **TEST** (XD: **START**).



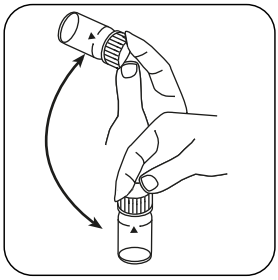
Retirez la cuvette de la chambre de mesure.



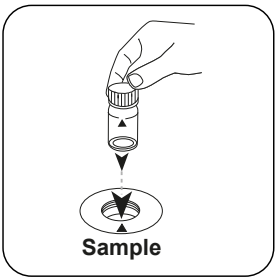
Ajoutez **3 gouttes de DPD 3 Solution** dans la cuvette réservée à l'échantillon.

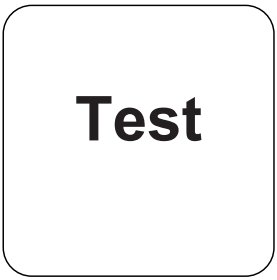


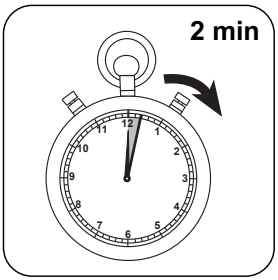
Fermez la(les) cuvette(s).



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







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

Appuyez sur la touche **TEST** (XD: **START**).

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

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

[a]Détermination du libre, combiné et total

Chlore HR T M103

0.1 - 10 mg/L Cl_2 [a] CL10

DPD

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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

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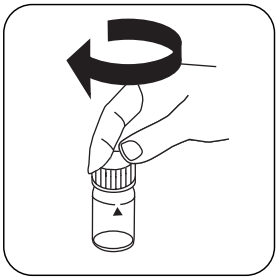
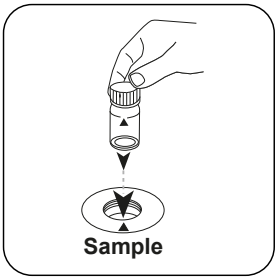
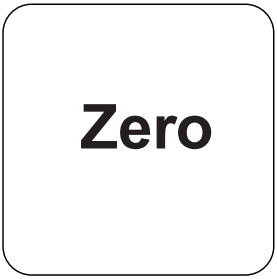
Remplissez une cuvette de 24 mm de **10 mL d'échantillon**.



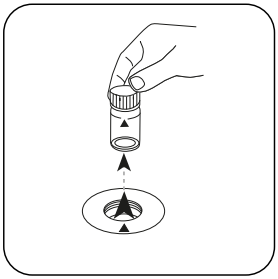
Fermez la(les) cuvette(s).



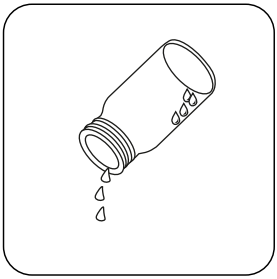
Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.



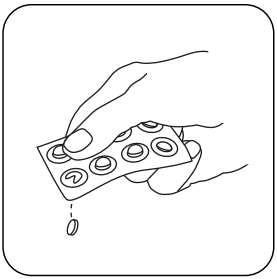
Appuyez sur la touche **ZERO**.



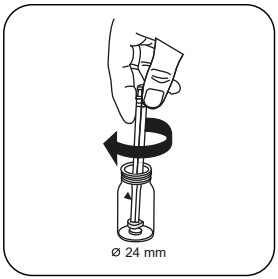
Retirez la cuvette de la chambre de mesure.



Videz pratiquement la cuvette en y laissant quelques gouttes.

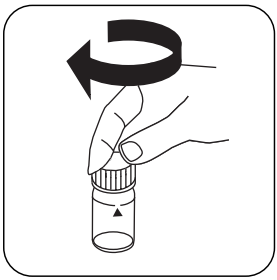


Ajoutez une **pastille de DPD No. 1 HR** .

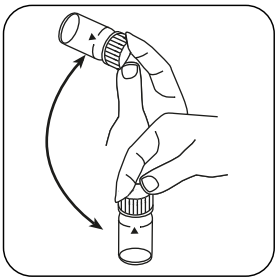


Écrasez la(les) pastille(s) en la(les) tournant un peu.

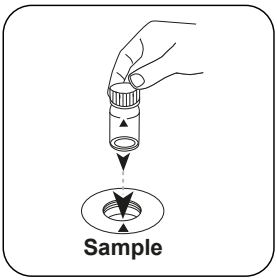
Remplissez la cuvette jusqu'au **repère de 10 mL** en y versant l'**échantillon**.



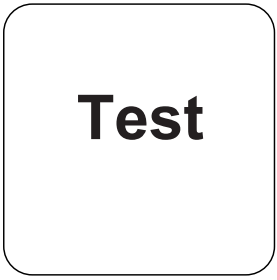
Fermez la(les) cuvette(s).



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.



Appuyez sur la touche **TEST** (XD: **START**).

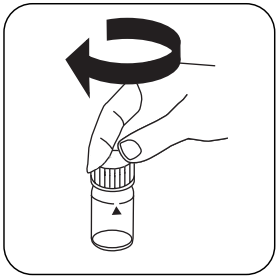
Le résultat s'affiche à l'écran en mg/L chlore libre.

Réalisation de la quantification Chlore HR total avec pastilles

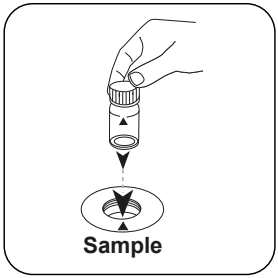
Sélectionnez la méthode sur l'appareil.

Sélectionnez également la quantification : total

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.

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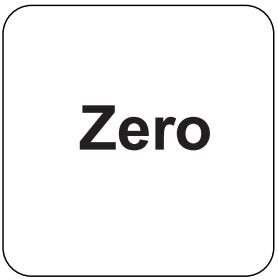
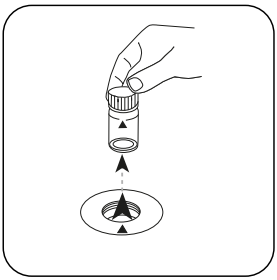
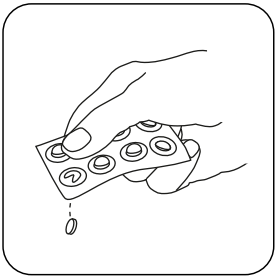


Appuyez sur la touche **ZERO**.

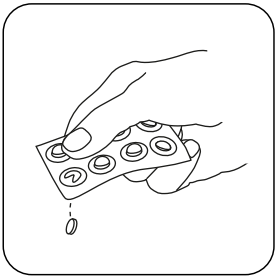


Retirez la cuvette de la chambre de mesure.

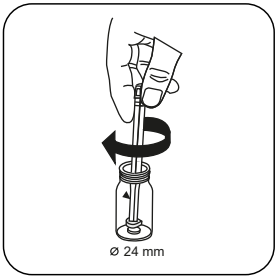
Videz pratiquement la cuvette en y laissant quelques gouttes.



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



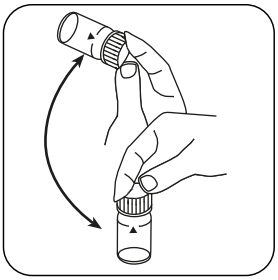
Ajoutez une **pastille de DPD No. 3 HR** .



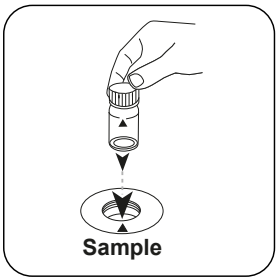
Écrasez la(les) pastille(s) en la(les) tournant un peu.

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

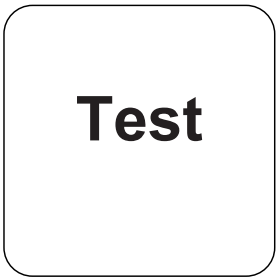
Fermez la(les) cuvette(s).



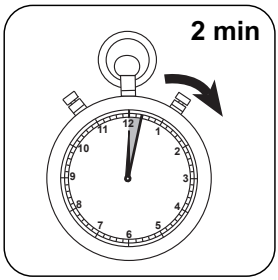
Dissolvez la(les) pastille(s) en mettant le tube plusieurs fois à l'envers.



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



Appuyez sur la touche **TEST** (XD: **START**).



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

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

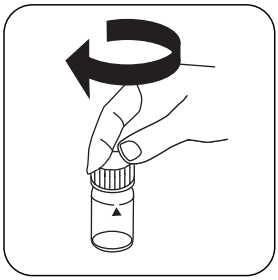
Le résultat s'affiche à l'écran en mg/L chlore total.

Réalisation de la quantification Chlore HR détermination différenciée avec pastilles

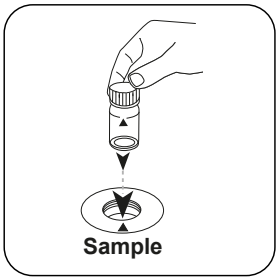
Sélectionnez la méthode sur l'appareil.

Sélectionnez également la quantification : différenciée

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

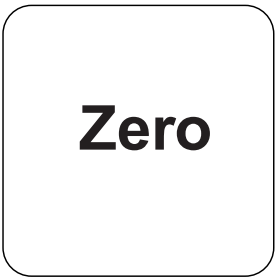


Fermez la(les) cuvette(s).

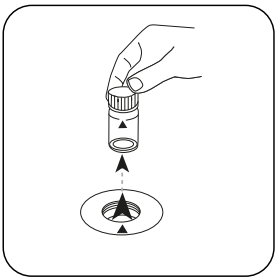


Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.

FR

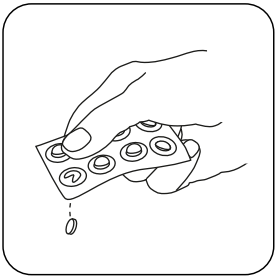


Appuyez sur la touche **ZERO**.

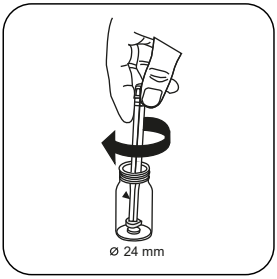


Retirez la cuvette de la chambre de mesure.

Videz pratiquement la cuvette en y laissant quelques gouttes.

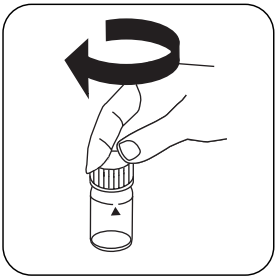


Ajoutez une **pastille de DPD No. 1 HR** .

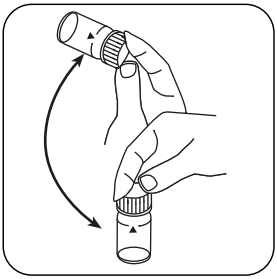


Écrasez la(les) pastille(s) en la(les) tournant un peu.

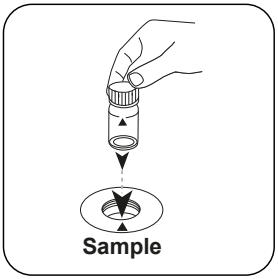
Remplissez la cuvette jusqu'au **repère de 10 mL** en y versant l'**échantillon**.



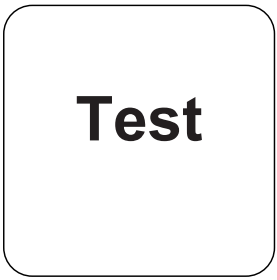
Fermez la(les) cuvette(s).



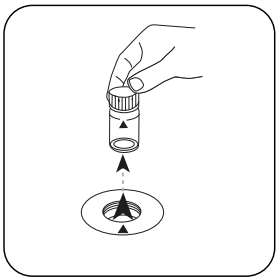
Dissolvez la(les) pastille(s) en mettant le tube plusieurs fois à l'envers.



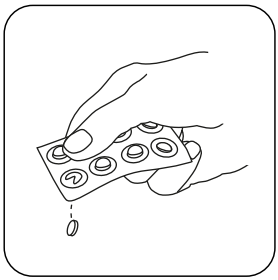
Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.



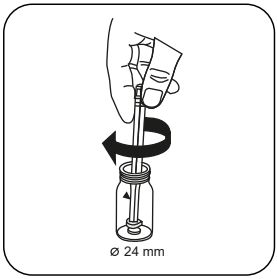
Appuyez sur la touche **TEST** (XD: **START**).



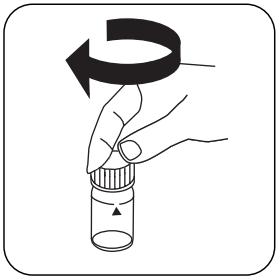
Retirez la cuvette de la chambre de mesure.



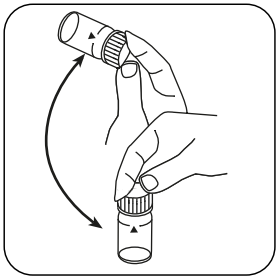
Ajoutez une **pastille de DPD No. 3 HR** .



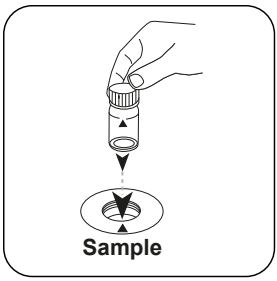
Écrasez la(les) pastille(s) en la(les) tournant un peu.



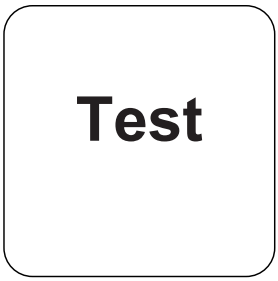
Fermez la(les) cuvette(s).



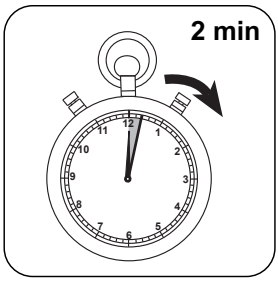
Dissolvez la(les) pastille(s) en mettant le tube plusieurs fois à l'envers.



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



Appuyez sur la touche **TEST** (XD: **START**).



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 | [e)]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 | [j)#] agitateur inclus

Chlore PP M110

0.02 - 2 mg/L Cl_2 [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).

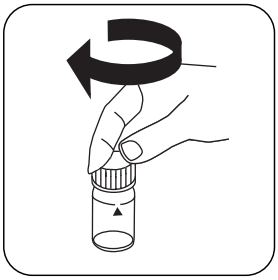
Réalisation de la quantification Chlore libre avec réactifs en sachet de poudre (PP)

Sélectionnez la méthode sur l'appareil.

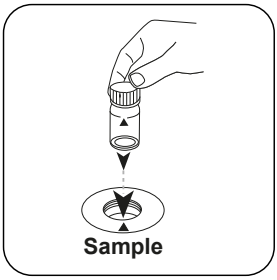
Sélectionnez également la quantification : libre

FR

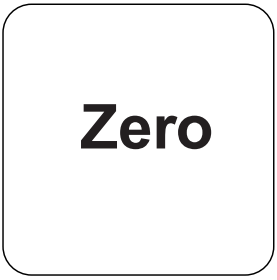
Remplissez une cuvette de 24 mm de **10 mL d'échantillon**.



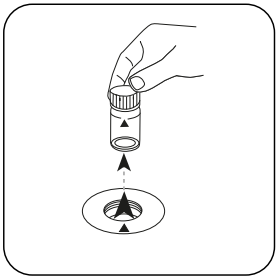
Fermez la(les) cuvette(s).



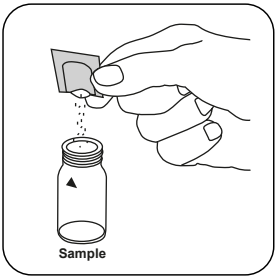
Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.



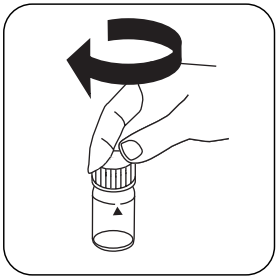
Appuyez sur la touche **ZERO**.



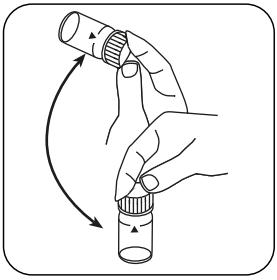
Retirez la cuvette de la chambre de mesure.



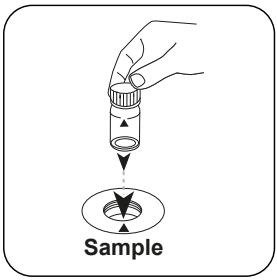
Ajoutez un **sachet de poudre Chlorine FREE-DPD/ F10**.



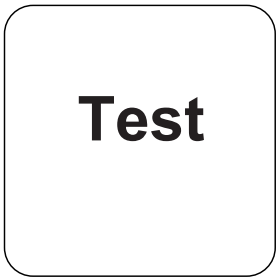
Fermez la(les) cuvette(s).



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.



Appuyez sur la touche **TEST** (XD: **START**).

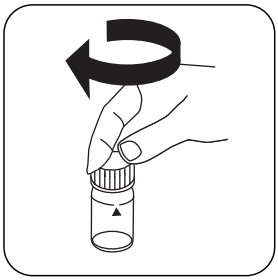
Le résultat s'affiche à l'écran en mg/L chlore libre.

Réalisation de la quantification Chlore total avec réactifs en sachet de poudre (PP)

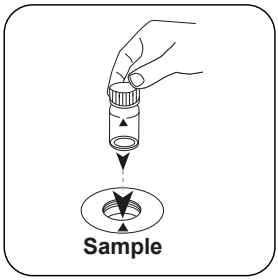
Sélectionnez la méthode sur l'appareil.

Sélectionnez également la quantification : total

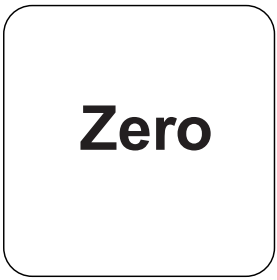
Remplissez une cuvette de 24 mm de **10 mL d'échantillon**.



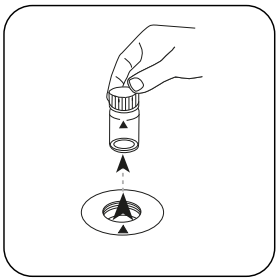
Fermez la(les) cuvette(s).



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

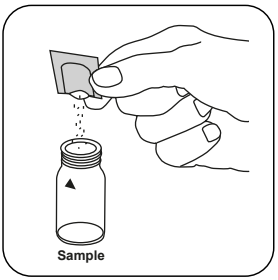


Appuyez sur la touche **ZERO**.

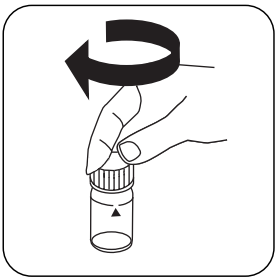


Retirez la cuvette de la chambre de mesure.

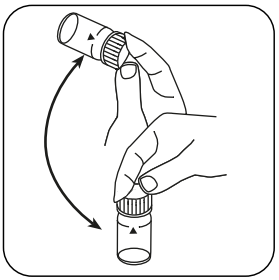
FR



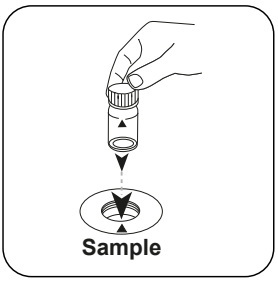
Ajoutez un **sachet de poudre Chlorine TOTAL-DPD/ F10**.



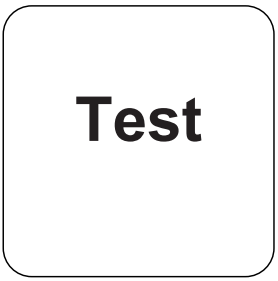
Fermez la(les) cuvette(s).



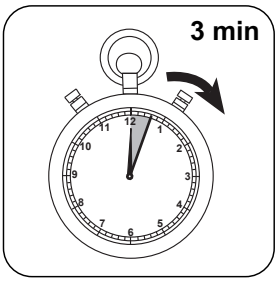
Retourner plusieurs fois pour mélanger le contenu (20 sec.) .



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



Appuyez sur la touche **TEST** (XD: **START**).



Attendez la fin du **temps de réaction de 3 minute(s)** .

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

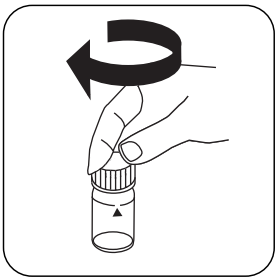
Le résultat s'affiche à l'écran en mg/L chlore total.

Réalisation de la quantification Chlore détermination différenciée avec réactifs en sachet de poudre (PP)

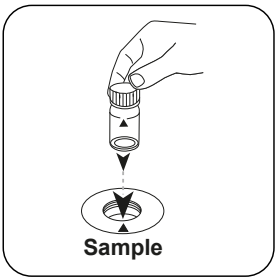
Sélectionnez la méthode sur l'appareil.

Sélectionnez également la quantification : différenciée

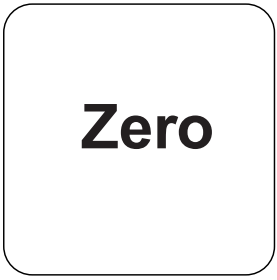
Remplissez une cuvette de 24 mm de **10 mL d'échantillon**.



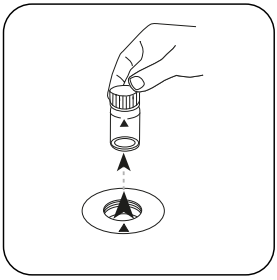
Fermez la(les) cuvette(s).



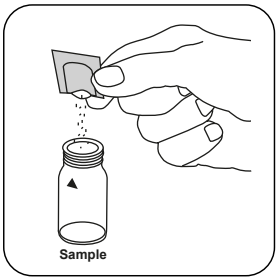
Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.



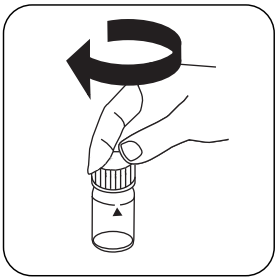
Appuyez sur la touche **ZERO**.



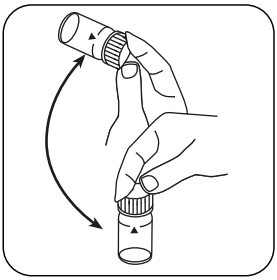
Retirez la cuvette de la chambre de mesure.



Ajoutez un **sachet de poudre Chlorine FREE-DPD/ F10**.



Fermez la(les) cuvette(s).



Retourner plusieurs fois pour mélanger le contenu (20 sec.) .

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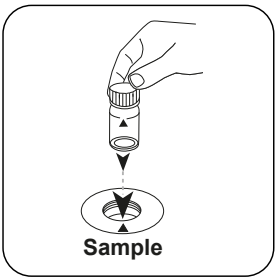
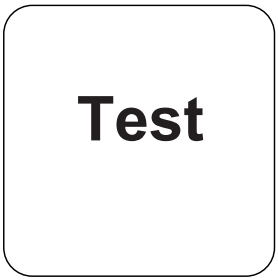
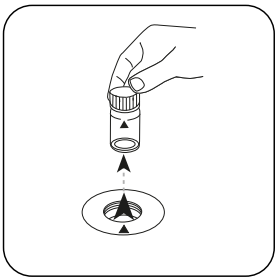


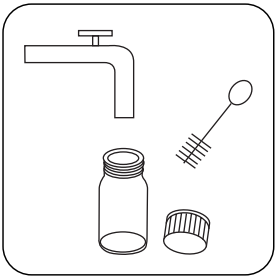
Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.



Appuyez sur la touche **TEST** (XD: **START**).

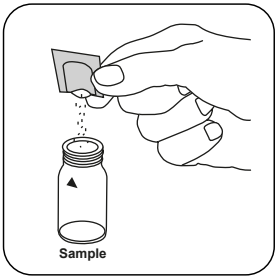


Retirez la cuvette de la chambre de mesure.

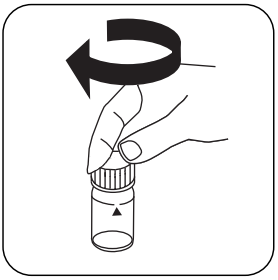


Nettoyez à fond la cuvette et le couvercle de la cuvette.

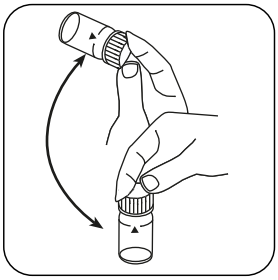
Remplissez une cuvette de 24 mm de **10 mL d'échantillon**.



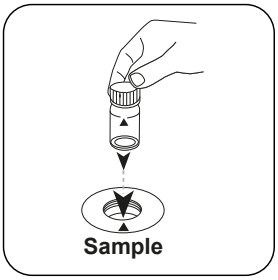
Ajoutez un **sachet de poudre TOTAL-DPD/ F10**.



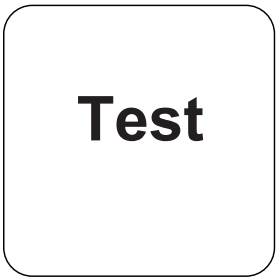
Fermez la(les) cuvette(s).

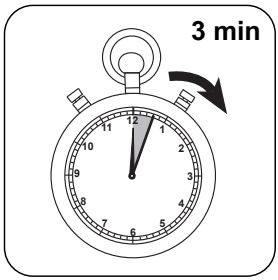


Retourner plusieurs fois pour mélanger le contenu (20 sec.) .



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





Appuyez sur la touche **TEST** (XD: **START**).

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.

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

Méthode Validation

Limite de détection	0.01 mg/L
Limite de détermination	0.03 mg/L
Fin de la gamme de mesure	2 mg/L
Sensibilité	1.68 mg/L / Abs
Intervalle de confiance	0.033 mg/L
Déviation standard	0.014 mg/L
Coefficient de variation	1.34 %

Conformité

EN ISO 7393-2

[a)]Détermination du libre, combiné et total

Chlore HR 2 PP M112

0.1 - 10 mg/L Cl_2

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

Échantillonnage

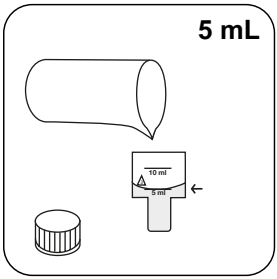
1. Lors de la préparation de l'échantillon, il faudra éviter le dégazage du chrome, par ex. par pipetage ou agitation.
2. L'analyse devra avoir lieu immédiatement après le prélèvement de l'échantillon.

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).

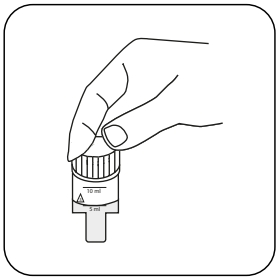
Réalisation de la quantification Chlore HR 2 libre avec réactifs en sachet de poudre (PP)

Sélectionnez la méthode sur l'appareil.

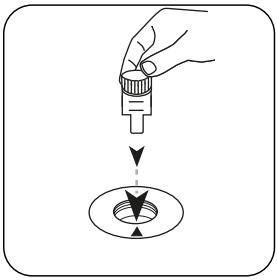


Remplissez une cuvette de 10 mm de **5 mL d'échantillon**.

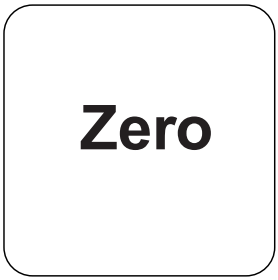
MD50: Remplissez une cuvette de 24 mm de **10 mL d'échantillon**.



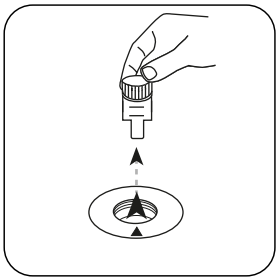
Fermez la(les) cuvette(s).



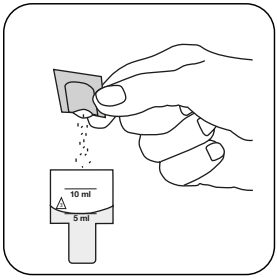
Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.



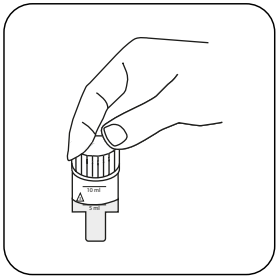
Appuyez sur la touche **ZERO**.



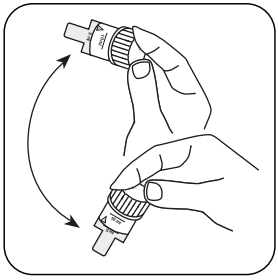
Retirez la **cuvette** de la chambre de mesure.



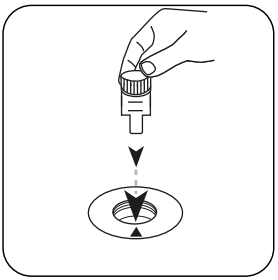
Ajoutez un **sachet de poudre Vario Chlorine Free / F25**.



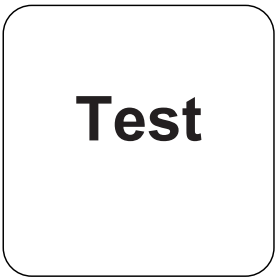
Fermez la(les) cuvette(s).



Mélangez le contenu en mettant le tube plusieurs fois à l'envers (20 sec.) puis à l'endroit.



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

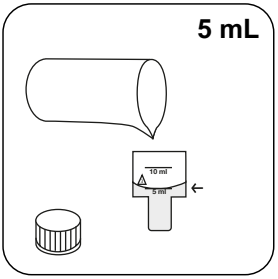


Appuyez sur la touche **TEST** (XD: **START**).

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

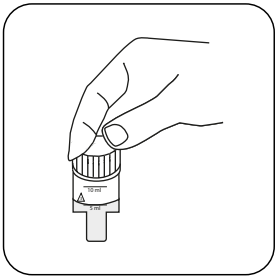
Réalisation de la quantification Chlore HR 2 total avec réactifs en sachet de poudre (PP)

Sélectionnez la méthode sur l'appareil.

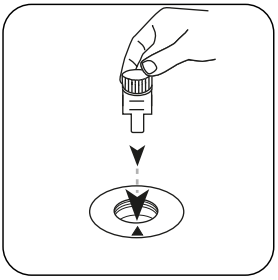


Remplissez une cuvette de 10 mm de **5 mL d'échantillon**.

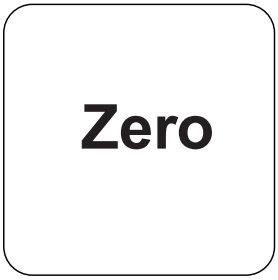
MD50: Remplissez une cuvette de 24 mm de **10 mL d'échantillon**.



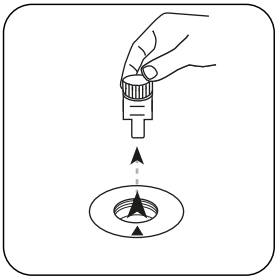
Fermez la(les) cuvette(s).



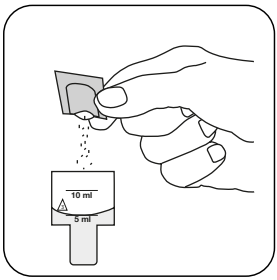
Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.



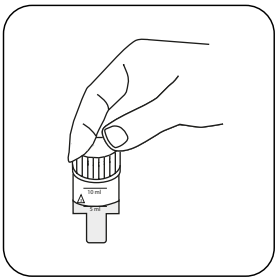
Appuyez sur la touche **ZERO**.



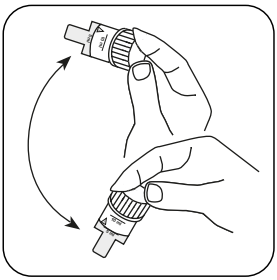
Retirez la **cuvette** de la chambre de mesure.



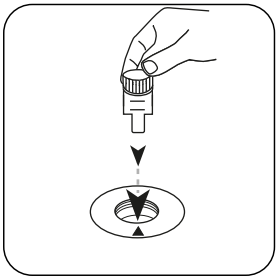
Ajoutez un **sachet de poudre Vario Chlorine Total / F25**.



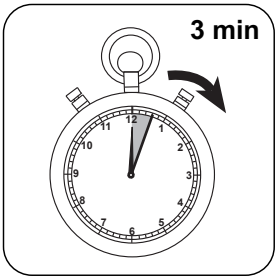
Fermez la(les) cuvette(s).



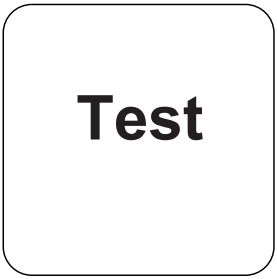
Mélangez le contenu en mettant le tube plusieurs fois à l'envers (20 sec.) puis à l'endroit.



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)** .



Appuyez sur la touche **TEST** (XD: **START**).

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

Méthode chimique

DPD

Appendice

FR

Interférences

Interférences persistantes

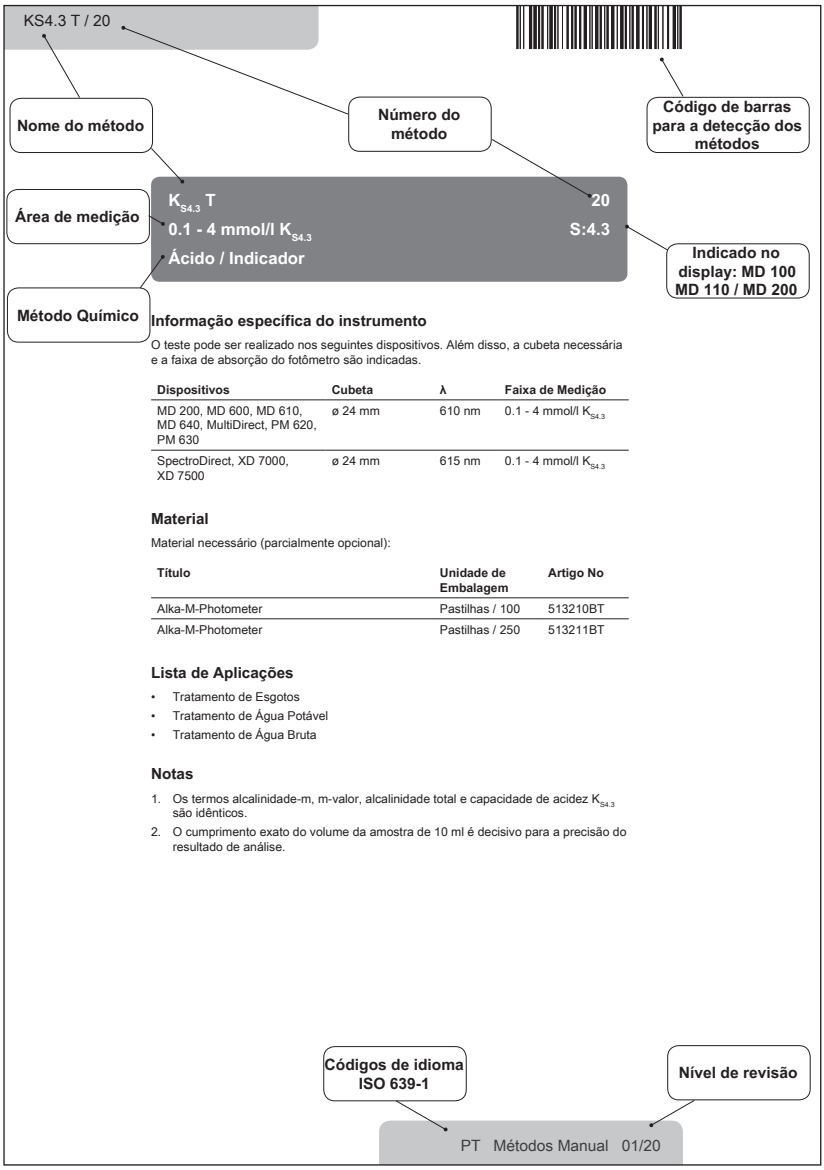
- Les agents oxydants contenus dans les échantillons réagissent tous comme le chlore, ce qui entraîne des résultats plus élevés.

Interférences exclues

- Les perturbations causées par le cuivre et le fer (III) seront éliminées par EDTA.
- Les concentrations de chlore supérieures à 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


KS4.3 T / 20
Nome do método
Número do método
Código de barras para a detecção dos métodos
Área de medição
$K_{S4.3}$ T
20
0.1 - 4 mmol/l $K_{S4.3}$
S:4.3
Ácido / Indicador
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 $K_{S4.3}$
SpectroDirect, XD 7000, XD 7500 | ø 24 mm | 615 nm | 0.1 - 4 mmol/l $K_{S4.3}$
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 $K_{S4.3}$ 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

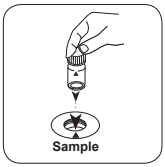
Realização da determinação Capacidade de acidez $K_{S4.3}$ com pastilha

Escolher o método no equipamento.

Para este método não tem de ser efetuada uma medição ZERO nos seguintes equipamentos: XD 7000, XD 7500

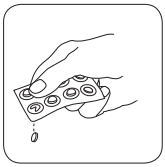
Encher a célula de 24 mm com **10 ml de amostra** .

Fechar a(s) célula(s).

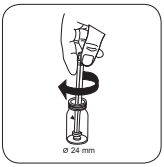


Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.

• • •



Pastilha ALKA-M-PHOTOMETER.



Esmagar a(s) pastilha(s) rodando ligeiramente.

Fechar a(s) célula(s).

Cloro T M100

0.01 - 6.0 mg/L Cl_2 [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).

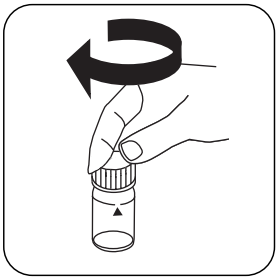
Notas

1. Os pastilhas Evo podem ser utilizadas como alternativa à pastilha padrão correspondente (por exemplo, DPD Nº 3 Evo em vez da DPD Nº 3).

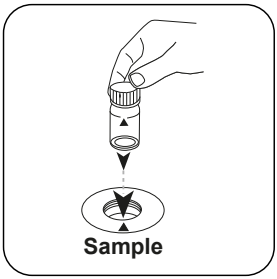
Realização da determinação Cloro livre com pastilha

Escolher o método no equipamento.

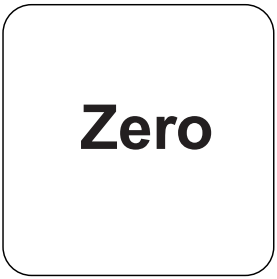
Encher a célula de 24 mm com **10 mL de amostra** .



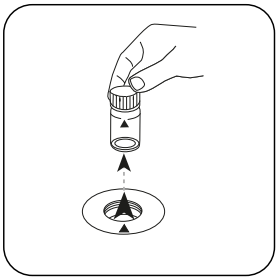
Fechar a(s) célula(s).



Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.

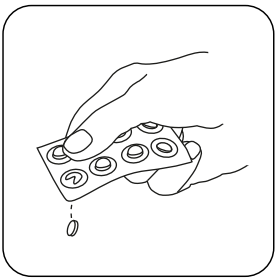


Premir a tecla **ZERO**.

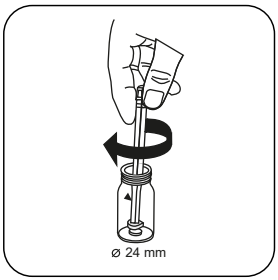


Retirar a célula do compartimento de medição.

Esvaziar a célula até ficarem apenas algumas gotas.

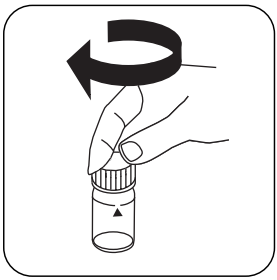


Pastilha DPD No. 1.

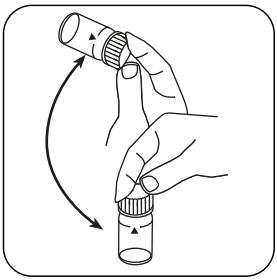


Esmagar a(s) pastilha(s) rodando ligeiramente.

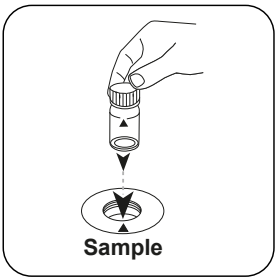
Encher a célula até à **marca de 10 mL** com a **amostra** .



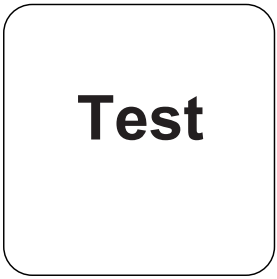
Fechar a(s) célula(s).



Dissolver a(s) pastilha(s) girando.



Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.



Premir a tecla **TEST** (XD: **START**).

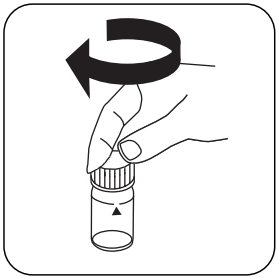
No visor aparece o resultado em mg/L Cloro livre.

Realização da determinação Cloro total com pastilha

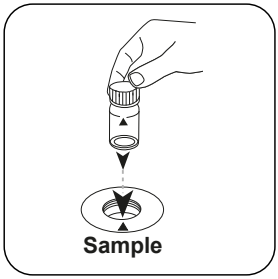
Escolher o método no equipamento.

Escolha ainda a determinação: total

Encher a célula de 24 mm com **10 mL de amostra** .

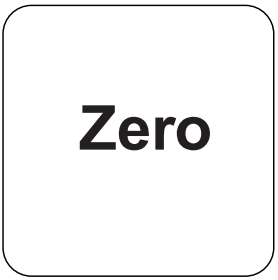


Fechar a(s) célula(s).

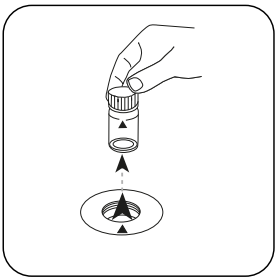


Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.

PT

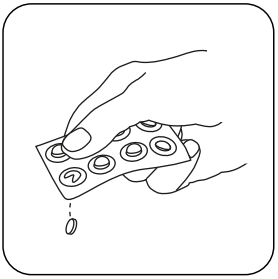


Premir a tecla **ZERO**.

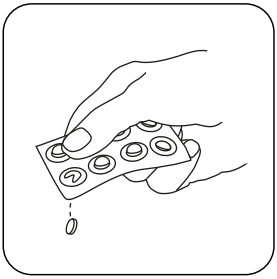


Retirar a célula do compartimento de medição.

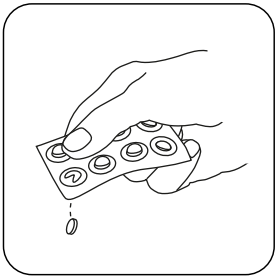
Esvaziar a célula até ficarem apenas algumas gotas.



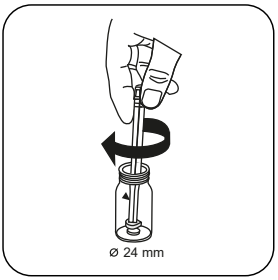
Pastilha DPD No. 1.



Pastilha DPD No. 3.

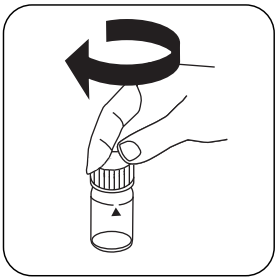


Como alternativa aos comprimidos DPD No. 1 e No. 3, pode ser adicionado 1 comprimido DPD No. 4.

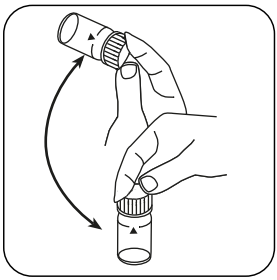


Esmagar a(s) pastilha(s) rodando ligeiramente.

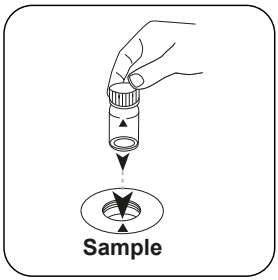
Encher a célula até à **marca de 10 mL** com a **amostra** .



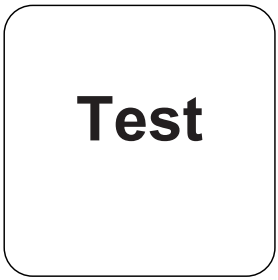
Fechar a(s) célula(s).



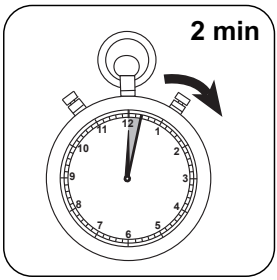
Dissolver a(s) pastilha(s) girando.



Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.



Premir a tecla **TEST** (XD: **START**).



Aguardar **2 minuto(s) de tempo de reação**.

Decorrido o tempo de reação, a medição é efetuada automaticamente.

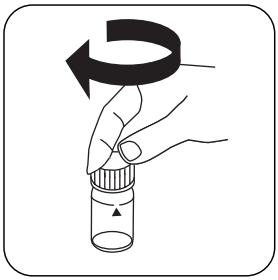
No visor aparece o resultado em mg/L Cloro total.

Realização da determinação Cloro diferenciado com pastilha

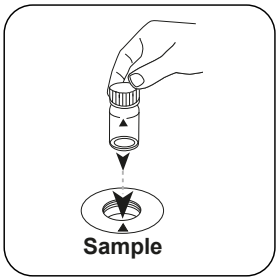
Escolher o método no equipamento.

Escolha ainda a determinação: diferenciado

Encher a célula de 24 mm com **10 mL de amostra** .

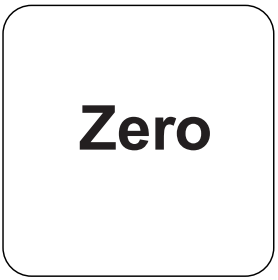


Fechar a(s) célula(s).

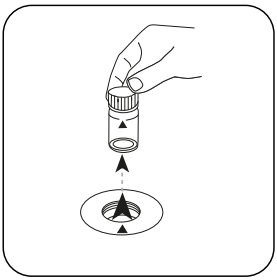


Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.

PT

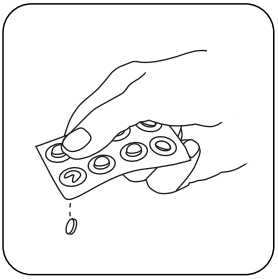


Premir a tecla **ZERO**.

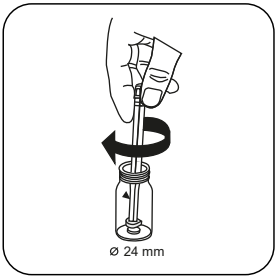


Retirar a célula do compartimento de medição.

Esvaziar a célula até ficarem apenas algumas gotas.



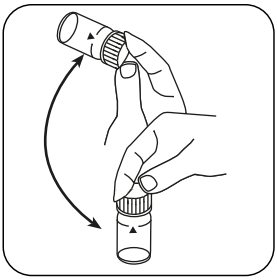
Pastilha DPD No. 1.



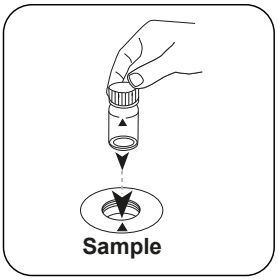
Esmagar a(s) pastilha(s) rodando ligeiramente.

Encher a célula até à **marca de 10 mL** com a **amostra** .

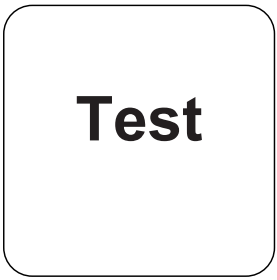
Fechar a(s) célula(s).



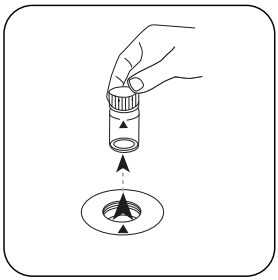
Dissolver a(s) pastilha(s) girando.



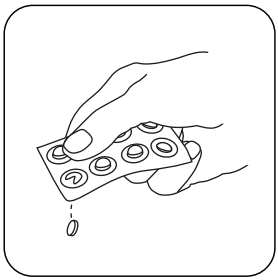
Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.



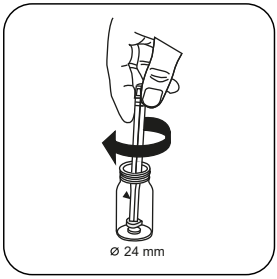
Premir a tecla **TEST** (XD: **START**).



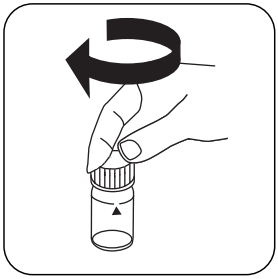
Retirar a célula do compartimento de medição.



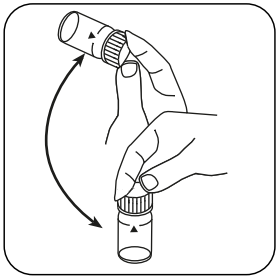
Pastilha DPD No. 3.



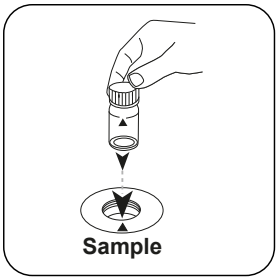
Esmagar a(s) pastilha(s) rodando ligeiramente.



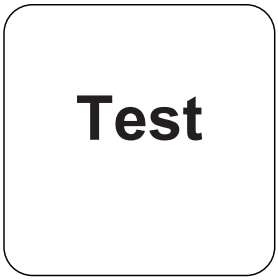
Fechar a(s) célula(s).



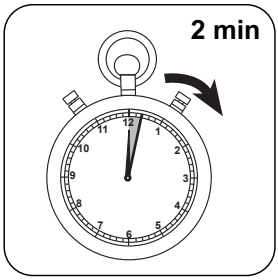
Dissolver a(s) pastilha(s) girando.



Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.



Premir a tecla **TEST** (XD: **START**).



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 Pesistentes

- 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

Validação de método

Limite de Detecção	0.02 mg/L
Limite de Determinação	0.06 mg/L
Fim da Faixa de Medição	6 mg/L
Sensibilidade	2.05 mg/L / Abs
Faixa de Confiança	0.04 mg/L
Desvio Padrão	0.019 mg/L
Coeficiente de Variação	0.87 %

Conformidade

EN ISO 7393-2

[a]Determinação do possível livre, vinculado, total | [e]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 Cl_2 [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.

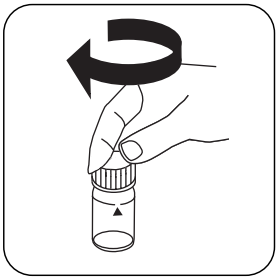
PT

Realização da determinação Cloro livre com reagente líquido

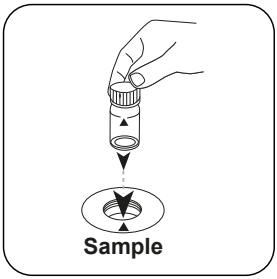
Escolher o método no equipamento.

Escolha ainda a determinação: livre

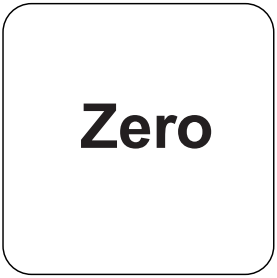
Encher a célula de 24 mm com **10 mL de amostra** .



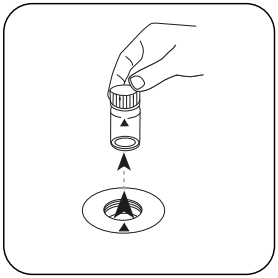
Fechar a(s) célula(s).



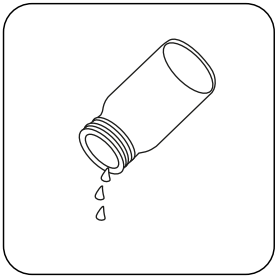
Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.



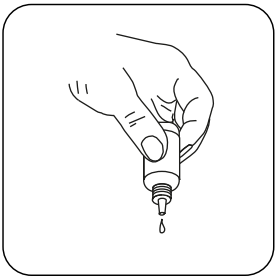
Premir a tecla **ZERO**.



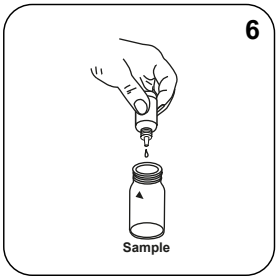
Retirar a célula do compartimento de medição.



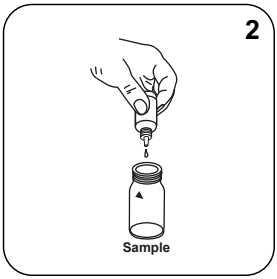
Esvaziar a célula.



Manter os frascos conta gotas na vertical e pressionar lentamente para adicionar gotas de igual dimensão.

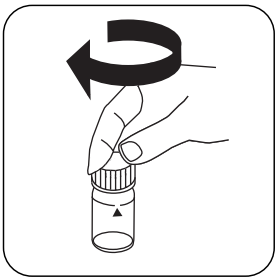


Adicionar **6 gotas DPD 1 Buffer Solution** à célula de amostra.

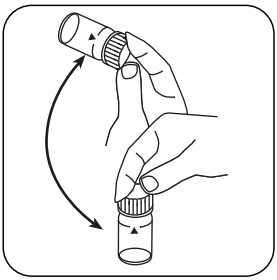


Adicionar **2 gotas DPD 1 Reagent Solution** à célula de amostra.

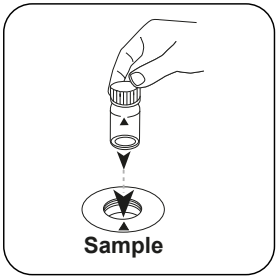
Encher a célula até à **marca de 10 mL** com a **amostra** .



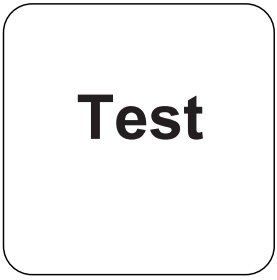
Fechar a(s) célula(s).



Misturar o conteúdo girando.



Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.



Premir a tecla **TEST** (XD: **START**).

No visor aparece o resultado em mg/L Cloro livre.

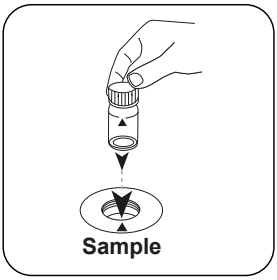
Realização da determinação Cloro total com reagente líquido

Escolher o método no equipamento.

Escolha ainda a determinação: total

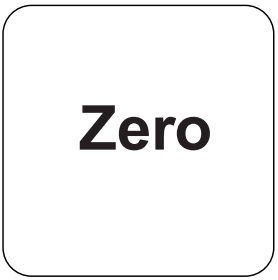
Encher a célula de 24 mm com **10 mL de amostra** .

Fechar a(s) célula(s).

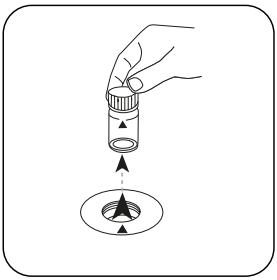


Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.

PT

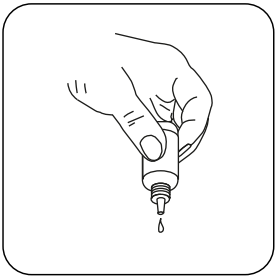


Premir a tecla **ZERO**.

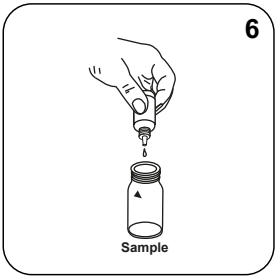


Retirar a célula do compartimento de medição.

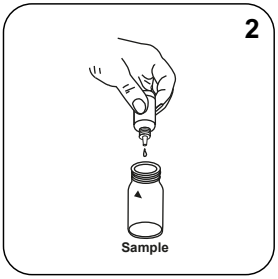
Esvaziar a célula.



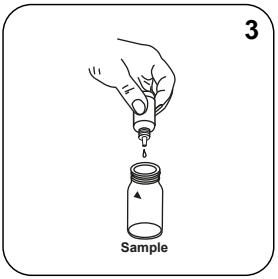
Manter os frascos conta gotas na vertical e pressionar lentamente para adicionar gotas de igual dimensão.



Adicionar **6 gotas DPD 1 Buffer Solution** à célula de amostra.

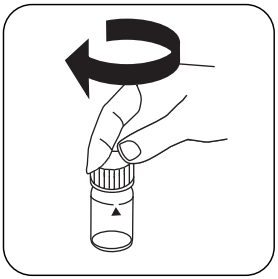


Adicionar **2 gotas DPD 1 Reagent Solution** à célula de amostra.

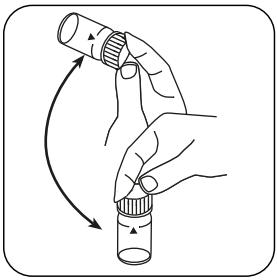


Adicionar **3 gotas DPD 3 Solution** à célula de amostra.

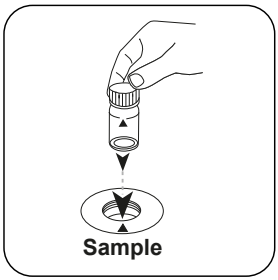
Encher a célula até à **marca de 10 mL** com a **amostra** .



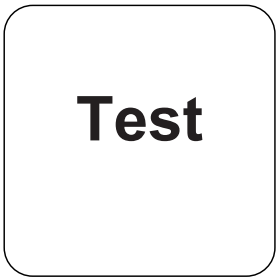
Fechar a(s) célula(s).



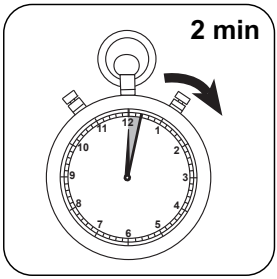
Misturar o conteúdo girando.



Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.



Premir a tecla **TEST** (XD: **START**).



Aguardar **2 minuto(s) de tempo de reação**.

Decorrido o tempo de reação, a medição é efetuada automaticamente.

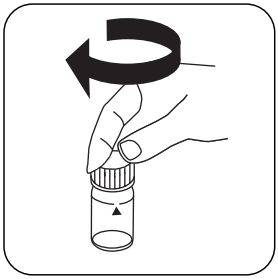
No visor aparece o resultado em mg/L Cloro total.

Realização da determinação Cloro diferenciado com reagente líquido

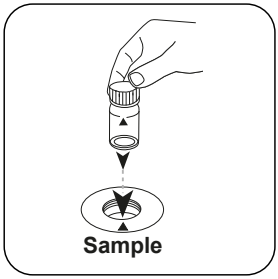
Escolher o método no equipamento.

Escolha ainda a determinação: diferenciado

Encher a célula de 24 mm com **10 mL de amostra** .

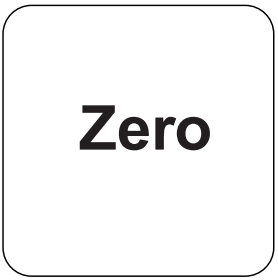


Fechar a(s) célula(s).

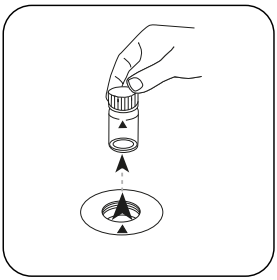


Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.

PT

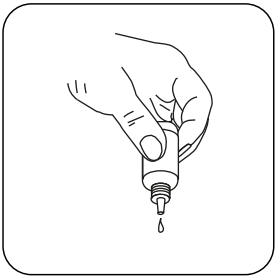


Premir a tecla **ZERO**.

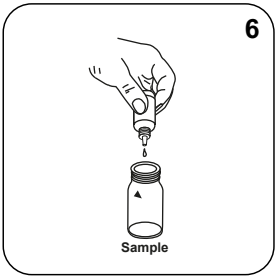


Retirar a célula do compartimento de medição.

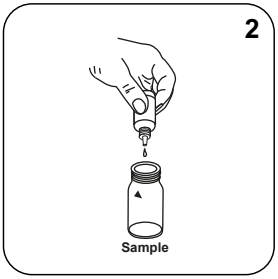
Esvaziar a célula.



Manter os frascos conta gotas na vertical e pressionar lentamente para adicionar gotas de igual dimensão.

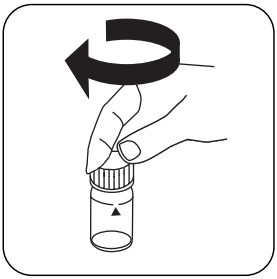


Adicionar **6 gotas DPD 1 Buffer Solution** à célula de amostra.

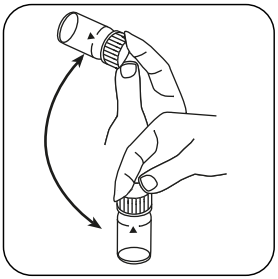


Adicionar **2 gotas DPD 1 Reagent Solution** à célula de amostra.

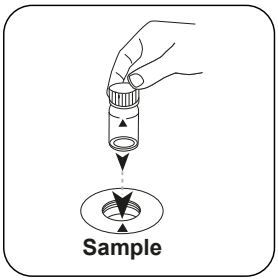
Encher a célula até à **marca de 10 mL** com a **amostra** .



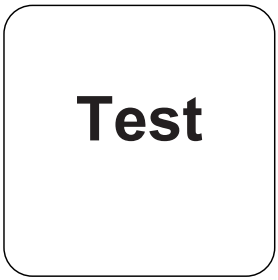
Fechar a(s) célula(s).



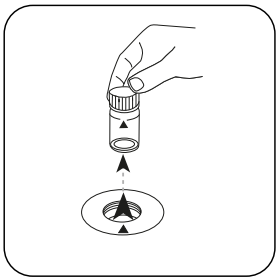
Misturar o conteúdo girando.



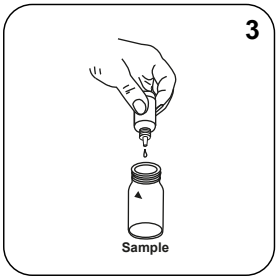
Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.



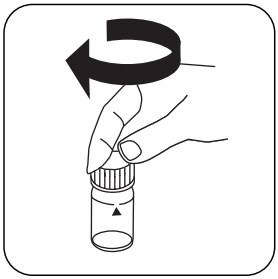
Premir a tecla **TEST** (XD: **START**).



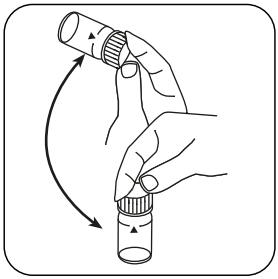
Retirar a célula do compartimento de medição.



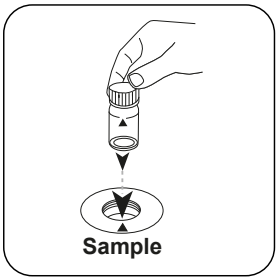
Adicionar **3 gotas DPD 3 Solution** à célula de amostra.



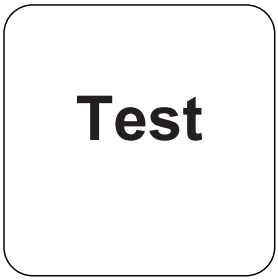
Fechar a(s) célula(s).



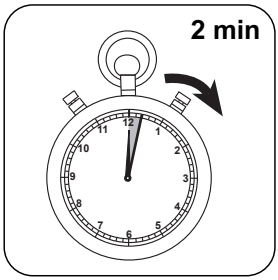
Misturar o conteúdo girando.



Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.



Premir a tecla **TEST** (XD: **START**).



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 Pesistentes

- 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

[a)]Determinação do possível livre, vinculado, total

Cloro HR T M103

0.1 - 10 mg/L Cl_2 [a] CL10

DPD

PT

Material

Material necessário (parcialmente opcional):

Reagentes	Unidade de Embalagem	Código do Produto
DPD Nº. 1 HR	Pastilhas / 100	511500BT
DPD Nº. 1 HR	Pastilhas / 250	511501BT
DPD Nº. 1 HR	Pastilhas / 500	511502BT
DPD Nº. 3 HR	Pastilhas / 100	511590BT
DPD Nº. 3 HR	Pastilhas / 250	511591BT
DPD Nº. 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 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.3 HR Evo	Pastilhas / 100	511920BT
DPD Nº. 3 HR Evo	Pastilhas / 250	511921BT
DPD Nº. 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 Nº 3 Evo em vez da DPD Nº 3).

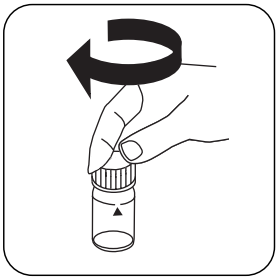
Realização da determinação Cloro HR livre com pastilha

Escolher o método no equipamento.

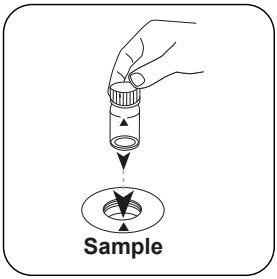
Escolha ainda a determinação: livre

PT

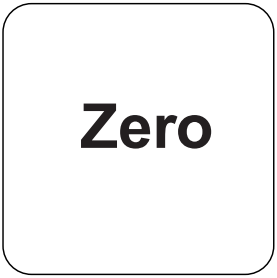
Encher a célula de 24 mm com **10 mL de amostra** .



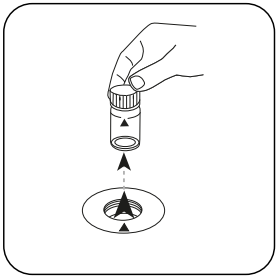
Fechar a(s) célula(s).



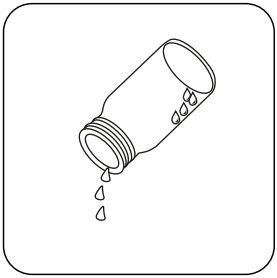
Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.



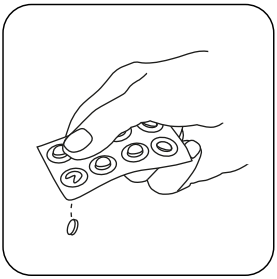
Premir a tecla **ZERO**.



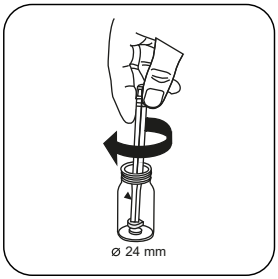
Retirar a célula do compartimento de medição.



Esvaziar a célula até ficarem apenas algumas gotas.

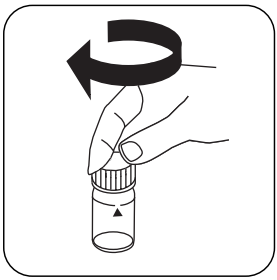


Pastilha DPD No. 1 HR .

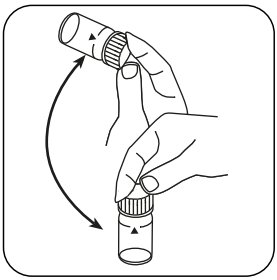


Esmagar a(s) pastilha(s) rodando ligeiramente.

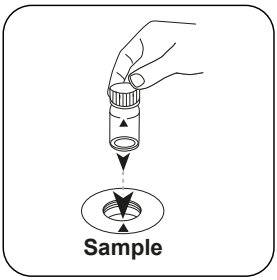
Encher a célula até à **marca de 10 mL** com a **amostra** .



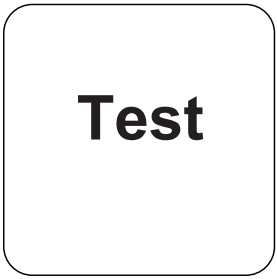
Fechar a(s) célula(s).



Dissolver a(s) pastilha(s) girando.



Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.



Premir a tecla **TEST** (XD: **START**).

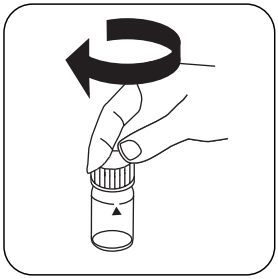
No visor aparece o resultado em mg/L Cloro livre.

Realização da determinação Cloro HR total com pastilha

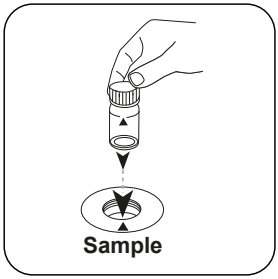
Escolher o método no equipamento.

Escolha ainda a determinação: total

Encher a célula de 24 mm com **10 mL de amostra** .

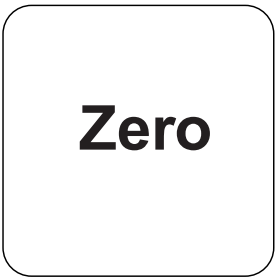


Fechar a(s) célula(s).

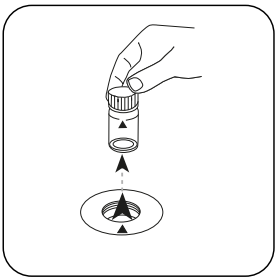


Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.

PT

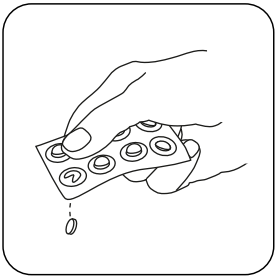


Premir a tecla **ZERO**.

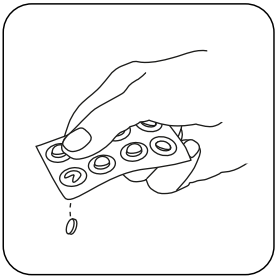


Retirar a célula do compartimento de medição.

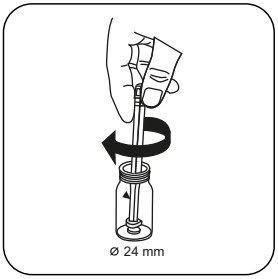
Esvaziar a célula até ficarem apenas algumas gotas.



Pastilha DPD No. 1 HR .



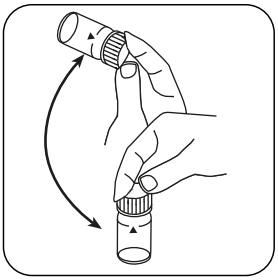
Pastilha DPD No. 3 HR .



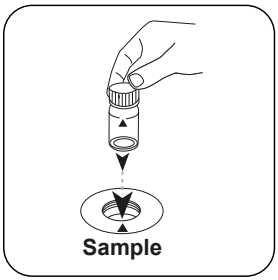
Esmagar a(s) pastilha(s) rodando ligeiramente.

Encher a célula até à **marca de 10 mL** com a **amostra** .

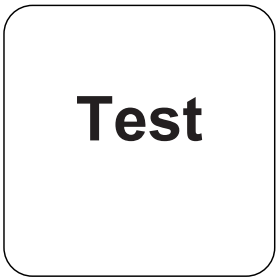
Fechar a(s) célula(s).



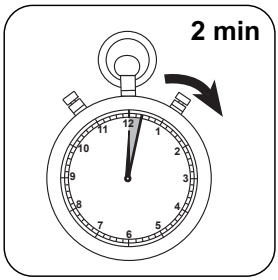
Dissolver a(s) pastilha(s) girando.



Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.



Premir a tecla **TEST** (XD: **START**).



Aguardar **2 minuto(s) de tempo de reação**.

Decorrido o tempo de reação, a medição é efetuada automaticamente.

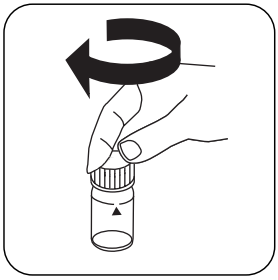
No visor aparece o resultado em mg/L Cloro total.

Realização da determinação Cloro HR diferenciado com pastilha

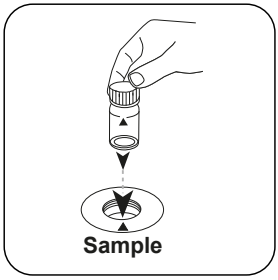
Escolher o método no equipamento.

Escolha ainda a determinação: diferenciado

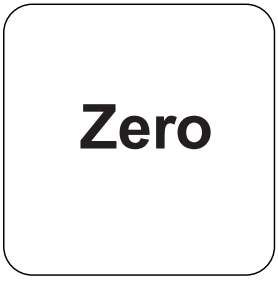
Encher a célula de 24 mm com **10 mL de amostra** .



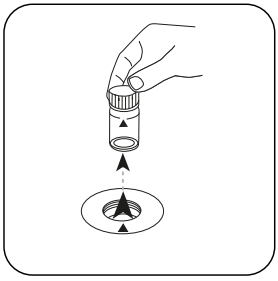
Fechar a(s) célula(s).



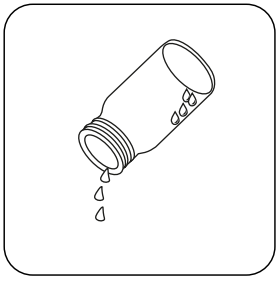
Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.



Premir a tecla **ZERO**.

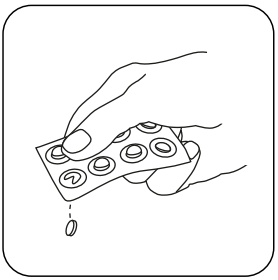


Retirar a célula do compartimento de medição.

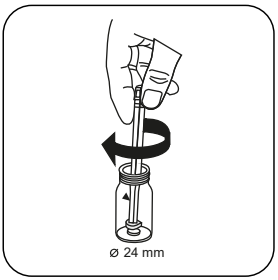


Esvaziar a célula até ficarem apenas algumas gotas.

PT

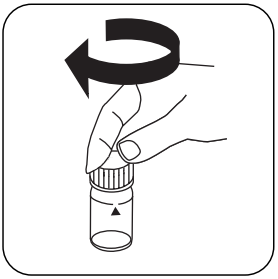


Pastilha DPD No. 1 HR .

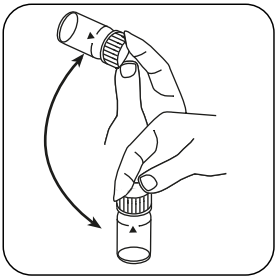


Esmagar a(s) pastilha(s) rodando ligeiramente.

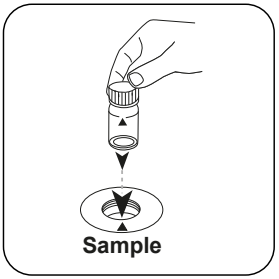
Encher a célula até à **marca de 10 mL** com a **amostra** .



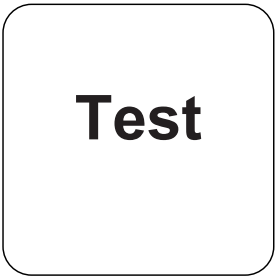
Fechar a(s) célula(s).



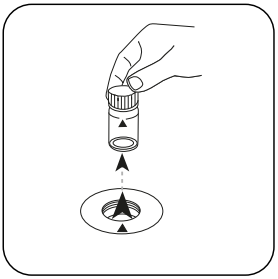
Dissolver a(s) pastilha(s) girando.



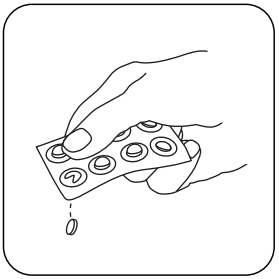
Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.



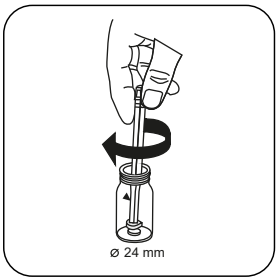
Premir a tecla **TEST** (XD: **START**).



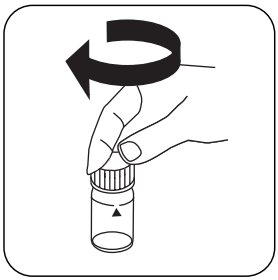
Retirar a célula do compartimento de medição.



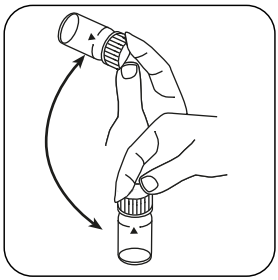
Pastilha DPD No. 3 HR .



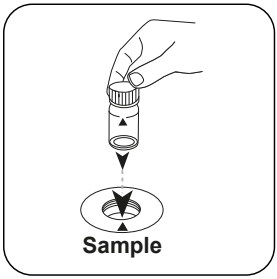
Esmagar a(s) pastilha(s) rodando ligeiramente.



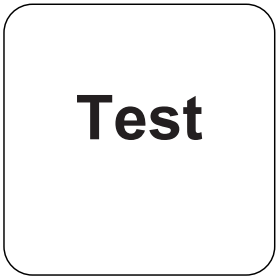
Fechar a(s) célula(s).



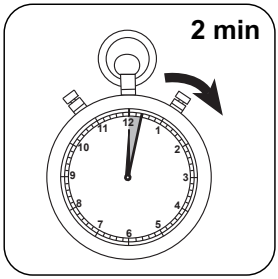
Dissolver a(s) pastilha(s) girando.



Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.



Premir a tecla **TEST** (XD: **START**).



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 Pesistentes

- 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 | [e]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 | [f]incluindo vareta de agitação

Cloro PP M110

0.02 - 2 mg/L Cl_2 [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

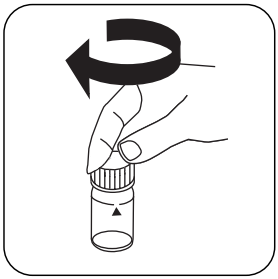
1. Limpeza das células:
   Uma vez que muitos produtos de limpeza domésticos (p. ex. lava-louça) contêm substâncias redutoras, na determinação de cloro pode haver demasiadas reduções. Para excluir este erro de medição, os equipamentos de vidro não deviam ter a capacidade de absorção de cloro. Para esse 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

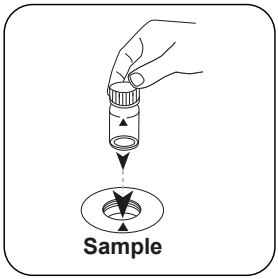
Escolher o método no equipamento.

Escolha ainda a determinação: livre

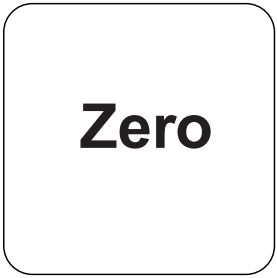
Encher a célula de 24 mm com **10 mL de amostra** .



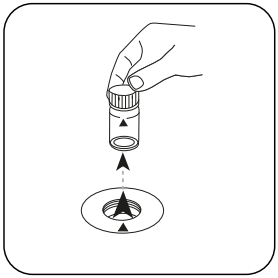
Fechar a(s) célula(s).



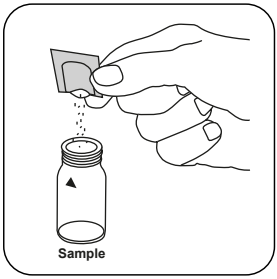
Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.



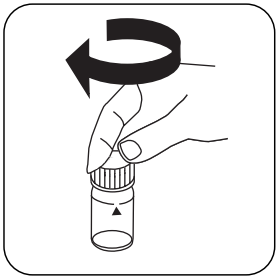
Premir a tecla **ZERO**.



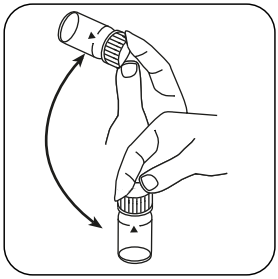
Retirar a célula do compartimento de medição.



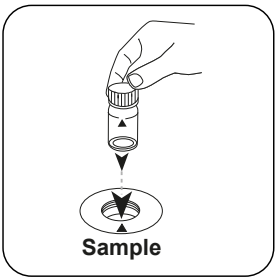
Adicionar um **pacote de pó Chlorine FREE-DPD/ F10** .

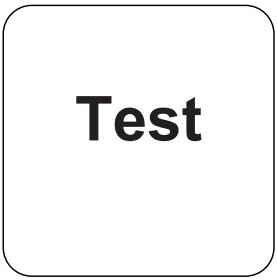


Fechar a(s) célula(s).



Misturar o conteúdo girando (20 sec.).





PT

Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.

Premir a tecla **TEST** (XD: **START**).

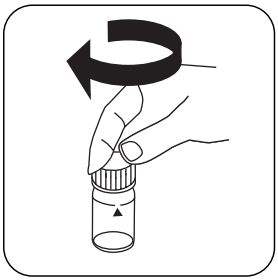
No visor aparece o resultado em mg/L Cloro livre.

Realização da determinação Cloro total com pacotes de pó

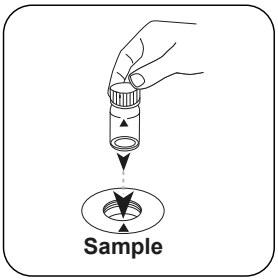
Escolher o método no equipamento.

Escolha ainda a determinação: total

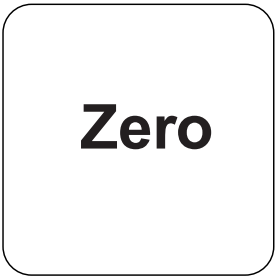
Encher a célula de 24 mm com **10 mL de amostra** .



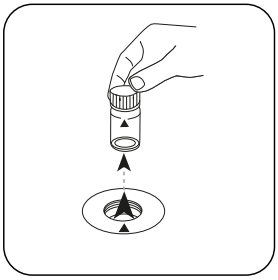
Fechar a(s) célula(s).



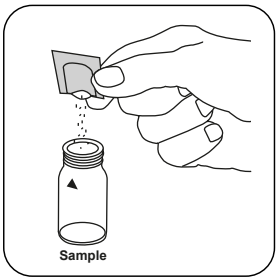
Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.



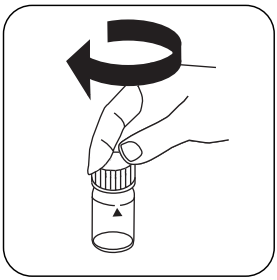
Premir a tecla **ZERO**.



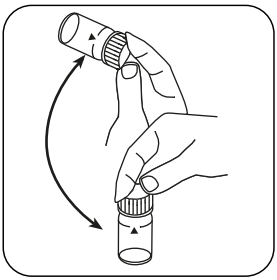
Retirar a célula do compartimento de medição.



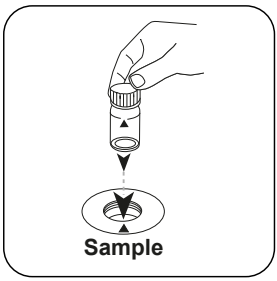
Adicionar um **pacote de pó Chlorine TOTAL-DPD/ F10** .



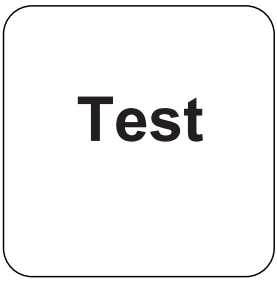
Fechar a(s) célula(s).



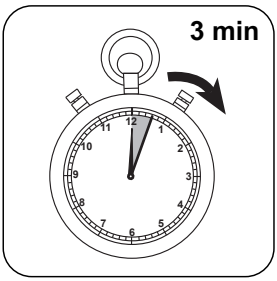
Misturar o conteúdo girando (20 sec.).



Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.



Premir a tecla **TEST** (XD: **START**).



Aguardar **3 minuto(s) de tempo de reação**.

Decorrido o tempo de reação, a medição é efetuada automaticamente.

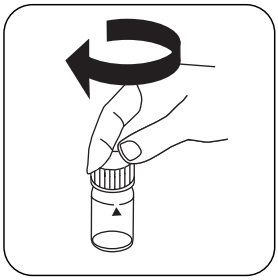
No visor aparece o resultado em mg/L Cloro total.

Realização da determinação Cloro diferenciado com pacotes de pó

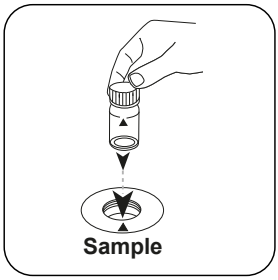
Escolher o método no equipamento.

Escolha ainda a determinação: diferenciado

Encher a célula de 24 mm com **10 mL de amostra** .

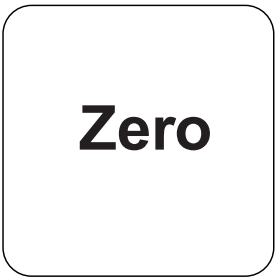


Fechar a(s) célula(s).

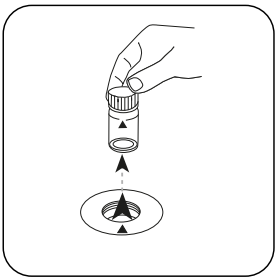


Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.

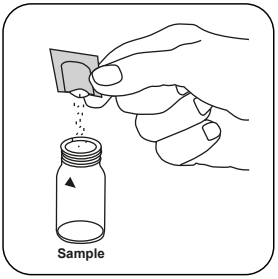
PT



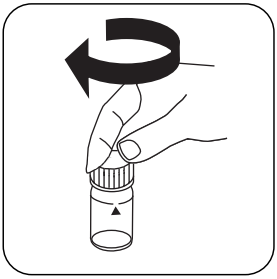
Premir a tecla **ZERO**.



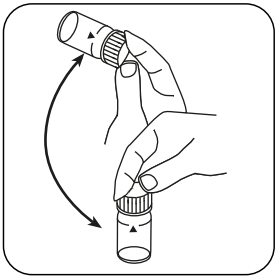
Retirar a célula do compartimento de medição.



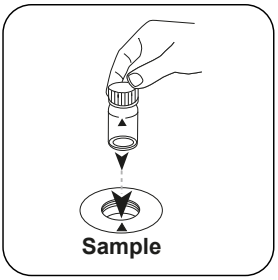
Adicionar um **pacote de pó Chlorine FREE-DPD/ F10** .



Fechar a(s) célula(s).

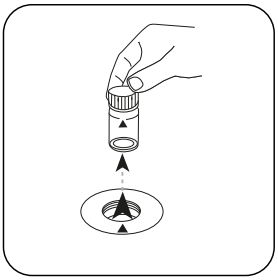


Misturar o conteúdo girando (20 sec.).



Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.

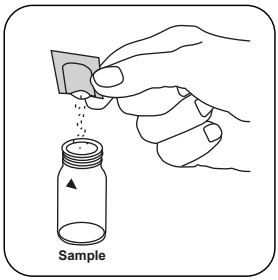
Premir a tecla **TEST** (XD: **START**).



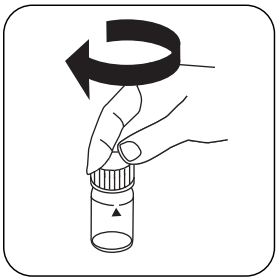
Retirar a célula do compartimento de medição.

Limpar bem a célula e a tampa da mesma.

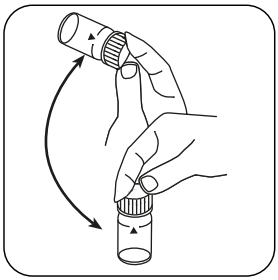
Encher a célula de 24 mm com **10 mL de amostra** .



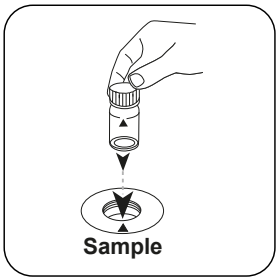
Adicionar um **pacote de pó TOTAL-DPD/ F10** .



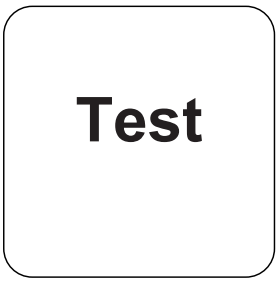
Fechar a(s) célula(s).



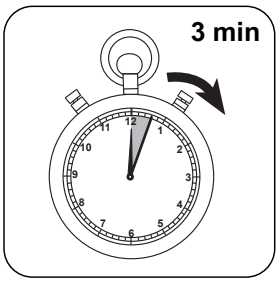
Misturar o conteúdo girando (20 sec.).



Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.



Premir a tecla **TEST** (XD: **START**).



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

PT

Texto de Interferências

Interferências Pesistentes

- 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

Validação de método

Limite de Detecção	0.01 mg/L
Limite de Determinação	0.03 mg/L
Fim da Faixa de Medição	2 mg/L
Sensibilidade	1.68 mg/L / Abs
Faixa de Confiança	0.033 mg/L
Desvio Padrão	0.014 mg/L
Coeficiente de Variação	1.34 %

Conformidade

EN ISO 7393-2

[a)]Determinação do possível livre, vinculado, total

Cloro HR 2 PP M112

0.1 - 10 mg/L Cl_2

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

Amostragem

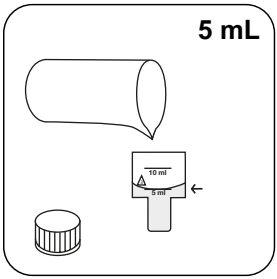
1. Na preparação da amostra é preciso evitar a libertação de gases de cloro, p. ex. através da pipetagem e agitação.
2. A análise tem de ser efetuada logo após a recolha da amostra.

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).

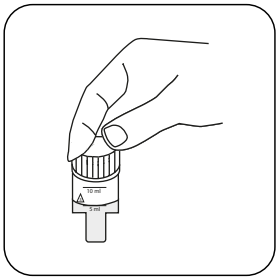
Realização da determinação Cloro HR 2 livre com pacotes de pó

Escolher o método no equipamento.

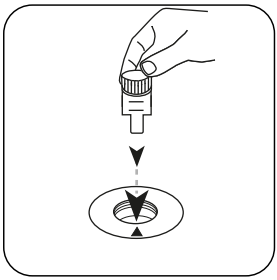


Encher a célula de 10 mm com **5 mL de amostra** .

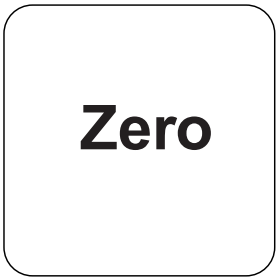
MD50: Encher a célula de 24 mm com **10 mL de amostra** .



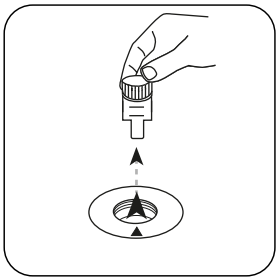
Fechar a(s) célula(s).



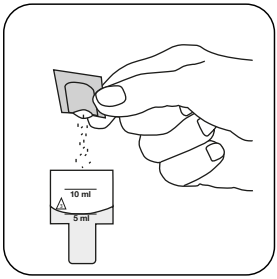
Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.



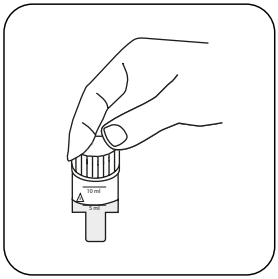
Premir a tecla **ZERO**.



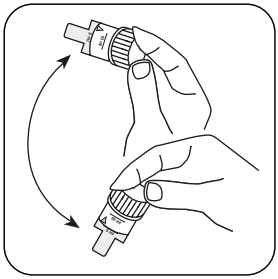
Retirar a **célula** do compartimento de medição.



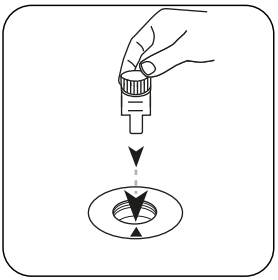
Adicionar um **pacote de pó Vario Chlorine Free / F25** .



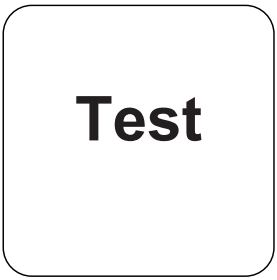
Fechar a(s) célula(s).



Misturar o conteúdo girando (20 sec.).



Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.

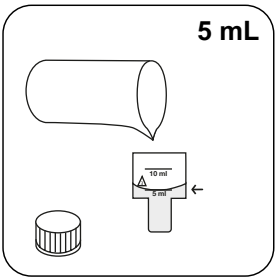


Premir a tecla **TEST** (XD: **START**).

No visor aparece o resultado em mg/L Cloro.

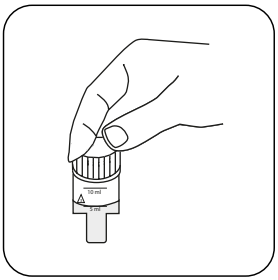
Realização da determinação Cloro HR 2 total com pacotes de pó

Escolher o método no equipamento.

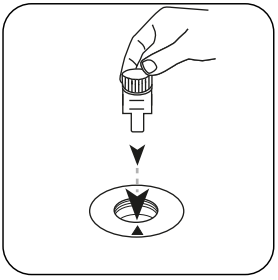


Encher a célula de 10 mm com **5 mL de amostra** .

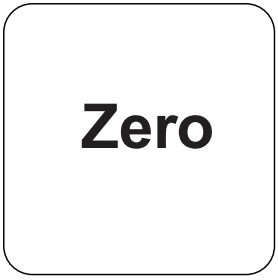
MD50: Encher a célula de 24 mm com **10 mL de amostra** .



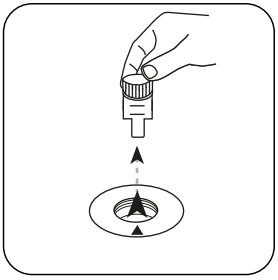
Fechar a(s) célula(s).



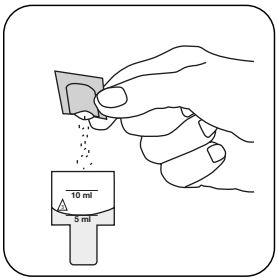
Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.



Premir a tecla **ZERO**.



Retirar a **célula** do compartimento de medição.



Adicionar um **pacote de pó Vario Chlorine Total / F25**

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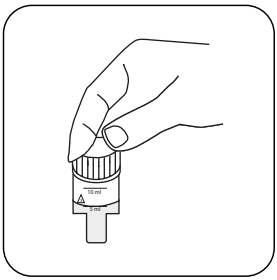
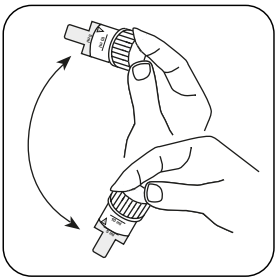
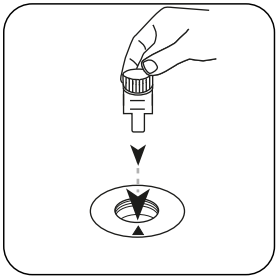


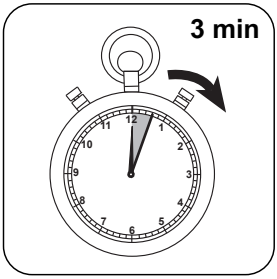
Fechar a(s) célula(s).



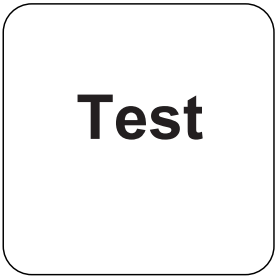
Misturar o conteúdo girando (20 sec.).



Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.



Aguardar **3 minuto(s) de tempo de reação**.



Premir a tecla **TEST** (XD: **START**).

No visor aparece o resultado em mg/L Cloro.

Método Químico

DPD

Apêndice

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Texto de Interferências

Interferências Pesistentes

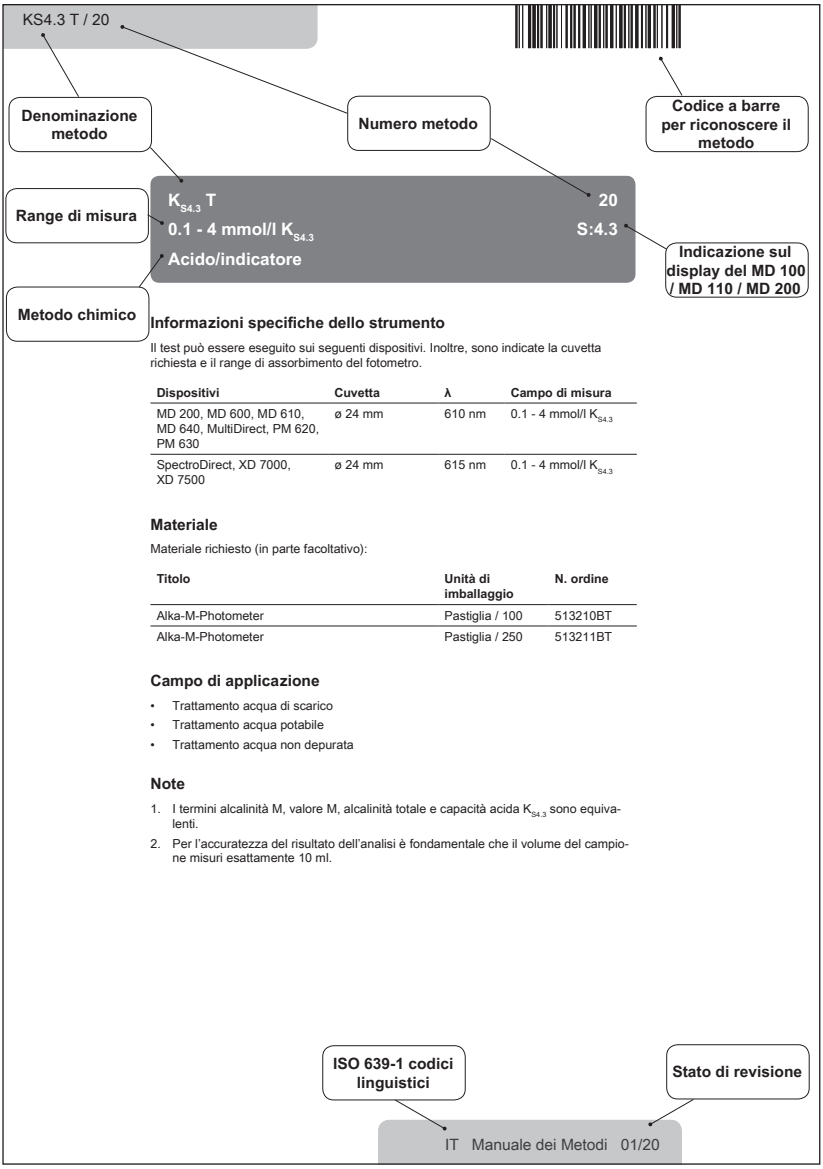
- Todos os oxidantes presentes nas amostras reagem como o cloro, o que leva a resultados demasiado altos.

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



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.

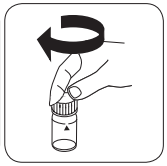
Svolgimento della misurazione

Esecuzione della rilevazione Capacità acida $K_{S4.3}$ con pastiglia

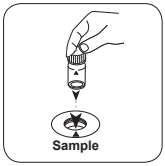
Selezionare il metodo nel dispositivo.

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**.

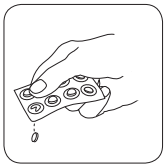


Chiudere la/e cuvetta/e.

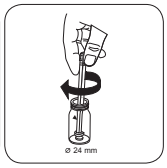


Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.

• • •



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 Cl_2 [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).

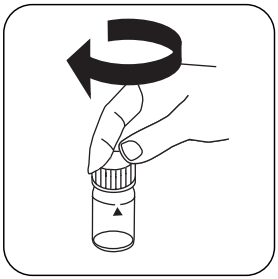
Note

1. Le compresse Evo possono essere utilizzate come alternativa alla corrispondente compressa standard (ad esempio DPD No. 3 Evo invece di DPD No. 3).

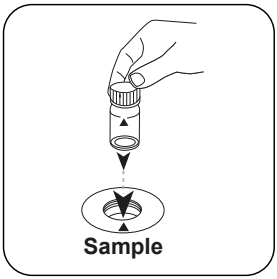
Esecuzione della rilevazione Cloro, libero con compressa

Selezionare il metodo nel dispositivo.

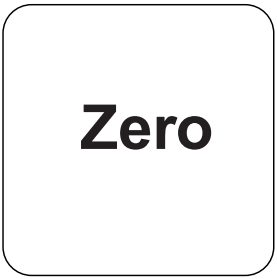
Riempire una cuvetta da 24 mm con **10 mL di campione**.



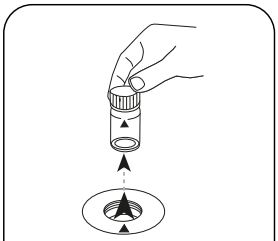
Chiudere la/e cuvetta/e.



Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.

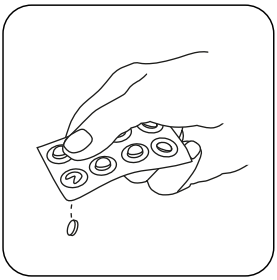


Premere il tasto **ZERO**.

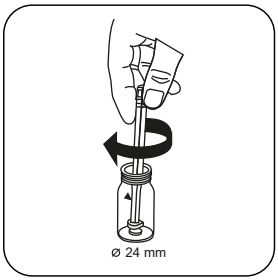


Prelevare la cuvetta dal vano di misurazione.

Svuotare la cuvetta finché non rimangono alcune gocce.

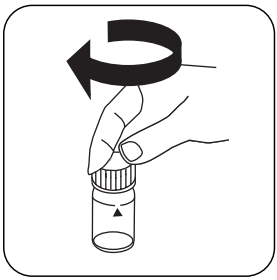


Aggiungere **una pastiglia DPD No. 1**.

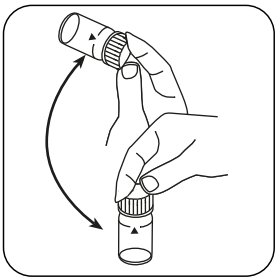


Frantumare la/e pastiglia/e con una leggera rotazione.

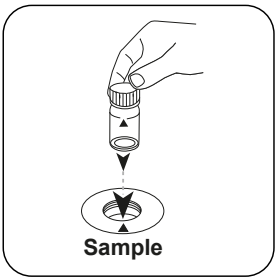
Immettere il **campione** nella cuvetta fino a raggiungere **la tacca dei 10 mL** .



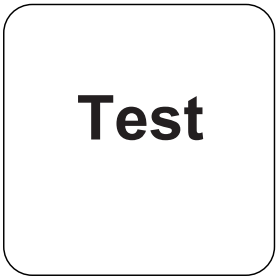
Chiudere la/e cuvetta/e.



Far sciogliere la/e pastiglia/e agitando.



Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



Premere il tasto **TEST** (XD: **START**).

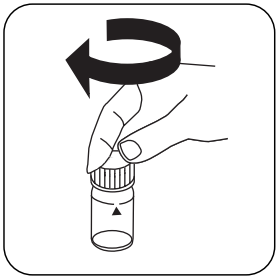
Sul display compare il risultato in mg/L di Cloro libero.

Esecuzione della rilevazione Cloro, totale con compressa

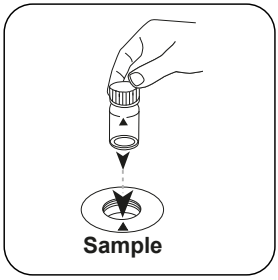
Selezionare il metodo nel dispositivo.

Selezionare inoltre la determinazione: totale

Riempire una cuvetta da 24 mm con **10 mL di campione**.

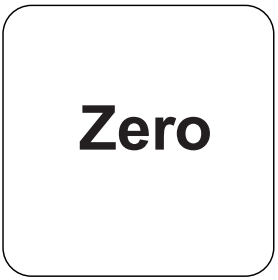


Chiudere la/e cuvetta/e.

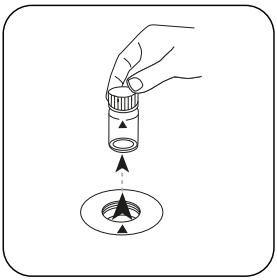


Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.

IT

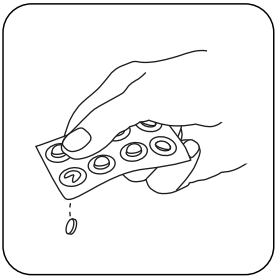


Premere il tasto **ZERO**.

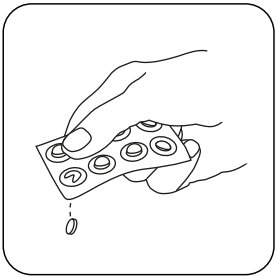


Prelevare la cuvetta dal vano di misurazione.

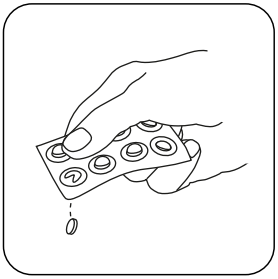
Svuotare la cuvetta finché non rimangono alcune gocce.



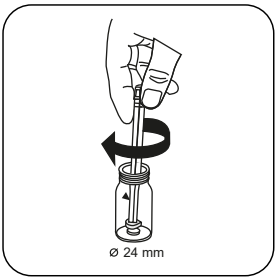
Aggiungere **una pastiglia DPD No. 1**.



Aggiungere **una pastiglia DPD No. 3**.

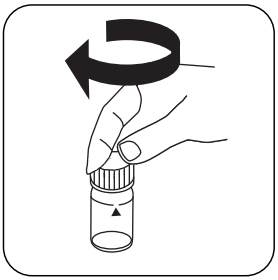


In alternativa al DPD No. 1 e No. 3 tablet, un DPD No. 4 tablet può essere aggiunto.

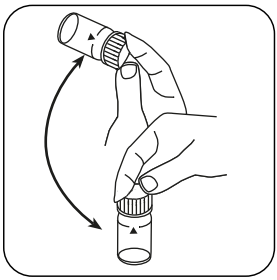


Frantumare la/e pastiglia/e con una leggera rotazione.

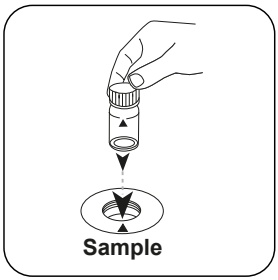
Immettere il **campione** nella cuvetta fino a raggiungere **la tacca dei 10 mL** .



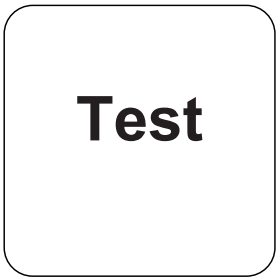
Chiudere la/e cuvetta/e.



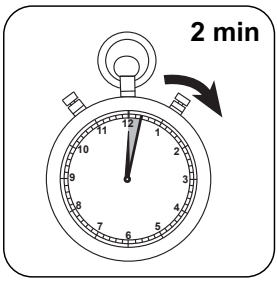
Far sciogliere la/e pastiglia/e agitando.



Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



Premere il tasto **TEST** (XD: **START**).



Attendere un **tempo di reazione di 2 minuto/i** .

Allo scadere del tempo di reazione viene effettuata automaticamente la misurazione.

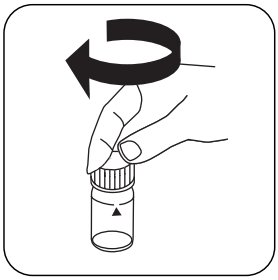
Sul display compare il risultato in mg/L di Cloro totale.

Esecuzione della rilevazione Cloro, determinazione differenziata con compressa

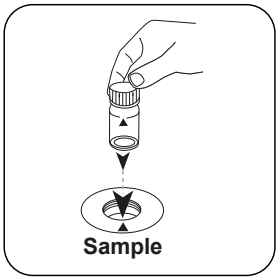
Selezionare il metodo nel dispositivo.

Selezionare inoltre la determinazione: differenziato

Riempire una cuvetta da 24 mm con **10 mL di campione**.

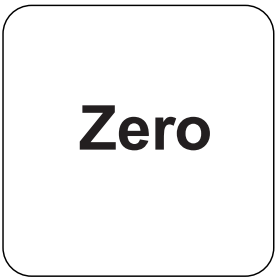


Chiudere la/e cuvetta/e.

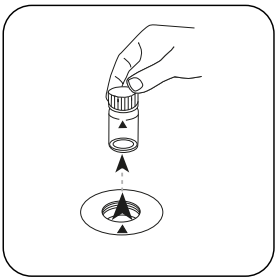


Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.

IT

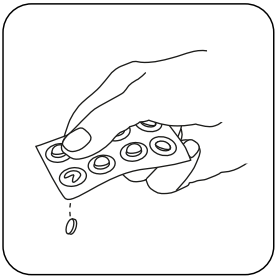


Premere il tasto **ZERO**.

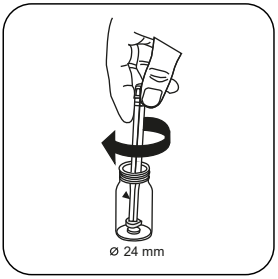


Prelevare la cuvetta dal vano di misurazione.

Svuotare la cuvetta finché non rimangono alcune gocce.

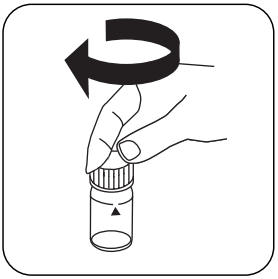


Aggiungere **una pastiglia DPD No. 1**.

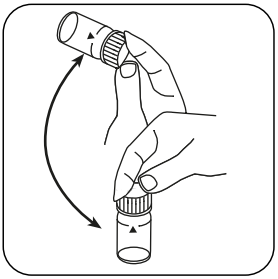


Frantumare la/e pastiglia/e con una leggera rotazione.

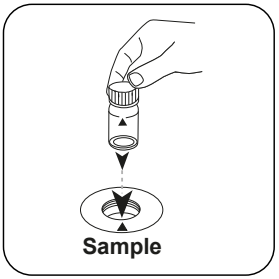
Immettere il **campione** nella cuvetta fino a raggiungere **la tacca dei 10 mL** .



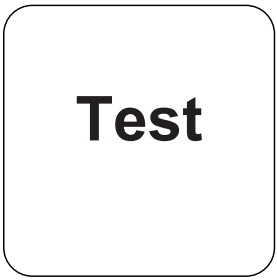
Chiudere la/e cuvetta/e.



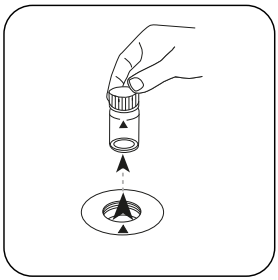
Far sciogliere la/e pastiglia/e agitando.



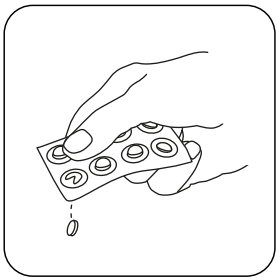
Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



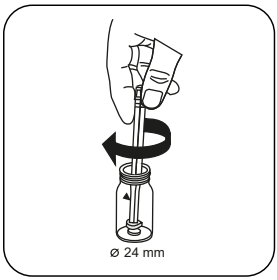
Premere il tasto **TEST** (XD: **START**).



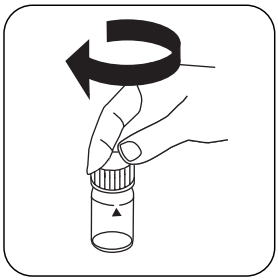
Prelevare la cuvetta dal vano di misurazione.



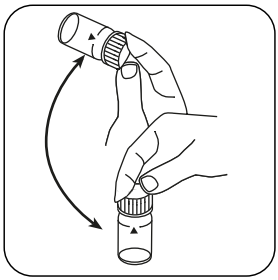
Aggiungere **una pastiglia DPD No. 3**.



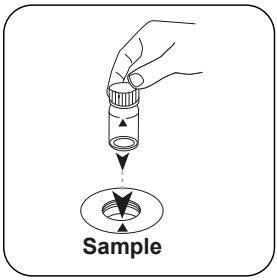
Frantumare la/e pastiglia/e con una leggera rotazione.



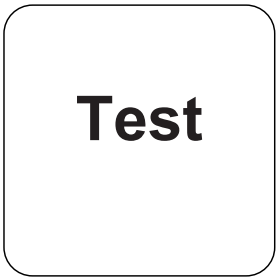
Chiudere la/e cuvetta/e.



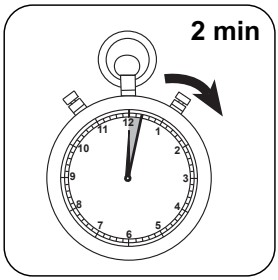
Far sciogliere la/e pastiglia/e agitando.



Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



Premere il tasto **TEST** (XD: **START**).



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 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

Validazione metodo

Limite di rilevabilità	0.02 mg/L
Limite di quantificazione	0.06 mg/L
Estremità campo di misura	6 mg/L
Sensibilità	2.05 mg/L / Abs
Intervallo di confidenza	0.04 mg/L
Deviazione standard della procedura	0.019 mg/L
Coefficiente di variazione della procedura	0.87 %

Conforme

EN ISO 7393-2

[a]Determinazione di libero, vincolato, totale possibile | [e]Reagente 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 Cl_2 [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

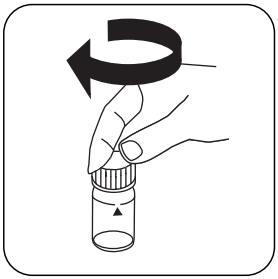
1. Dopo l'uso bisogna richiudere immediatamente le boccette contagocce con i rispettivi tappi dello stesso colore.
2. Conservare al fresco il kit di reagenti a una temperatura compresa tra +6 °C e +10 °C.

Esecuzione della rilevazione Cloro, libero con reagente liquido

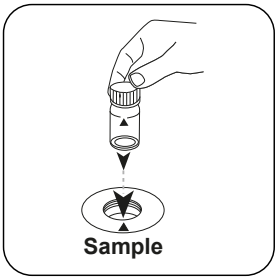
Selezionare il metodo nel dispositivo.

Selezionare inoltre la determinazione: libero

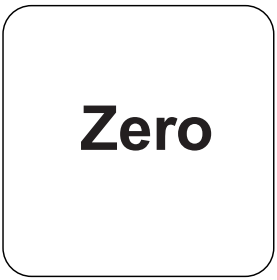
Riempire una cuvetta da 24 mm con **10 mL di campione**.



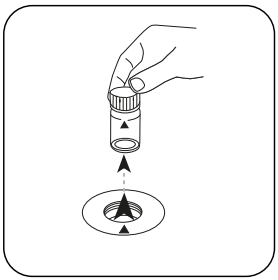
Chiudere la/e cuvetta/e.



Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.

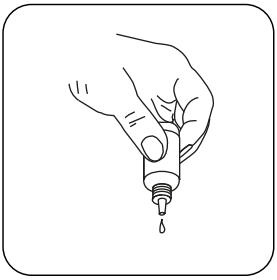


Premere il tasto **ZERO**.

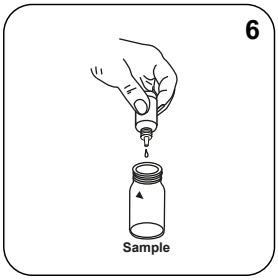


Prelevare la cuvetta dal vano di misurazione.

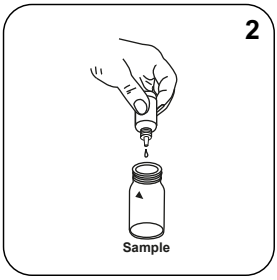
Svuotare la cuvetta.



Tenere le boccette contagocce in posizione verticale e introdurre, premendo lentamente, gocce della stessa dimensione nella cuvetta.

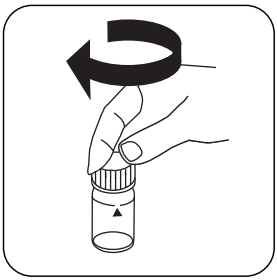


Introdurre **6 gocce di DPD 1 Buffer Solution** nella cuvetta del campione.

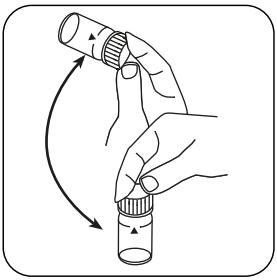


Introdurre **2 gocce di DPD 1 Reagent Solution** nella cuvetta del campione.

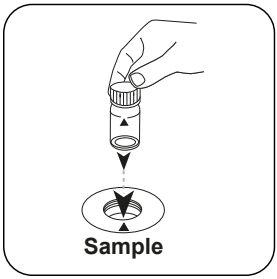
Immettere il **campione** nella cuvetta fino a raggiungere **la tacca dei 10 mL** .



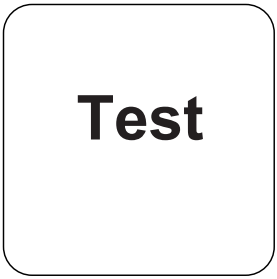
Chiudere la/e cuvetta/e.



Miscelare il contenuto capovolgendo.



Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



Premere il tasto **TEST** (XD: **START**).

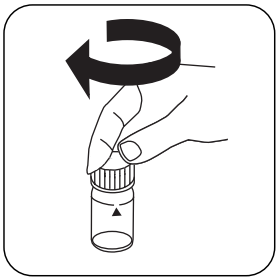
Sul display compare il risultato in mg/L di Cloro libero.

Esecuzione della rilevazione Cloro, totale con reagente liquido

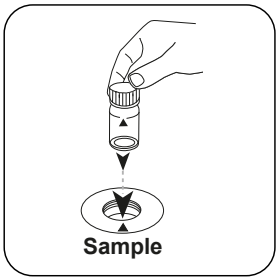
Selezionare il metodo nel dispositivo.

Selezionare inoltre la determinazione: totale

Riempire una cuvetta da 24 mm con **10 mL di campione**.

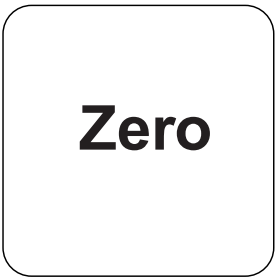


Chiudere la/e cuvetta/e.

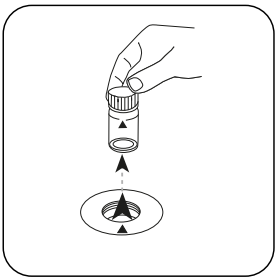


Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.

IT

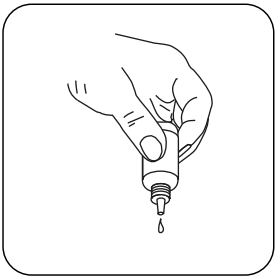


Premere il tasto **ZERO**.

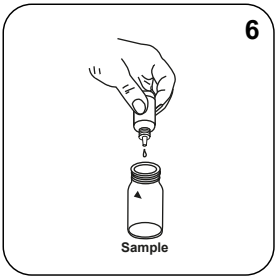


Prelevare la cuvetta dal vano di misurazione.

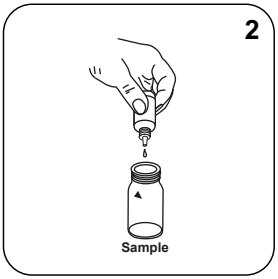
Svuotare la cuvetta.



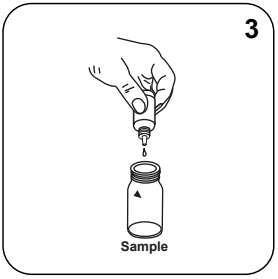
Tenere le boccette contagocce in posizione verticale e introdurre, premendo lentamente, gocce della stessa dimensione nella cuvetta.



Introdurre **6 gocce di DPD 1 Buffer Solution** nella cuvetta del campione.

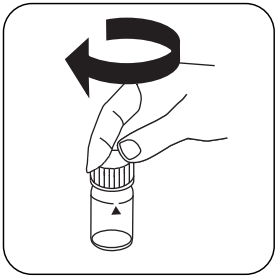


Introdurre **2 gocce di DPD 1 Reagent Solution** nella cuvetta del campione.

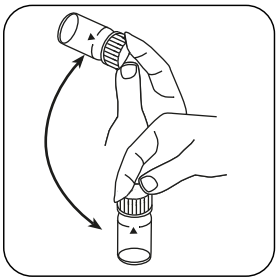


Introdurre **3 gocce di DPD 3 Solution** nella cuvetta del campione.

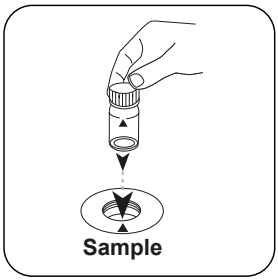
Immettere il **campione** nella cuvetta fino a raggiungere **la tacca dei 10 mL** .



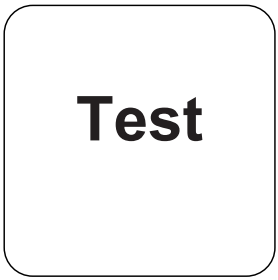
Chiudere la/e cuvetta/e.



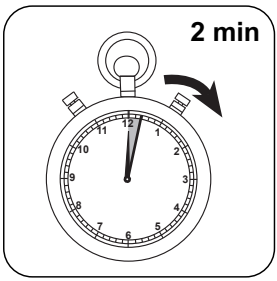
Miscelare il contenuto capovolgendo.



Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



Premere il tasto **TEST** (XD: **START**).



Attendere un **tempo di reazione di 2 minuto/i** .

Allo scadere del tempo di reazione viene effettuata automaticamente la misurazione.

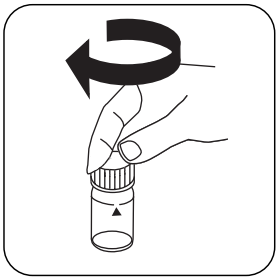
Sul display compare il risultato in mg/L di Cloro totale.

Esecuzione della rilevazione Cloro, differenziato con reagente liquido

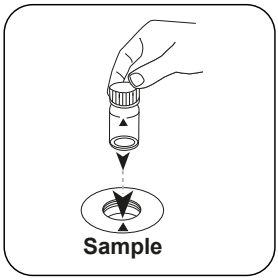
Selezionare il metodo nel dispositivo.

Selezionare inoltre la determinazione: differenziato

Riempire una cuvetta da 24 mm con **10 mL di campione**.

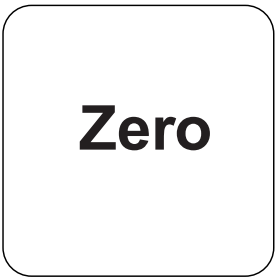


Chiudere la/e cuvetta/e.

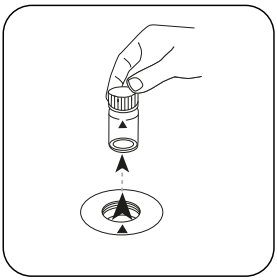


Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.

IT

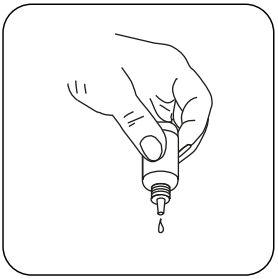


Premere il tasto **ZERO**.

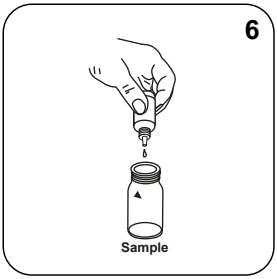


Prelevare la cuvetta dal vano di misurazione.

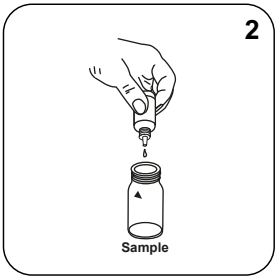
Svuotare la cuvetta.



Tenere le boccette contagocce in posizione verticale e introdurre, premendo lentamente, gocce della stessa dimensione nella cuvetta.



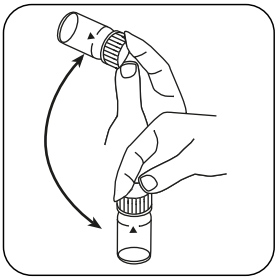
Introdurre **6 gocce di DPD 1 Buffer Solution** nella cuvetta del campione.



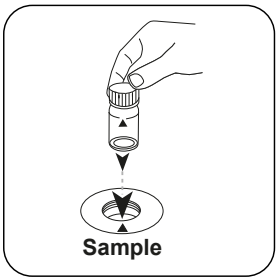
Introdurre **2 gocce di DPD 1 Reagent Solution** nella cuvetta del campione.

Immettere il **campione** nella cuvetta fino a raggiungere **la tacca dei 10 mL** .

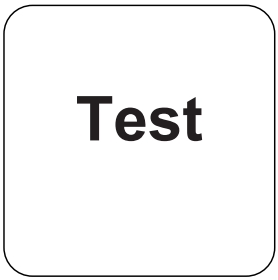
Chiudere la/e cuvetta/e.



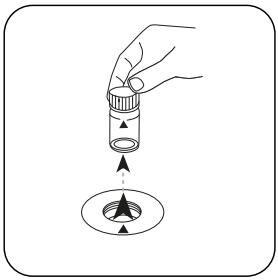
Miscelare il contenuto capovolgendo.



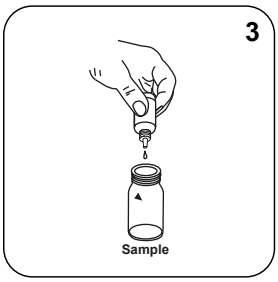
Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



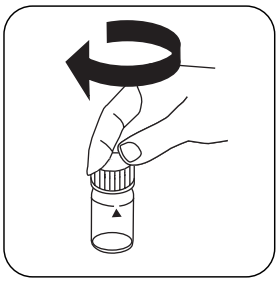
Premere il tasto **TEST** (XD: **START**).



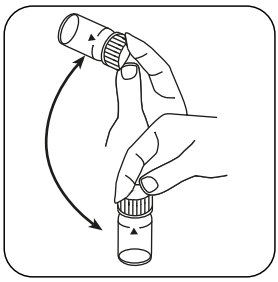
Prelevare la cuvetta dal vano di misurazione.



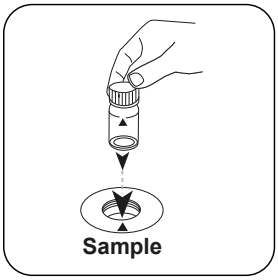
Introdurre **3 gocce di DPD 3 Solution** nella cuvetta del campione.



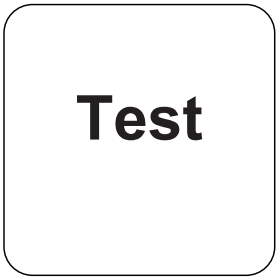
Chiudere la/e cuvetta/e.



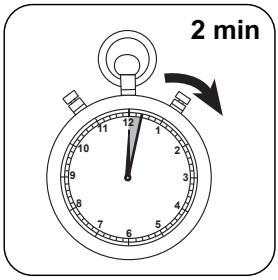
Miscelare il contenuto capovolgendo.



Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



Premere il tasto **TEST** (XD: **START**).



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.
- 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

[a)]Determinazione di libero, vincolato, totale possibile

Cloro HR T M103

0.1 - 10 mg/L Cl_2 [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 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

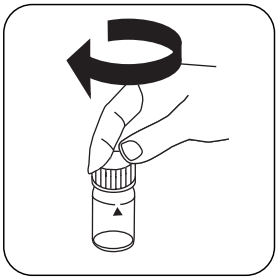
1. Le compresse Evo possono essere utilizzate come alternativa alla corrispondente compressa standard (ad esempio DPD No. 3 Evo invece di DPD No. 3).

Esecuzione della rilevazione Cloro HR, libero con compressa

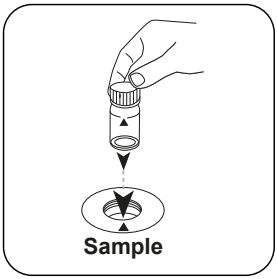
Selezionare il metodo nel dispositivo.

Selezionare inoltre la determinazione: libero

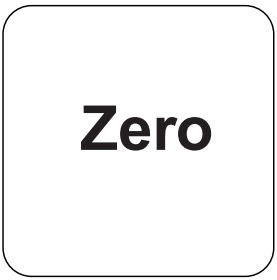
Riempire una cuvetta da 24 mm con **10 mL di campione**.



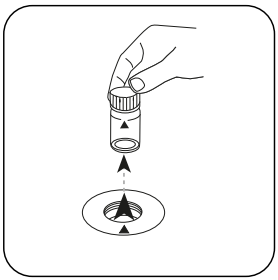
Chiudere la/e cuvetta/e.



Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.

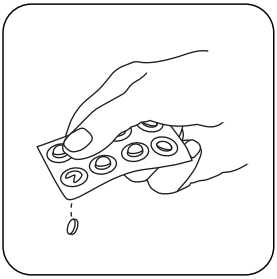


Premere il tasto **ZERO**.

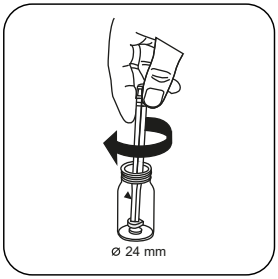


Prelevare la cuvetta dal vano di misurazione.

Svuotare la cuvetta finché non rimangono alcune gocce.

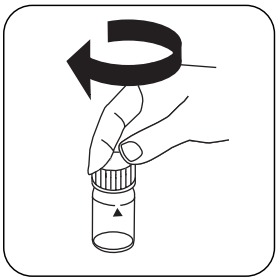


Aggiungere **una pastiglia DPD No. 1 HR** .

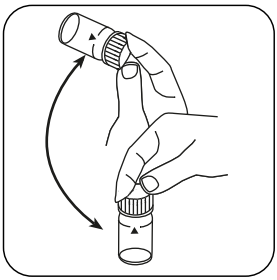


Frantumare la/e pastiglia/e con una leggera rotazione.

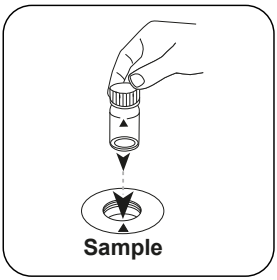
Immettere il **campione** nella cuvetta fino a raggiungere **la tacca dei 10 mL** .



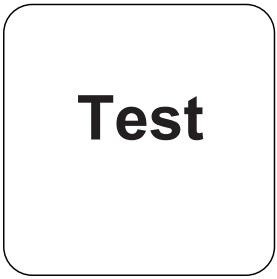
Chiudere la/e cuvetta/e.



Far sciogliere la/e pastiglia/e agitando.



Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



Premere il tasto **TEST** (XD: **START**).

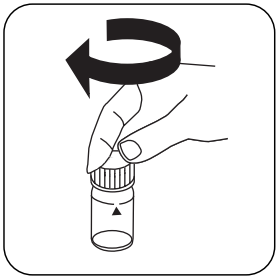
Sul display compare il risultato in mg/L di Cloro libero.

Esecuzione della rilevazione Cloro HR, totale con compressa

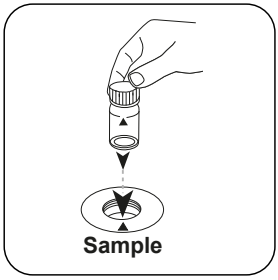
Selezionare il metodo nel dispositivo.

Selezionare inoltre la determinazione: totale

Riempire una cuvetta da 24 mm con **10 mL di campione**.

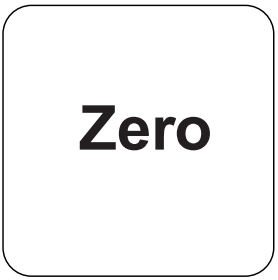


Chiudere la/e cuvetta/e.

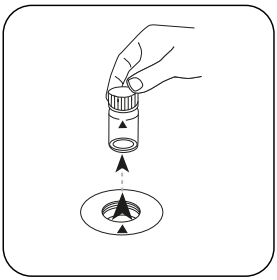


Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.

IT

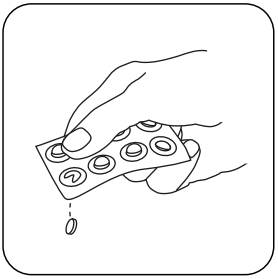


Premere il tasto **ZERO**.

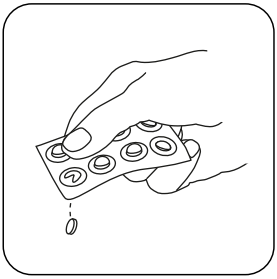


Prelevare la cuvetta dal vano di misurazione.

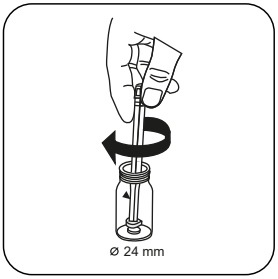
Svuotare la cuvetta finché non rimangono alcune gocce.



Aggiungere **una pastiglia DPD No. 1 HR** .



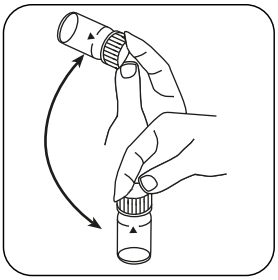
Aggiungere **una pastiglia DPD No. 3 HR** .



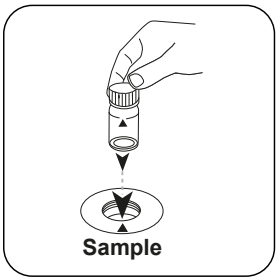
Frantumare la/e pastiglia/e con una leggera rotazione.

Immettere il **campione** nella cuvetta fino a raggiungere **la tacca dei 10 mL** .

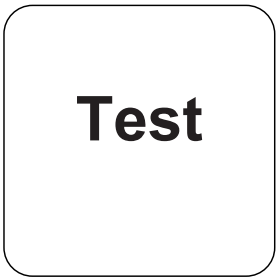
Chiudere la/e cuvetta/e.



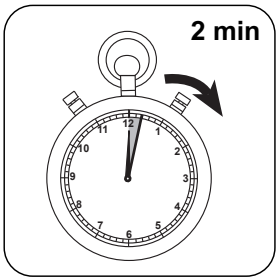
Far sciogliere la/e pastiglia/e agitando.



Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



Premere il tasto **TEST** (XD: **START**).



Attendere un **tempo di reazione di 2 minuto/i** .

Allo scadere del tempo di reazione viene effettuata automaticamente la misurazione.

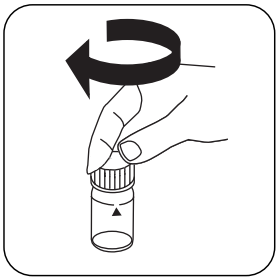
Sul display compare il risultato in mg/L di Cloro totale.

Esecuzione della rilevazione Cloro HR, determinazione differenziata con compressa

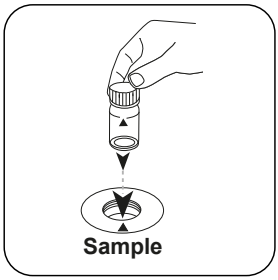
Selezionare il metodo nel dispositivo.

Selezionare inoltre la determinazione: differenziato

Riempire una cuvetta da 24 mm con **10 mL di campione**.

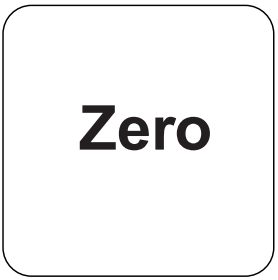


Chiudere la/e cuvetta/e.

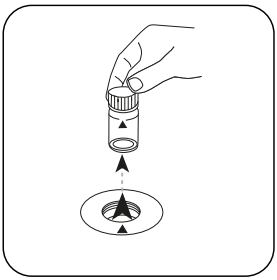


Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.

IT

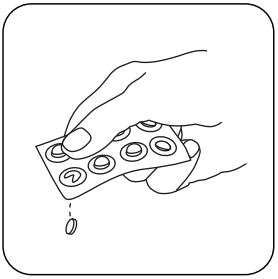


Premere il tasto **ZERO**.

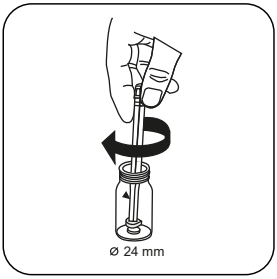


Prelevare la cuvetta dal vano di misurazione.

Svuotare la cuvetta finché non rimangono alcune gocce.

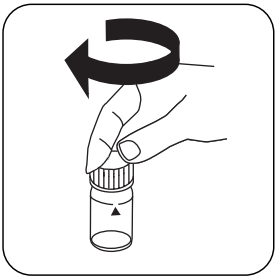


Aggiungere **una pastiglia DPD No. 1 HR** .

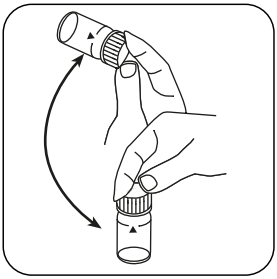


Frantumare la/e pastiglia/e con una leggera rotazione.

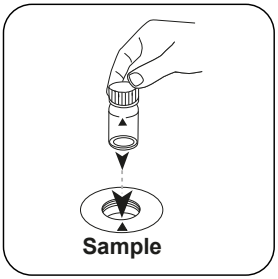
Immettere il **campione** nella cuvetta fino a raggiungere **la tacca dei 10 mL** .



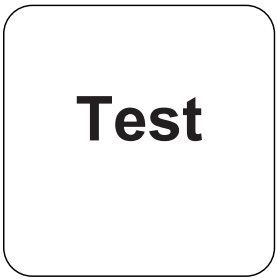
Chiudere la/e cuvetta/e.



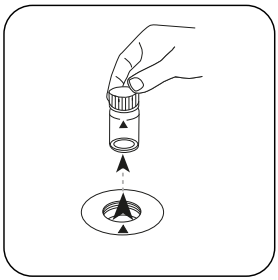
Far sciogliere la/e pastiglia/e agitando.



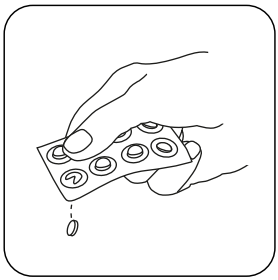
Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



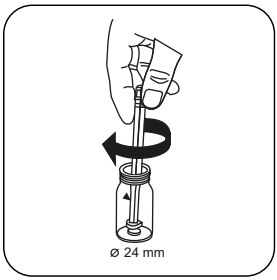
Premere il tasto **TEST** (XD: **START**).



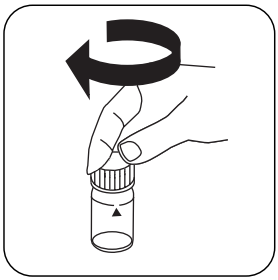
Prelevare la cuvetta dal vano di misurazione.



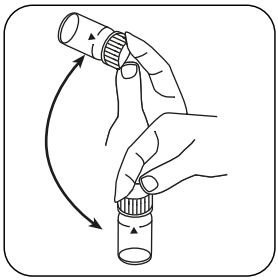
Aggiungere **una pastiglia DPD No. 3 HR** .



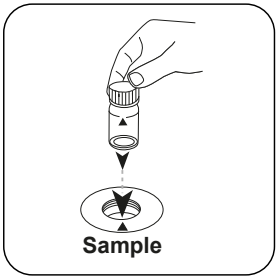
Frantumare la/e pastiglia/e con una leggera rotazione.



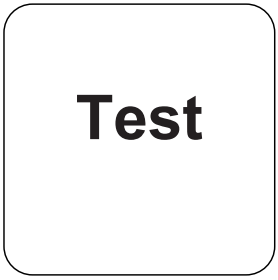
Chiudere la/e cuvetta/e.



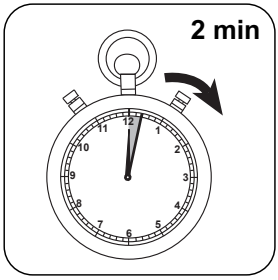
Far sciogliere la/e pastiglia/e agitando.



Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



Premere il tasto **TEST** (XD: **START**).



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

[a)]Determinazione di libero, vincolato, totale possibile | [e)]Reagente 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 | [j)#]Bacchetta compresa

Cloro PP M110

0.02 - 2 mg/L Cl_2 [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

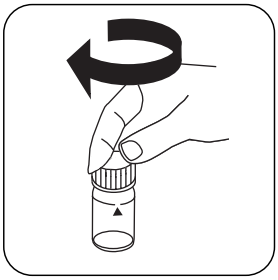
1. Pulizia delle cuvette:
   Poiché molti detergenti ad uso domestico (ad es. detersivo per piatti) contengono sostanze riducenti, nella rilevazione del cloro si potrebbero ottenere risultati troppo bassi. Per escludere tali errori di misura è necessario che i dispositivi in vetro siano esenti dal consumo 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).

Esecuzione della rilevazione cloro libero con confezioni in polvere

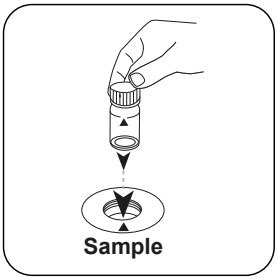
Selezionare il metodo nel dispositivo.

Selezionare inoltre la determinazione: libero

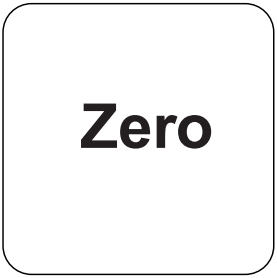
Riempire una cuvetta da 24 mm con **10 mL di campione**.



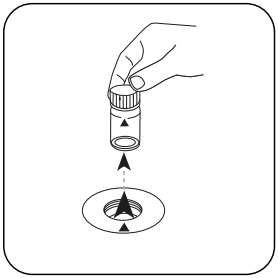
Chiudere la/e cuvetta/e.



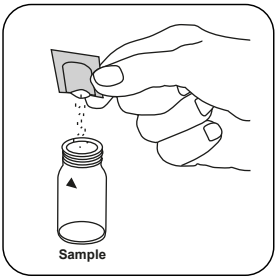
Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



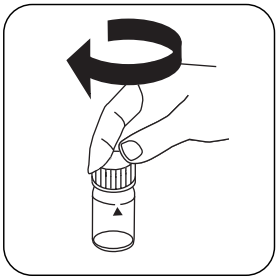
Premere il tasto **ZERO**.



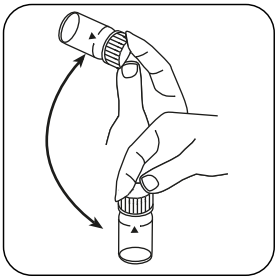
Prelevare la cuvetta dal vano di misurazione.



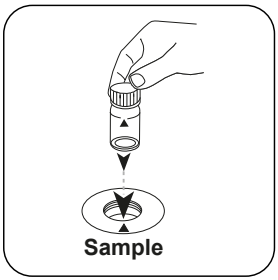
Aggiungere **una bustina di polvere Chlorine FREE-DPD/ F10**.



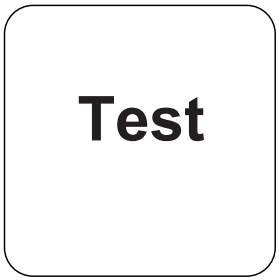
Chiudere la/e cuvetta/e.



Miscelare il contenuto capovolgendo (20 sec.).



Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



Premere il tasto **TEST** (XD: **START**).

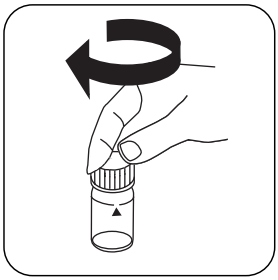
Sul display compare il risultato in mg/L di Cloro libero.

Esecuzione della rilevazione cloro totale con confezioni in polvere

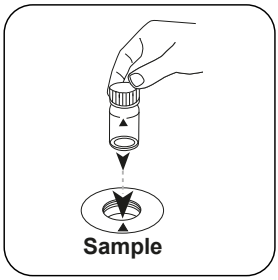
Selezionare il metodo nel dispositivo.

Selezionare inoltre la determinazione: totale

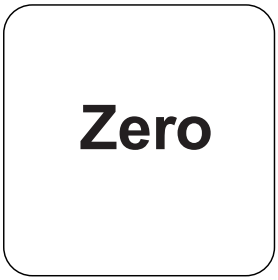
Riempire una cuvetta da 24 mm con **10 mL di campione**.



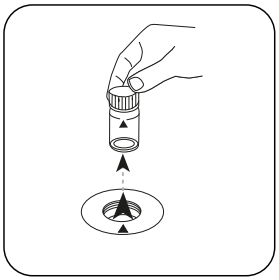
Chiudere la/e cuvetta/e.



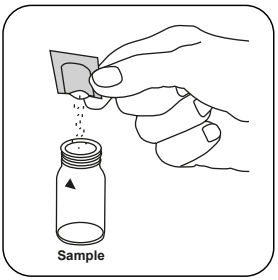
Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



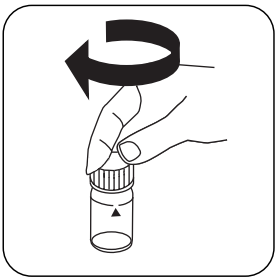
Premere il tasto **ZERO**.



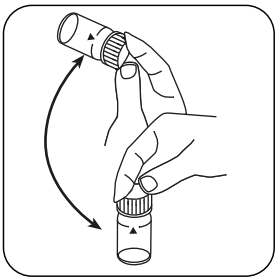
Prelevare la cuvetta dal vano di misurazione.



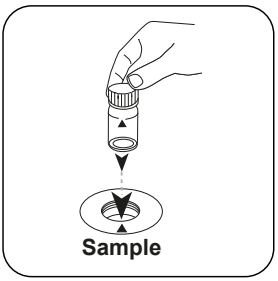
Aggiungere **una bustina di polvere Chlorine TOTAL-DPD/ F10**.



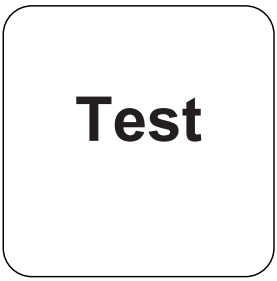
Chiudere la/e cuvetta/e.



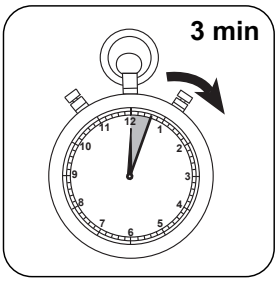
Miscelare il contenuto capovolgendo (20 sec.).



Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



Premere il tasto **TEST** (XD: **START**).



Attendere un **tempo di reazione di 3 minuto/i** .

Allo scadere del tempo di reazione viene effettuata automaticamente la misurazione.

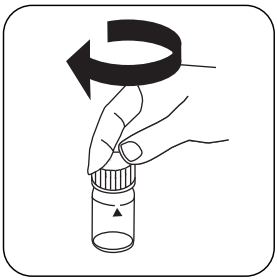
Sul display compare il risultato in mg/L di Cloro totale.

Esecuzione della rilevazione Cloro differenziato con confezioni in polvere

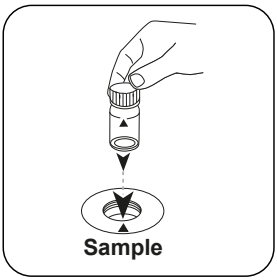
Selezionare il metodo nel dispositivo.

Selezionare inoltre la determinazione: differenziato

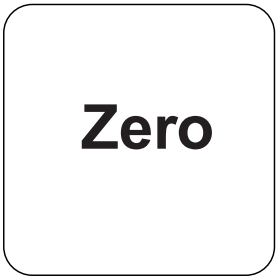
Riempire una cuvetta da 24 mm con **10 mL di campione**.



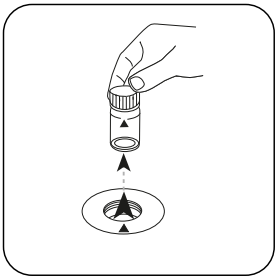
Chiudere la/e cuvetta/e.



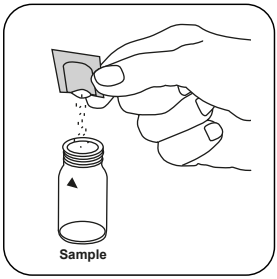
Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



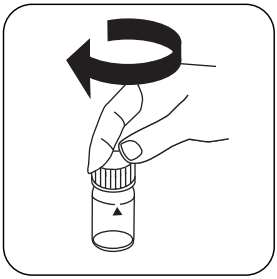
Premere il tasto **ZERO**.



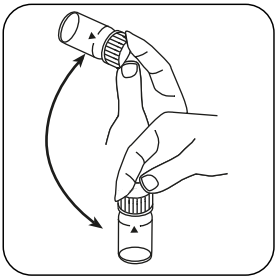
Prelevare la cuvetta dal vano di misurazione.



Aggiungere **una bustina di polvere Chlorine FREE-DPD/ F10**.

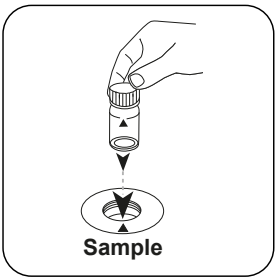


Chiudere la/e cuvetta/e.

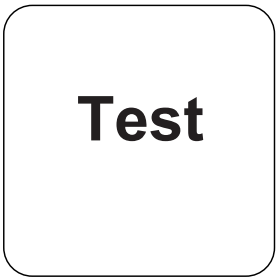


Miscelare il contenuto capovolgendo (20 sec.).

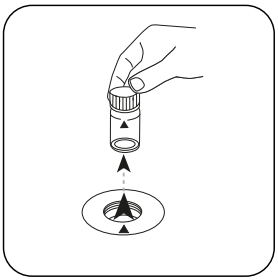
IT



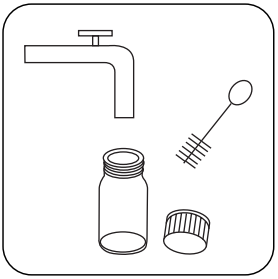
Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



Premere il tasto **TEST** (XD: **START**).

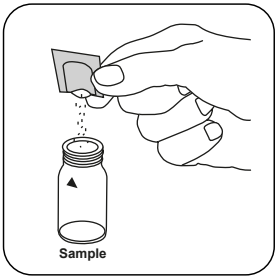


Prelevare la cuvetta dal vano di misurazione.

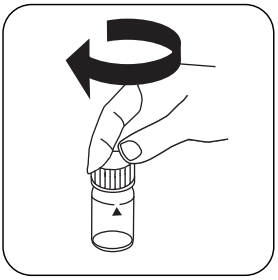


Pulire a fondo la cuvetta e il coperchio della cuvetta.

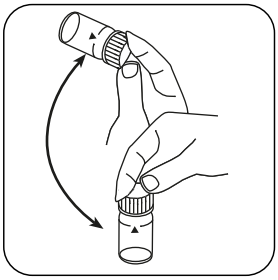
Riempire una cuvetta da 24 mm con **10 mL di campione**.



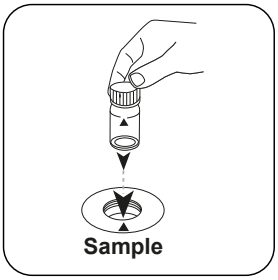
Aggiungere **una bustina di polvere TOTAL-DPD/ F10**.



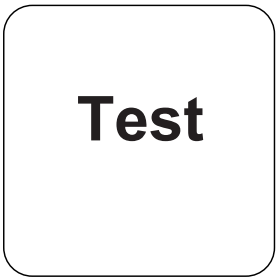
Chiudere la/e cuvetta/e.

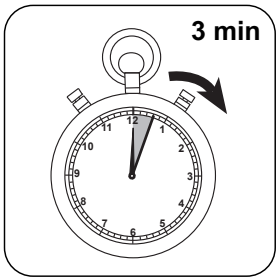


Miscelare il contenuto capovolgendo (20 sec.).



Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.





Premere il tasto **TEST** (XD: **START**).

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.

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

Validazione metodo

Limite di rilevabilità	0.01 mg/L
Limite di quantificazione	0.03 mg/L
Estremità campo di misura	2 mg/L
Sensibilità	1.68 mg/L / Abs
Intervallo di confidenza	0.033 mg/L
Deviazione standard della procedura	0.014 mg/L
Coefficiente di variazione della procedura	1.34 %

Conforme

EN ISO 7393-2

[a)]Determinazione di libero, vincolato, totale possibile

Cloro HR 2 PP M112

0.1 - 10 mg/L Cl_2

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

Prelievo del campione

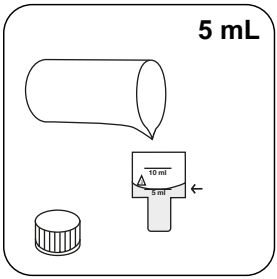
1. Nella preparazione del campione occorre evitare la degassificazione del cloro, ad es. utilizzando pipette e agitando.
2. L'analisi deve essere eseguita subito dopo il prelievo del campione.

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).

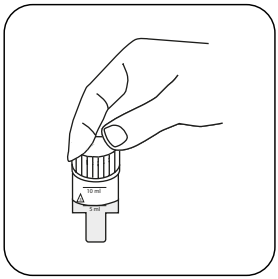
Esecuzione della rilevazione cloro libero HR 2 con confezioni in polvere

Selezionare il metodo nel dispositivo.

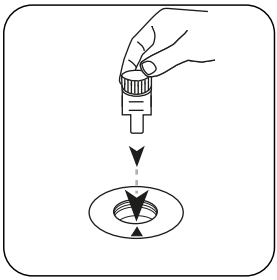


Riempire una cuvetta da 10 mm con **5 mL di campione**.

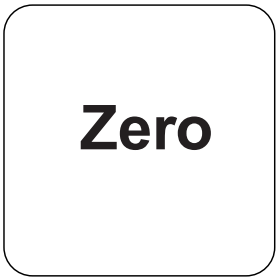
MD50: Riempire una cuvetta da 24 mm con **10 mL di campione**.



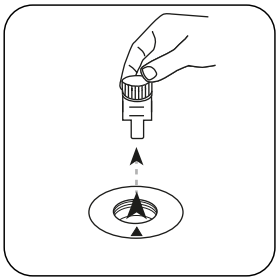
Chiudere la/e cuvetta/e.



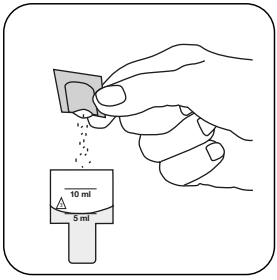
Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



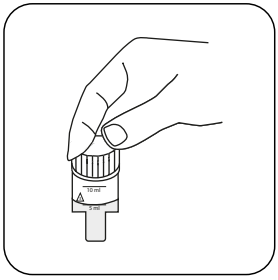
Premere il tasto **ZERO**.



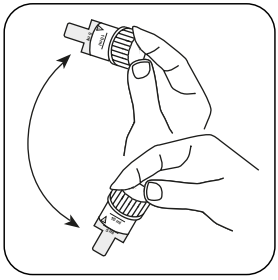
Prelevare la **cuvetta** dal vano di misurazione.



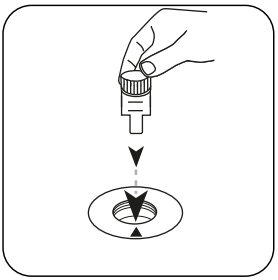
Aggiungere **una bustina di polvere Vario Chlorine Free / F25**.



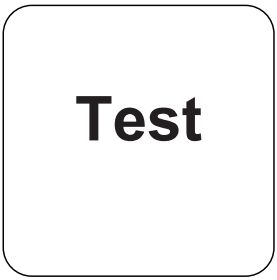
Chiudere la/e cuvetta/e.



Miscelare il contenuto capovolgendo (20 sec.).



Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.

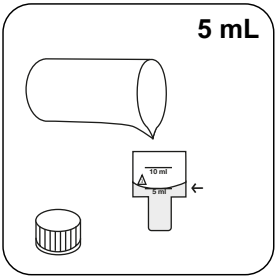


Premere il tasto **TEST** (XD: **START**).

Sul display compare il risultato in mg/L di Cloro.

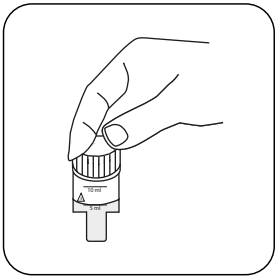
Esecuzione della rilevazione cloro totale HR 2 con confezioni in polvere

Selezionare il metodo nel dispositivo.

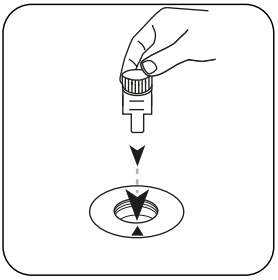


Riempire una cuvetta da 10 mm con **5 mL di campione**.

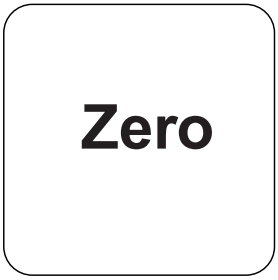
MD50: Riempire una cuvetta da 24 mm con **10 mL di campione**.



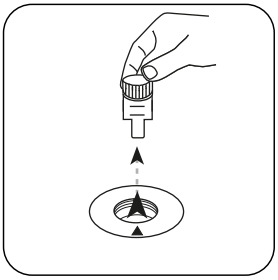
Chiudere la/e cuvetta/e.



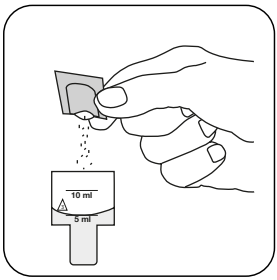
Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



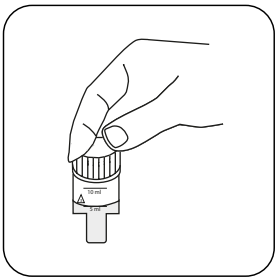
Premere il tasto **ZERO**.



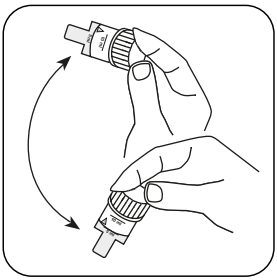
Prelevare la **cuvetta** dal vano di misurazione.



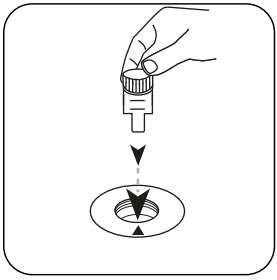
Aggiungere **una bustina di polvere Vario Chlorine Total / F25**.



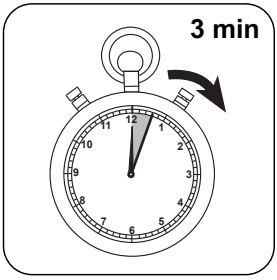
Chiudere la/e cuvetta/e.



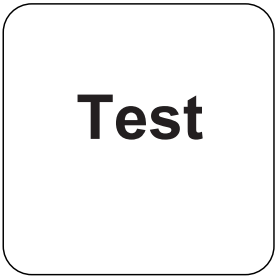
Miscelare il contenuto capovolgendo (20 sec.).



Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



Attendere un **tempo di reazione di 3 minuto/i** .



Premere il tasto **TEST** (XD: **START**).

Sul display compare il risultato in mg/L di Cloro.

Metodo chimico

DPD

Appendice

IT

Interferenze

Interferenze permanenti

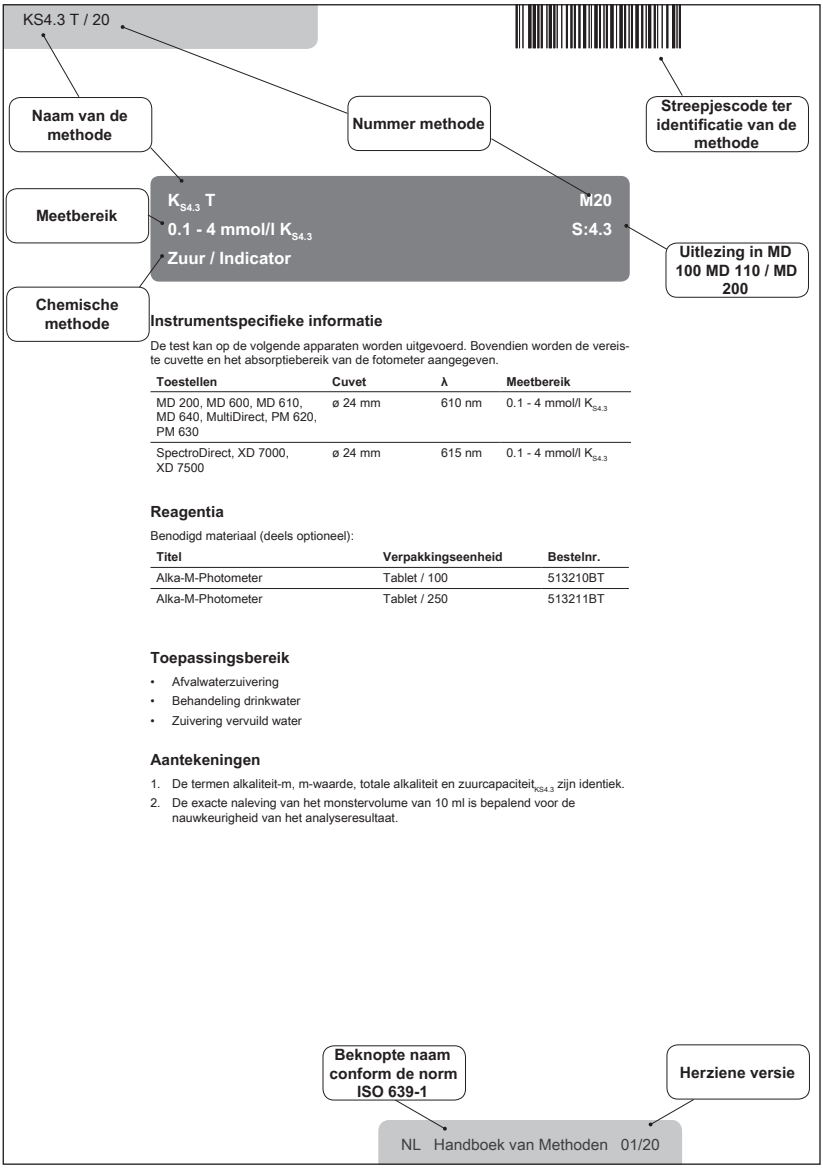
- Tutti gli ossidanti presenti nei campioni reagiscono come il cloro dando risultati troppo elevati.

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


KS4.3 T / 20
Naam van de methode
Nummer methode
Streepjescode ter identificatie van de methode
Meetbereik
Chemische methode
Uitlezing in MD 100 MD 110 / MD 200
K S4.3 T
M20
0.1 - 4 mmol/l K S4.3
S:4.3
Zuur / Indicator
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 KS4.3 zijn identiek.
2. De exacte naleving van het monstervolume van 10 ml is bepalend voor de nauwkeurigheid van het analyseresultaat.
Beknopte naam conform de norm ISO 639-1
Herziene versie
NL Handboek van Methoden 01/20

Uitvoering van de meting

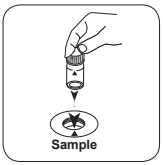
Uitvoering van de bepaling Zuurcapaciteit $K_{S4.3}$ met tablet

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.

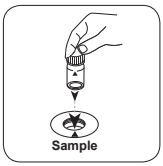
De spoelbakjes afsluiten.



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 $K_{S4.3}$.

Chloor T M100

0.01 - 6.0 mg/L Cl_2 [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.

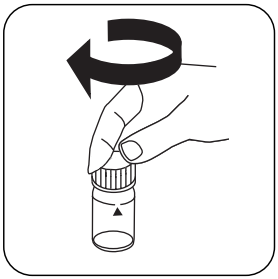
Aantekeningen

1. Evo-tabletten kunnen worden gebruikt als alternatief voor de overeenkomstige standaardtabletten (bv. DPD nr. 3 Evo in plaats van DPD nr. 3).

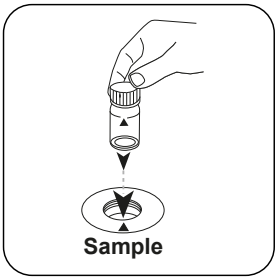
Uitvoering van de bepaling vrij chloor met tablet

De methode in het apparaat selecteren.

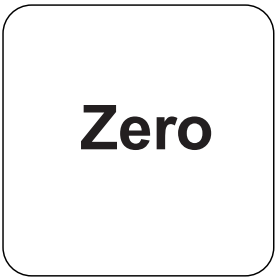
Spoelbakje van 24 mm met **10 mL staal** vullen.



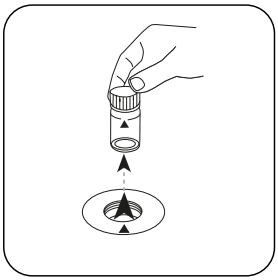
De spoelbakjes afsluiten.



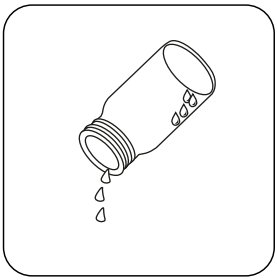
Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.



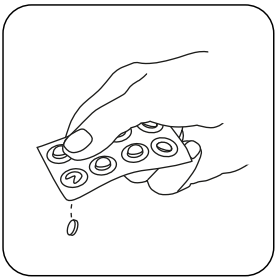
De toets **NUL** indrukken.



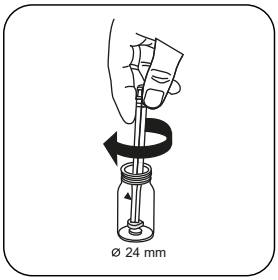
Het spoelbakje uit de meetschacht nemen.



Het spoelbakje tot op enkele druppels ledigen.

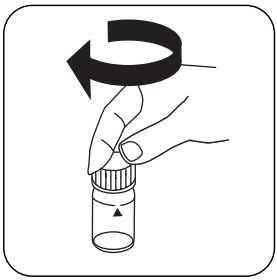


Een DPD Nr. 1 tablet toevoegen.

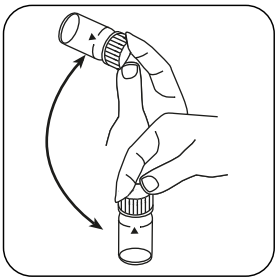


De tabletten onder lichte rotatie verpletteren.

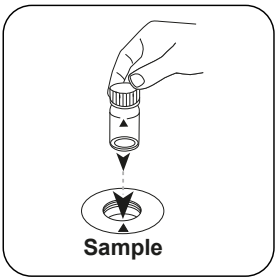
Het spoelbakje tot aan de **markering van 10 mL** met het **staal** vullen.



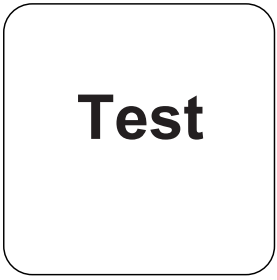
De spoelbakjes afsluiten.



Tabletten oplossen door om te draaien



Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.



De toets **TEST** (XD: **START**) indrukken.

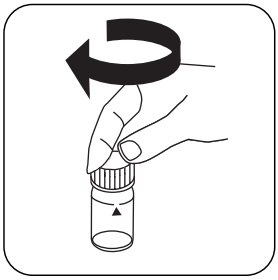
De display toont het resultaat in mg/L vrij chloor.

Uitvoering van de bepaling totaal chloor met tablet

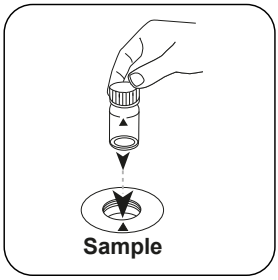
De methode in het apparaat selecteren.

Selecteer bovendien de bepaling: totaal

Spoelbakje van 24 mm met **10 mL staal** vullen.

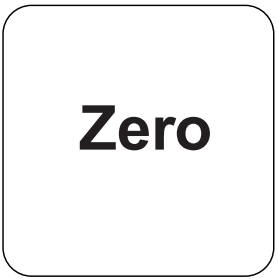


De spoelbakjes afsluiten.

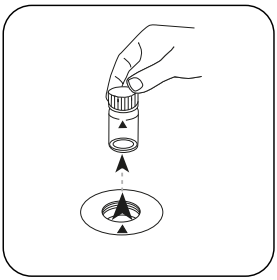


Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.

NL

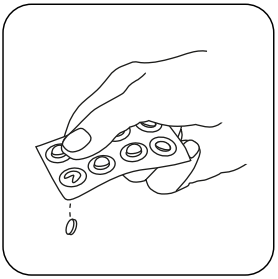


De toets **NUL** indrukken.

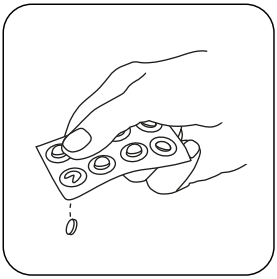


Het spoelbakje uit de meetschacht nemen.

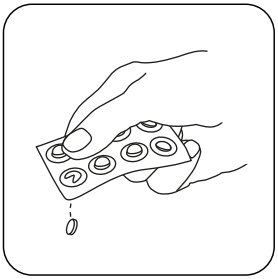
Het spoelbakje tot op enkele druppels ledigen.



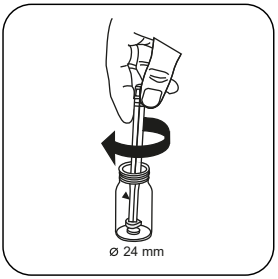
Een DPD Nr. 1 tablet toevoegen.



Een DPD Nr. 3 tablet toevoegen.

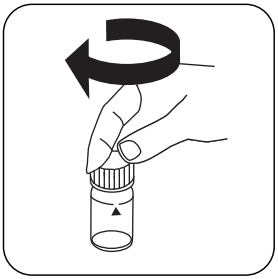


Als alternatief voor DPD nr. 1 en nr. 3 tabletten kan 1 DPD nr. 4 tablet worden toegevoegd.

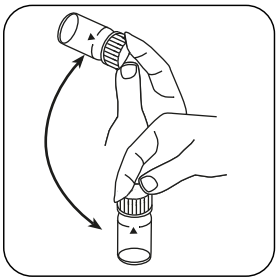


De tabletten onder lichte rotatie verpletteren.

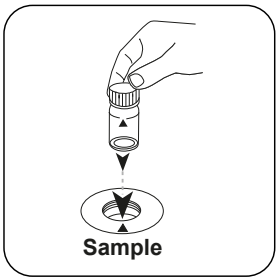
Het spoelbakje tot aan de **markering van 10 mL** met het **staal** vullen.



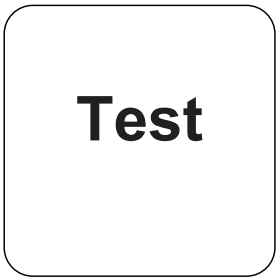
De spoelbakjes afsluiten.



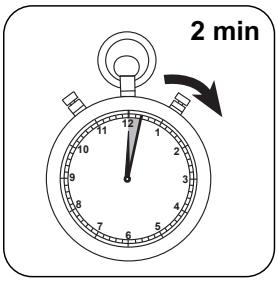
Tabletten oplossen door om te draaien



Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.



De toets **TEST** (XD: **START**) indrukken.



De reactietijd van 2 minuten afwachten.

Na afloop van de reactietijd wordt de meting automatisch uitgevoerd.

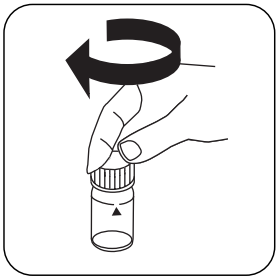
De display toont het resultaat in mg/L Totaal chloor.

Uitvoering van de bepaling gedifferentieerd chloor met tablet

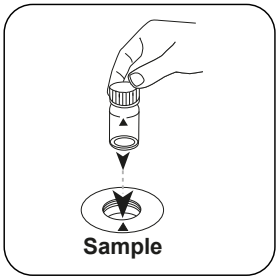
De methode in het apparaat selecteren.

Selecteer bovendien de bepaling: gedifferentieerd

Spoelbakje van 24 mm met **10 mL staal** vullen.

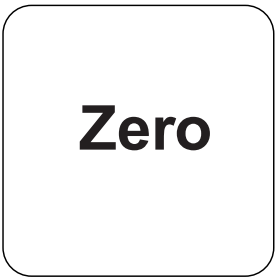


De spoelbakjes afsluiten.

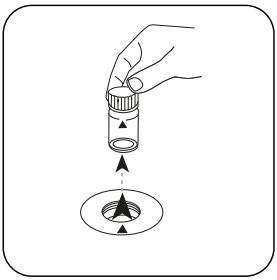


Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.

NL

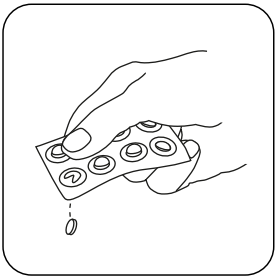


De toets **NUL** indrukken.

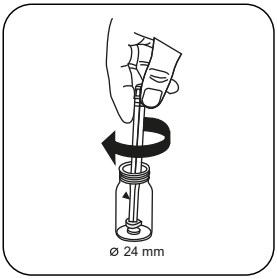


Het spoelbakje uit de meetschacht nemen.

Het spoelbakje tot op enkele druppels ledigen.



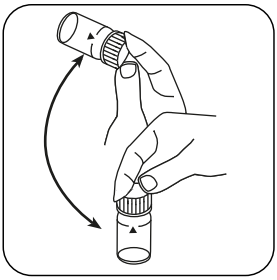
Een DPD Nr. 1 tablet toevoegen.



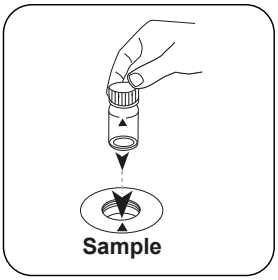
De tabletten onder lichte rotatie verpletteren.

Het spoelbakje tot aan de **markering van 10 mL** met het **staal** vullen.

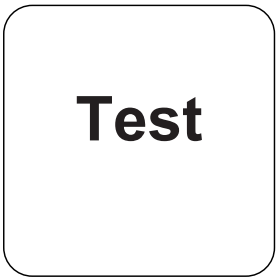
De spoelbakjes afsluiten.



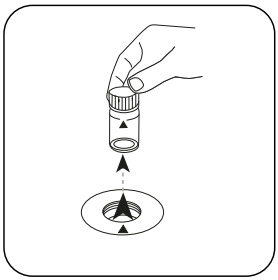
Tabletten oplossen door om te draaien



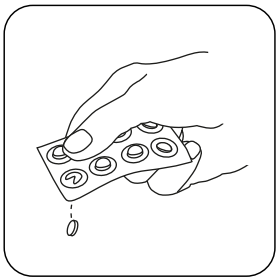
Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.



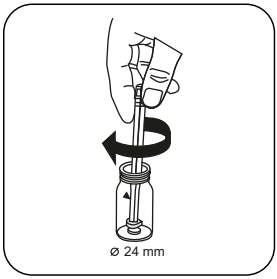
De toets **TEST** (XD: **START**) indrukken.



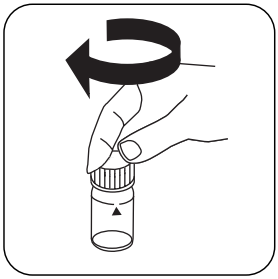
Het spoelbakje uit de meetschacht nemen.



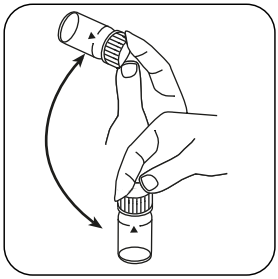
Een DPD Nr. 3 tablet toevoegen.



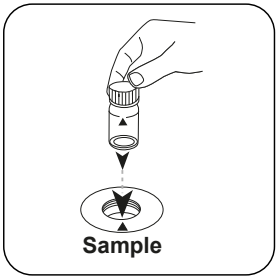
De tabletten onder lichte rotatie verpletteren.



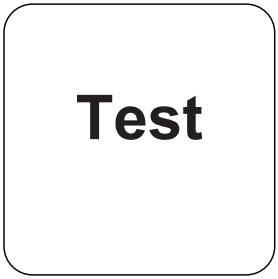
De spoelbakjes afsluiten.



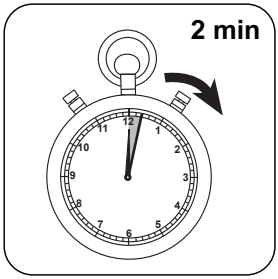
Tabletten oplossen door om te draaien



Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.



De toets **TEST** (XD: **START**) indrukken.



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

Validatie van de methodes

Aantoonbaarheidsgrens	0.02 mg/L
Bepaalbaarheidsgrens	0.06 mg/L
Einde meetbereik	6 mg/L
Gevoeligheid	2.05 mg/L / Abs
Betrouwbaarheidsgrenzen	0.04 mg/L
Standaardafwijking procedure	0.019 mg/L
Variatiecoefficient procedure	0.87 %

Conform

EN ISO 7393-2

[a)] bepaling van de vrije, gebonden, totaal mogelijke | [e)] 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 Cl_2 [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.

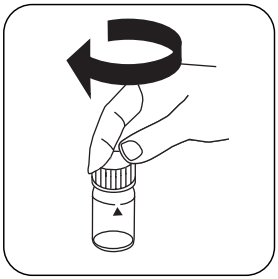
NL

Uitvoering van de bepaling vrij chloor met vloeibaar reagens

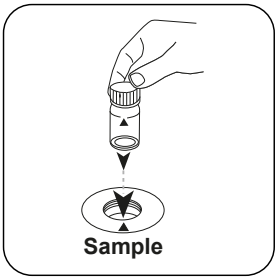
De methode in het apparaat selecteren.

Selecteer bovendien de bepaling: vrij

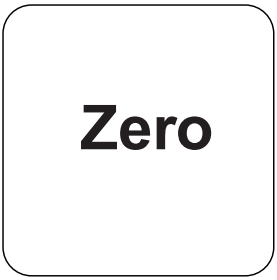
Spoelbakje van 24 mm met **10 mL staal** vullen.



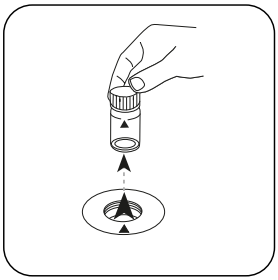
De spoelbakjes afsluiten.



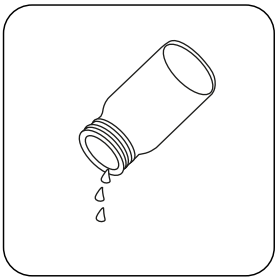
Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.



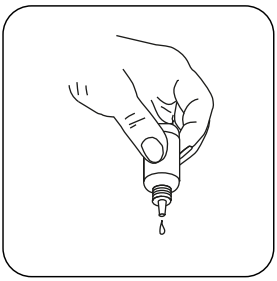
De toets **NUL** indrukken.



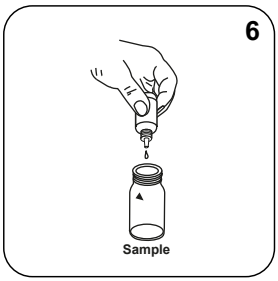
Het spoelbakje uit de meetschacht nemen.



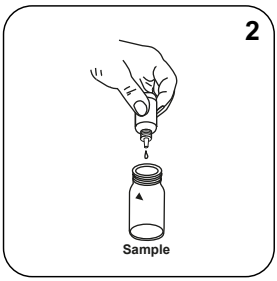
Het spoelbakje ledigen.



De druppelflessen verticaal houden en even grote druppels toevoegen door langzaam te drukken.

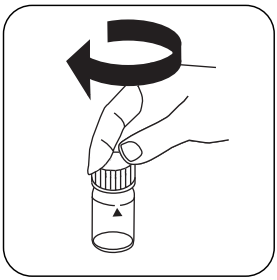


6 druppels DPD
1 bufferoplossing in het staalspoelbakje doen.

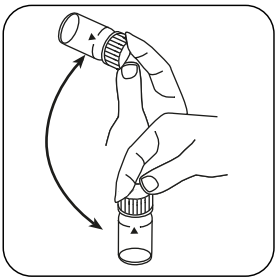


2 druppels DPD
1 reagensoplossing in het staalspoelbakje doen.

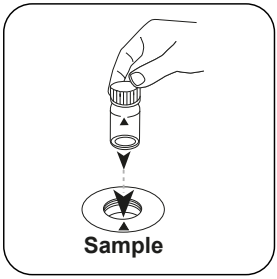
Het spoelbakje tot aan de **markering van 10 mL** met het **staal** vullen.



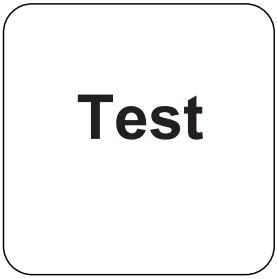
De spoelbakjes afsluiten.



De inhoud mengen door om te draaien.



Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.



De toets **TEST** (XD: **START**) indrukken.

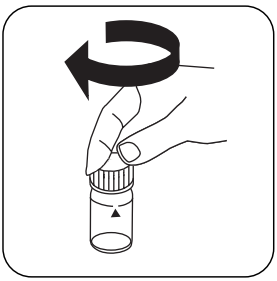
De display toont het resultaat in mg/L vrij chloor.

Uitvoering van de bepaling totaal chloor met vloeibaar reagens

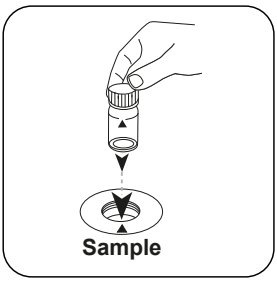
De methode in het apparaat selecteren.

Selecteer bovendien de bepaling: totaal

Spoelbakje van 24 mm met **10 mL staal** vullen.

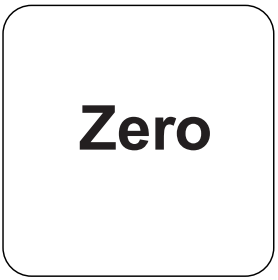


De spoelbakjes afsluiten.

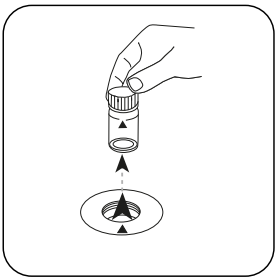


Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.

NL

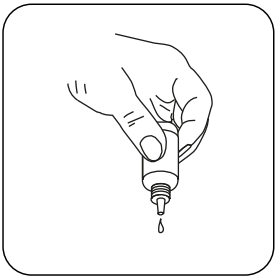


De toets **NUL** indrukken.

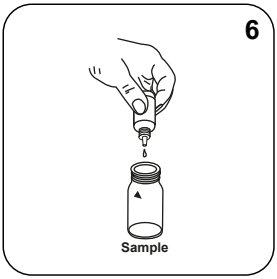


Het spoelbakje uit de meetschacht nemen.

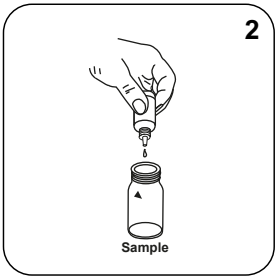
Het spoelbakje ledigen.



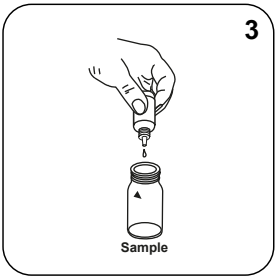
De druppelflessen verticaal houden en even grote druppels toevoegen door langzaam te drukken.



6 druppels DPD
1 bufferoplossing in het staalspoelbakje doen.

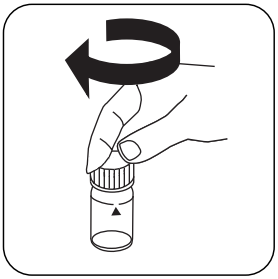


2 druppels DPD
1 reagensoplossing in het staalspoelbakje doen.

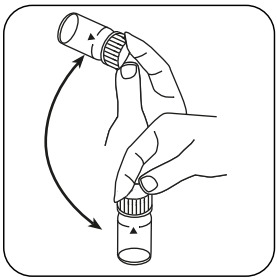


3 druppels DPD
3 oplossing in het staalspoelbakje doen.

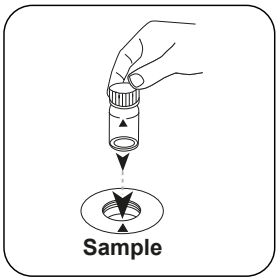
Het spoelbakje tot aan de **markering van 10 mL** met het **staal** vullen.



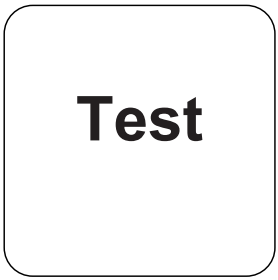
De spoelbakjes afsluiten.



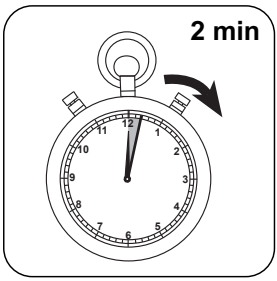
De inhoud mengen door om te draaien.



Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.



De toets **TEST** (XD: **START**) indrukken.



De reactietijd van 2 minuten afwachten.

Na afloop van de reactietijd wordt de meting automatisch uitgevoerd.

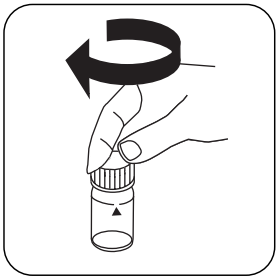
De display toont het resultaat in mg/L Totaal chloor.

Uitvoering van de bepaling gedifferentieerd chloor met vloeibaar reagens

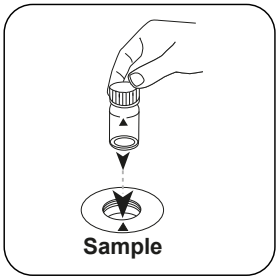
De methode in het apparaat selecteren.

Selecteer bovendien de bepaling: gedifferentieerd

Spoelbakje van 24 mm met **10 mL staal** vullen.

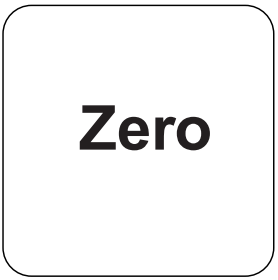


De spoelbakjes afsluiten.

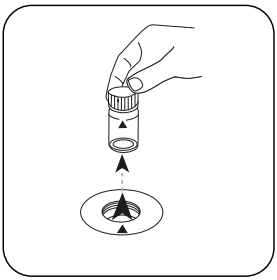


Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.

NL

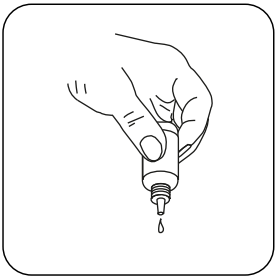


De toets **NUL** indrukken.

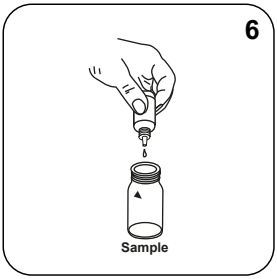


Het spoelbakje uit de meetschacht nemen.

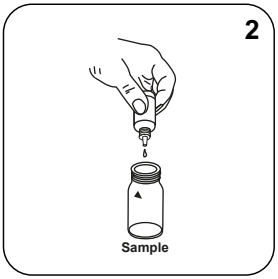
Het spoelbakje ledigen.



De druppelflessen verticaal houden en even grote druppels toevoegen door langzaam te drukken.

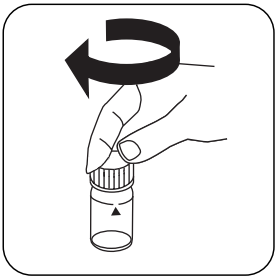


6 druppels DPD
1 bufferoplossing in het staalspoelbakje doen.

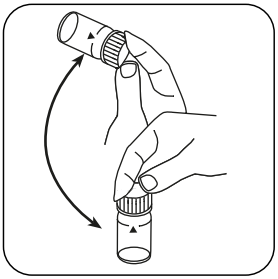


2 druppels DPD
1 reagensoplossing in het staalspoelbakje doen.

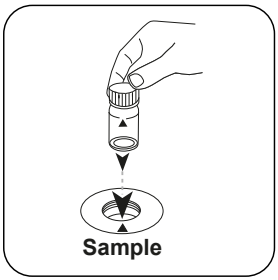
Het spoelbakje tot aan de **markering van 10 mL** met het **staal** vullen.



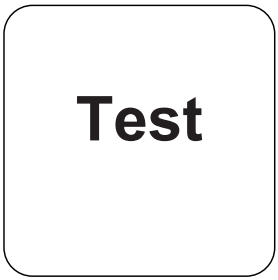
De spoelbakjes afsluiten.



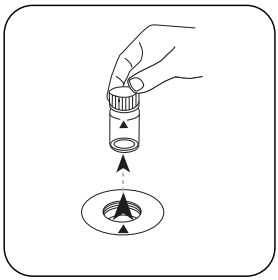
De inhoud mengen door om te draaien.



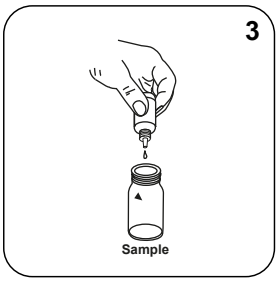
Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.



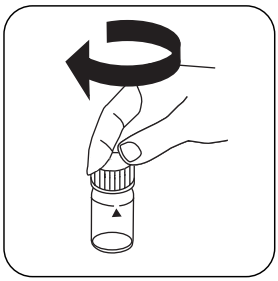
De toets **TEST** (XD: **START**) indrukken.



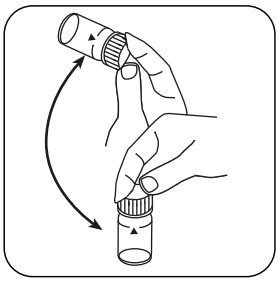
Het spoelbakje uit de meetschacht nemen.



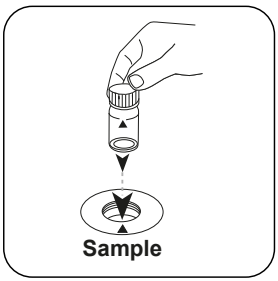
3 druppels DPD 3 oplossing in het staalspoelbakje doen.



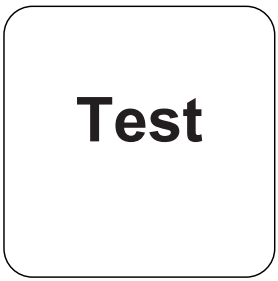
De spoelbakjes afsluiten.



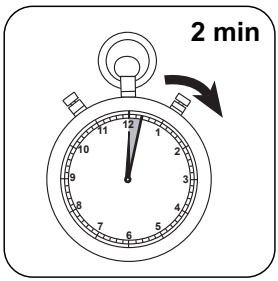
De inhoud mengen door om te draaien.



Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.



De toets **TEST** (XD: **START**) indrukken.



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 Cl_2 [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

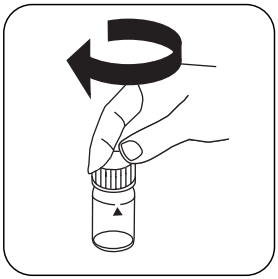
1. Evo-tabletten kunnen worden gebruikt als alternatief voor de overeenkomstige standaardtabletten (bv. DPD nr. 3 Evo in plaats van DPD nr. 3).

Uitvoering van de bepaling vrij chloor HR met tablet

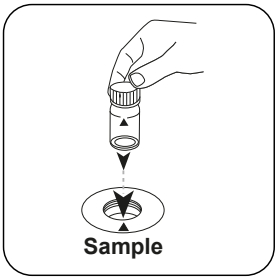
De methode in het apparaat selecteren.

Selecteer bovendien de bepaling: vrij

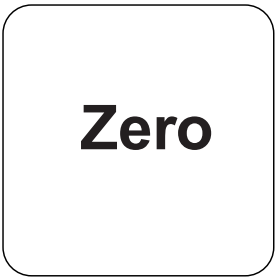
Spoelbakje van 24 mm met **10 mL staal** vullen.



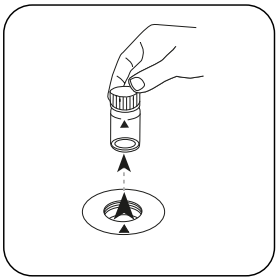
De spoelbakjes afsluiten.



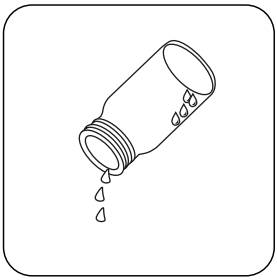
Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.



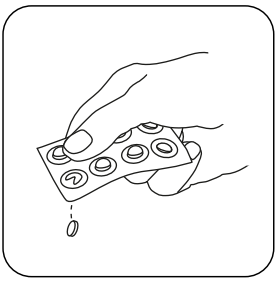
De toets **NUL** indrukken.



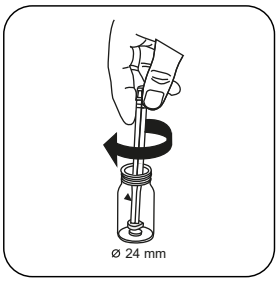
Het spoelbakje uit de meetschacht nemen.



Het spoelbakje tot op enkele druppels ledigen.

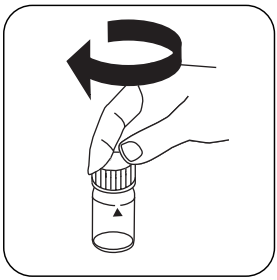


Een DPD Nr. 1 HR tablet toevoegen.

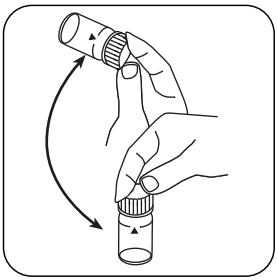


De tabletten onder lichte rotatie verpletteren.

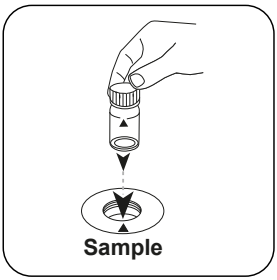
Het spoelbakje tot aan de **markering van 10 mL** met het **staal** vullen.



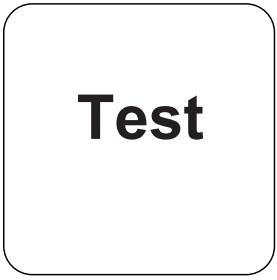
De spoelbakjes afsluiten.



Tabletten oplossen door om te draaien



Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.



De toets **TEST** (XD: **START**) indrukken.

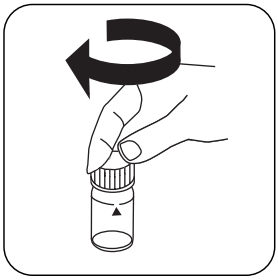
De display toont het resultaat in mg/L vrij chloor.

Uitvoering van de bepaling totaal chloor HR met tablet

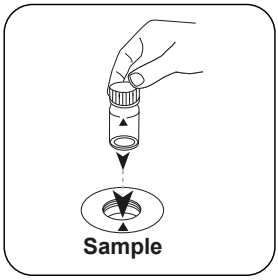
De methode in het apparaat selecteren.

Selecteer bovendien de bepaling: totaal

Spoelbakje van 24 mm met **10 mL staal** vullen.

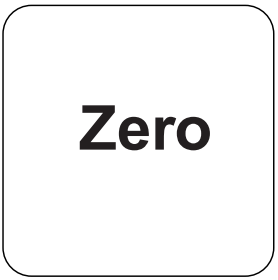


De spoelbakjes afsluiten.

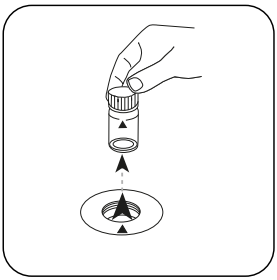


Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.

NL

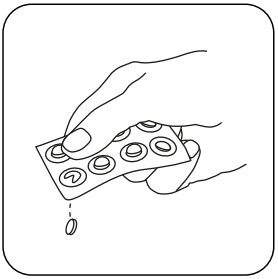


De toets **NUL** indrukken.

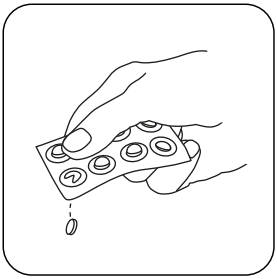


Het spoelbakje uit de meetschacht nemen.

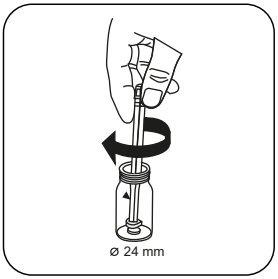
Het spoelbakje tot op enkele druppels ledigen.



Een DPD Nr. 1 HR tablet toevoegen.

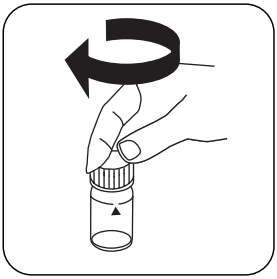


Een DPD Nr. 3 HR tablet toevoegen.

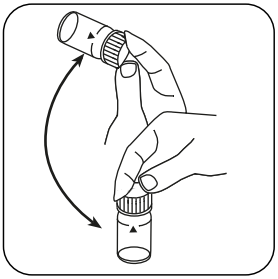


De tabletten onder lichte rotatie verpletteren.

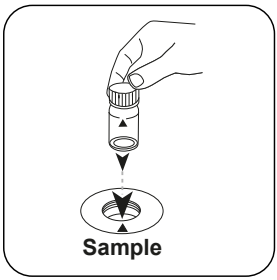
Het spoelbakje tot aan de **markering van 10 mL** met het **staal** vullen.



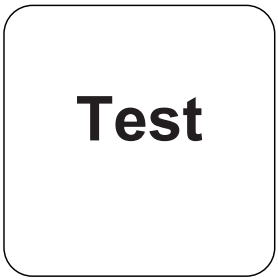
De spoelbakjes afsluiten.



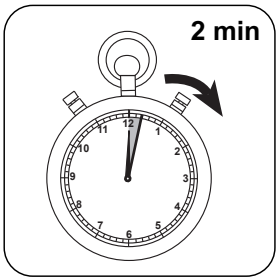
Tabletten oplossen door om te draaien



Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.



De toets **TEST** (XD: **START**) indrukken.



De reactietijd van 2 minuten afwachten.

Na afloop van de reactietijd wordt de meting automatisch uitgevoerd.

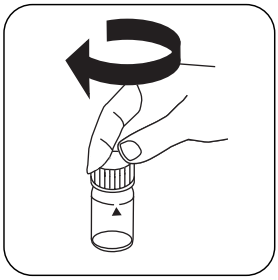
De display toont het resultaat in mg/L Totaal chloor.

Uitvoering van de bepaling gedifferentieerd chloor HR met tablet

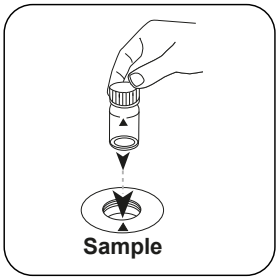
De methode in het apparaat selecteren.

Selecteer bovendien de bepaling: gedifferentieerd

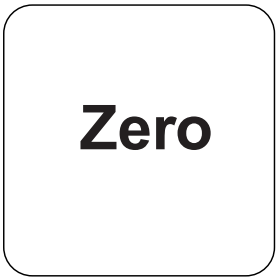
Spoelbakje van 24 mm met **10 mL staal** vullen.



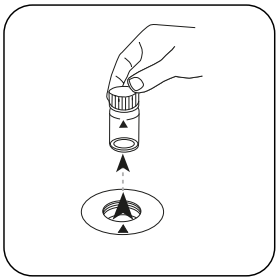
De spoelbakjes afsluiten.



Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.

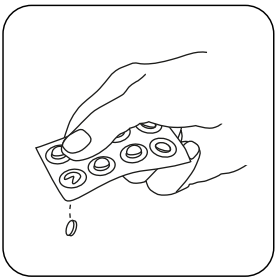


De toets **NUL** indrukken.

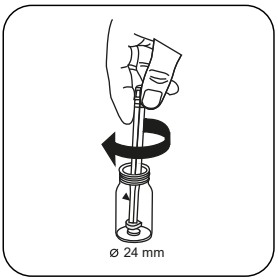


Het spoelbakje uit de meetschacht nemen.

Het spoelbakje tot op enkele druppels ledigen.



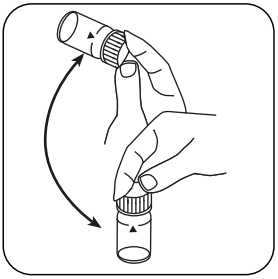
Een DPD Nr. 1 HR tablet toevoegen.



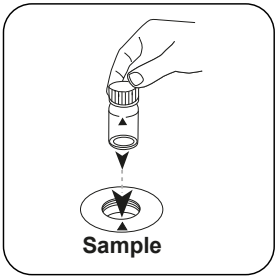
De tabletten onder lichte rotatie verpletteren.

Het spoelbakje tot aan de **markering van 10 mL** met het **staal** vullen.

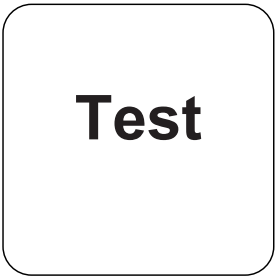
De spoelbakjes afsluiten.



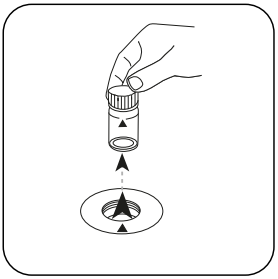
Tabletten oplossen door om te draaien



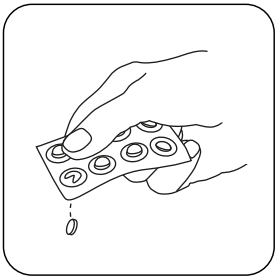
Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.



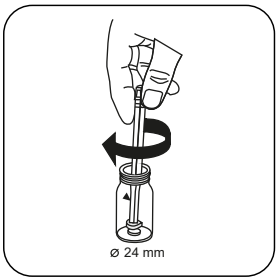
De toets **TEST** (XD: **START**) indrukken.



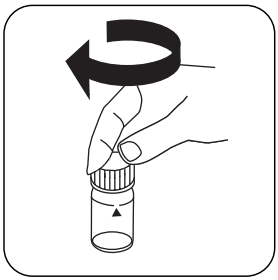
Het spoelbakje uit de meetschacht nemen.



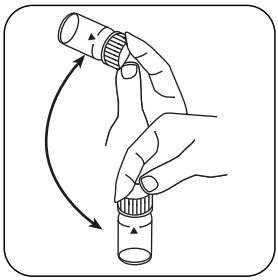
Een DPD Nr. 3 HR tablet toevoegen.



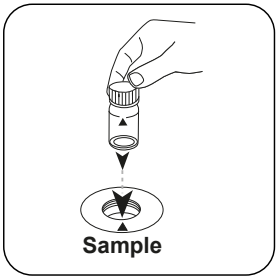
De tabletten onder lichte rotatie verpletteren.



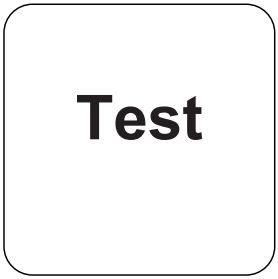
De spoelbakjes afsluiten.



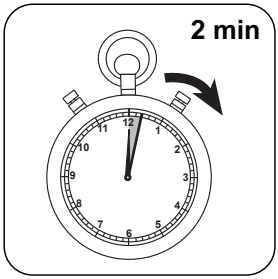
Tabletten oplossen door om te draaien



Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.



De toets **TEST** (XD: **START**) indrukken.



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 | [e)] 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 Cl_2 [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

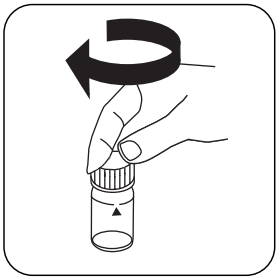
1. Het schoonmaken van de spoelbakjes:
   Aangezien veel huishoudelijke reinigingsmiddelen (bijv. afwasmiddelen) minder schadelijke stoffen bevatten, kan de bepaling van chloor leiden tot minder goede resultaten. Om deze meetfout uit te sluiten, moeten de glasapparaten chloorvrij zijn. Hiertoe wordt 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

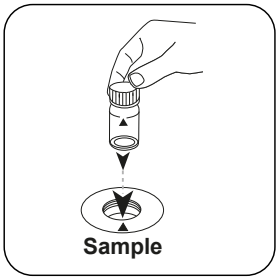
De methode in het apparaat selecteren.

Selecteer bovendien de bepaling: vrij

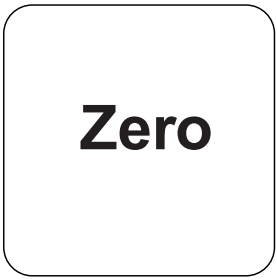
Spoelbakje van 24 mm met **10 mL staal** vullen.



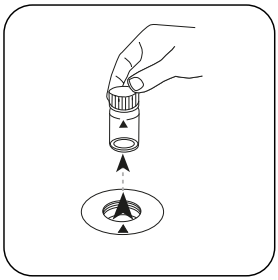
De spoelbakjes afsluiten.



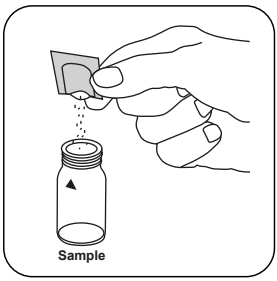
Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.



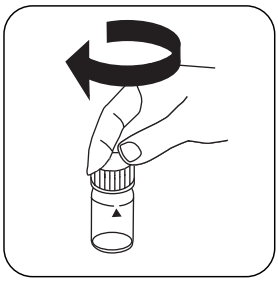
De toets **NUL** indrukken.



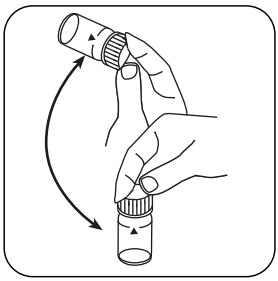
Het spoelbakje uit de meetschacht nemen.



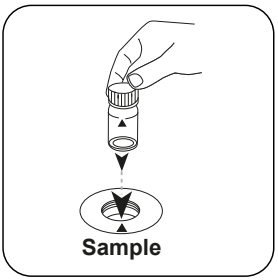
Een **Chloor FREE-DPD/ F10 poederpakje** toevoegen.



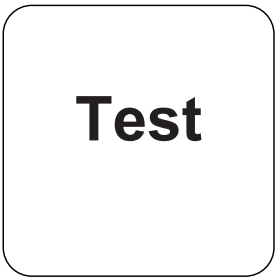
De spoelbakjes afsluiten.



De inhoud mengen door om te draaien (20 sec.).



Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.



De toets **TEST** (XD: **START**) indrukken.

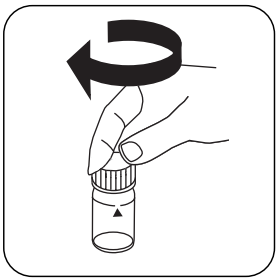
De display toont het resultaat in mg/L vrij chloor.

Uitvoering van de bepaling totaal chloor met poederpakjes

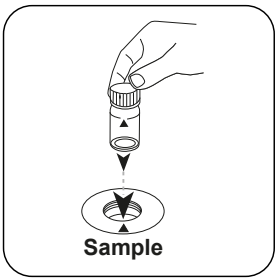
De methode in het apparaat selecteren.

Selecteer bovendien de bepaling: totaal

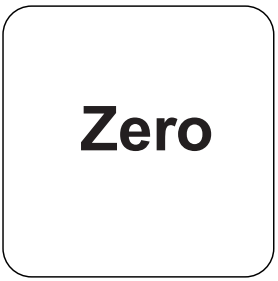
Spoelbakje van 24 mm met **10 mL staal** vullen.



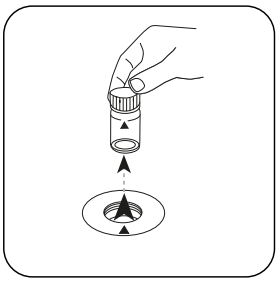
De spoelbakjes afsluiten.



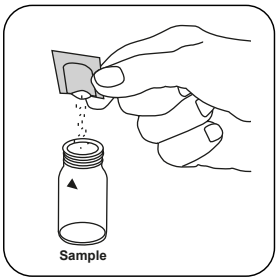
Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.



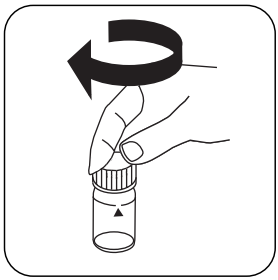
De toets **NUL** indrukken.



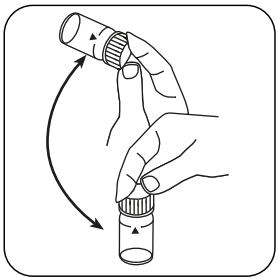
Het spoelbakje uit de meetschacht nemen.



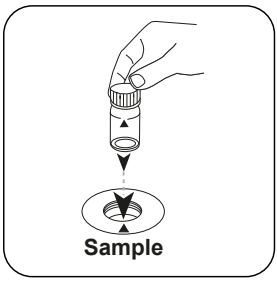
Een **Chloor TOTAL-DPD/ F10 poederpakje** toevoegen.



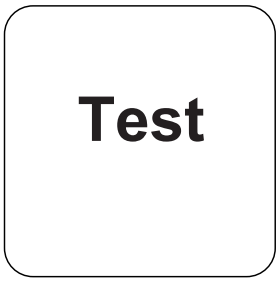
De spoelbakjes afsluiten.



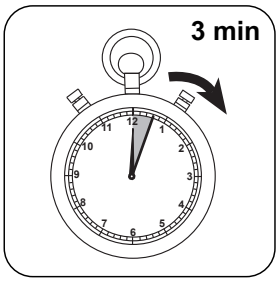
De inhoud mengen door om te draaien (20 sec.).



Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.



De toets **TEST** (XD: **START**) indrukken.



De reactietijd van 3 minuten afwachten.

Na afloop van de reactietijd wordt de meting automatisch uitgevoerd.

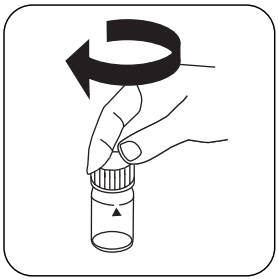
De display toont het resultaat in mg/L Totaal chloor.

Uitvoering van de bepaling gedifferentieerd chloor met poederpakjes

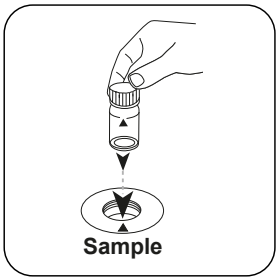
De methode in het apparaat selecteren.

Selecteer bovendien de bepaling: gedifferentieerd

Spoelbakje van 24 mm met **10 mL staal** vullen.

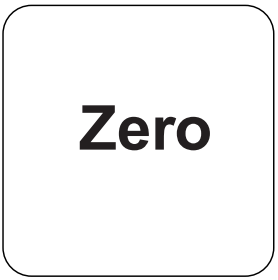


De spoelbakjes afsluiten.

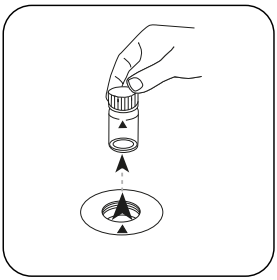


Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.

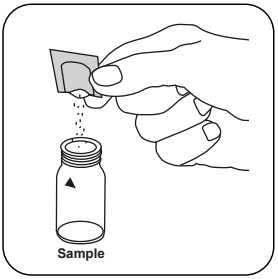
NL



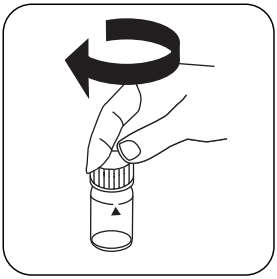
De toets **NUL** indrukken.



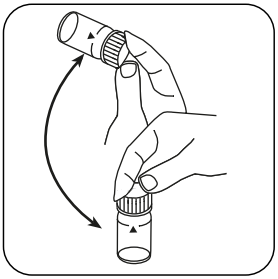
Het spoelbakje uit de meetschacht nemen.



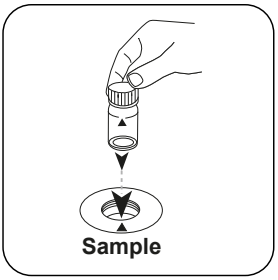
Een **Chloor FREE-DPD/ F10 poederpakje** toevoegen.



De spoelbakjes afsluiten.

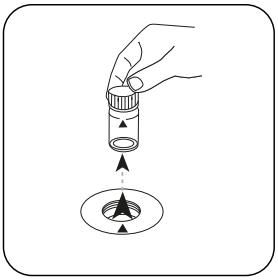


De inhoud mengen door om te draaien (20 sec.).



Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.

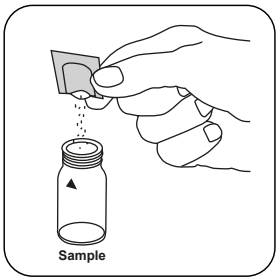
De toets **TEST** (XD: **START**) indrukken.



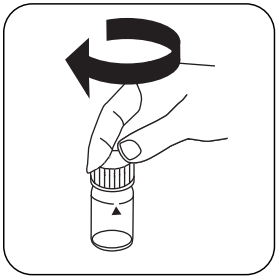
Het spoelbakje uit de meetschacht nemen.

Het spoelbakje en het deksel van het spoelbakje grondig reinigen.

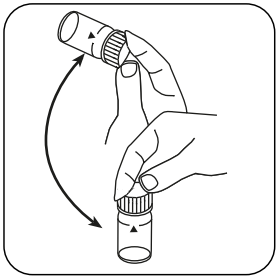
Spoelbakje van 24 mm met **10 mL staal** vullen.



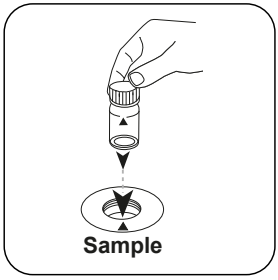
Een **TOTAAL-DPD/ F10 poederpakje** toevoegen.



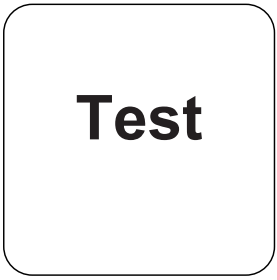
De spoelbakjes afsluiten.



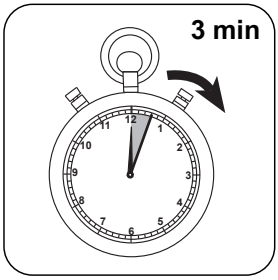
De inhoud mengen door om te draaien (20 sec.).



Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.



De toets **TEST** (XD: **START**) indrukken.



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

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 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).

Verstoringen	verstoort vanaf
CrO_4^{2-}	0,01
MnO_2	0,01

Validatie van de methodes

Aantoonbaarheidsgrens	0.01 mg/L
Bepaalbaarheidsgrens	0.03 mg/L
Einde meetbereik	2 mg/L
Gevoeligheid	1.68 mg/L / Abs
Betrouwbaarheidsgrenzen	0.033 mg/L
Standaardafwijking procedure	0.014 mg/L
Variatiecoefficient procedure	1.34 %

Conform

EN ISO 7393-2

[a] bepaling van de vrije, gebonden, totaal mogelijke

Chloor HR 2 PP M112

0.1 - 10 mg/L Cl_2

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

Bemonstering

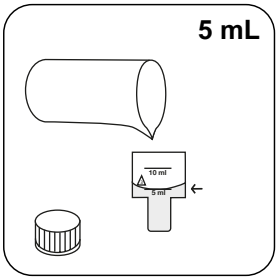
1. Tijdens de monstervoorbereiding moet worden vermeden dat het chloor wordt uitgestoten, bijvoorbeeld door pipetteren en schudden.
2. De analyse moet onmiddellijk na de bemonstering worden uitgevoerd.

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.

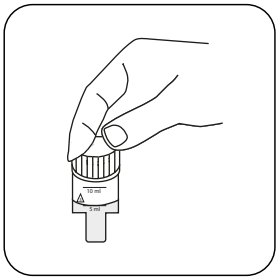
Uitvoering van de bepaling vrij chloor HR 2, met poederpakjes

De methode in het apparaat selecteren.

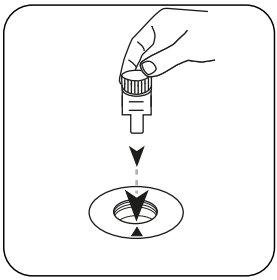


Spoelbakje van 10 mm met **5 mL staal** vullen.

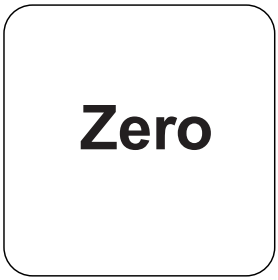
MD50: Spoelbakje van 24 mm met **5 mL staal** vullen.



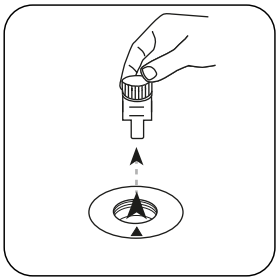
De spoelbakjes afsluiten.



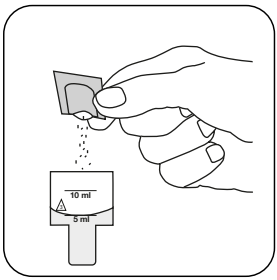
Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.



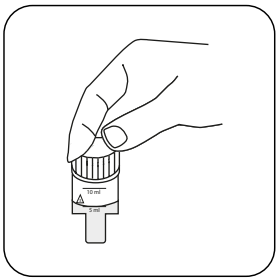
De toets **NUL** indrukken.



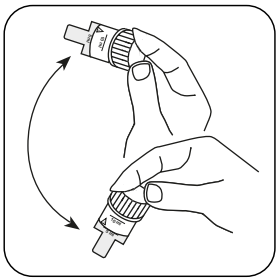
Het **spoelbakje** uit de meetschacht nemen.



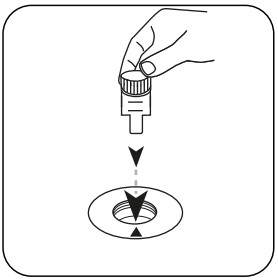
Een **Vario Chlorine Free / F25 poederpakje** toevoegen.



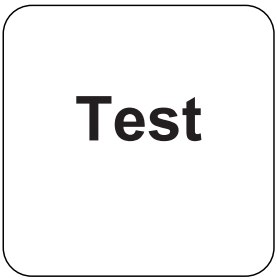
De spoelbakjes afsluiten.



De inhoud mengen door om te draaien (20 sec.).



Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.

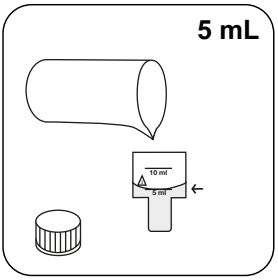


De toets **TEST** (XD: **START**) indrukken.

De display toont het resultaat in mg/L chloor.

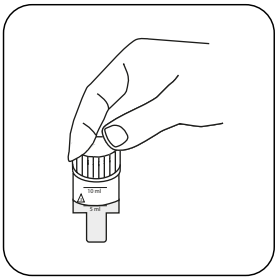
Uitvoering van de bepaling totaal chloor HR 2, met poederpakjes

De methode in het apparaat selecteren.

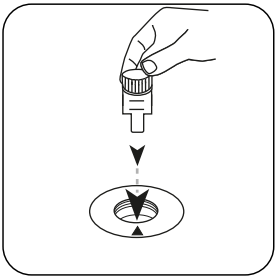


Spoelbakje van 10 mm met **5 mL staal** vullen.

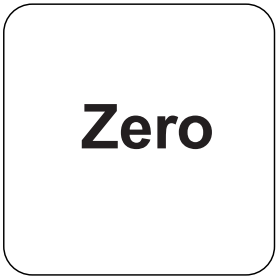
MD50: Spoelbakje van 24 mm met **5 mL staal** vullen.



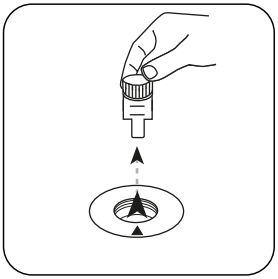
De spoelbakjes afsluiten.



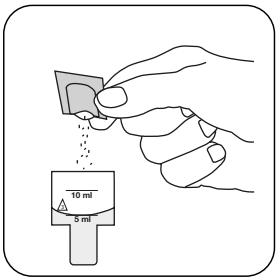
Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.



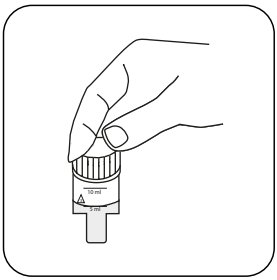
De toets **NUL** indrukken.



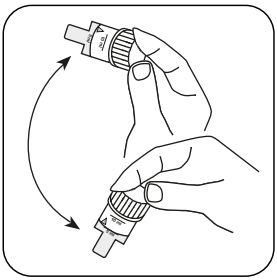
Het **spoelbakje** uit de meetschacht nemen.



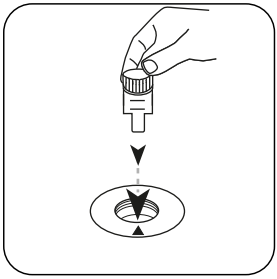
Een **Chloor FREE-DPD / F10 poederpakje** toevoegen.



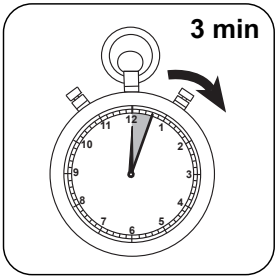
De spoelbakjes afsluiten.



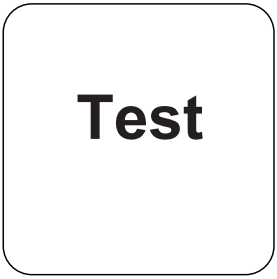
De inhoud mengen door om te draaien (20 sec.).



Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.



De reactietijd van 3 minuten afwachten.



De toets **TEST** (XD: **START**) indrukken.

De display toont het resultaat in mg/L chloor.

Chemische methode

DPD

Aanhangsel

NL

Verstoringen

Permanente verstoringen

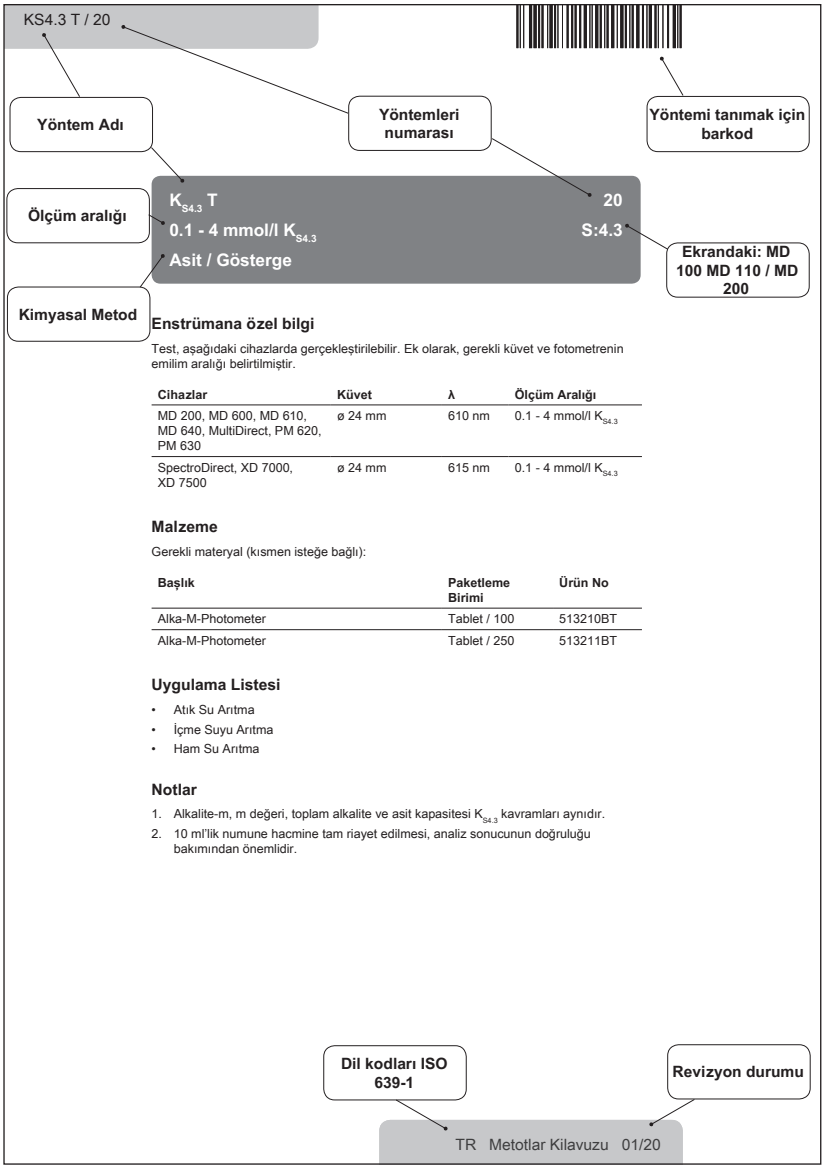
- Alle oxidatiemiddelen in de monsters reageren als chloor, wat tot extra resultaten leidt.

Uit te sluiten verstoringen

- Storingen veroorzaakt door koper en ijzer(III) worden door EDTA geëlimineerd.
- Concentraties van meer dan 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



Enstrümana özel bilgi

Test, aşağıdaki cihazlarda gerçekleştirilebilir. Ek olarak, gerekli küvet ve fotometrenin emilim 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

1. Alkalite-m, m değeri, toplam alkalite ve asit kapasitesi $K_{S4.3}$ kavramları aynıdır.
2. 10 ml'lik numune hacmine tam riayet edilmesi, analiz sonucunun doğruluğu bakımından önemlidir.

Testin uygulanması

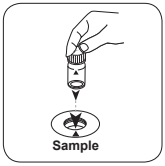
Tespitin uygulanması Tabletli asit kapasitesi $K_{S4.3}$

Cihazda metot seçin.

Bu metot için şu cihazlarda ZERO ölçümü yapılması gerekmez: XD 7000, XD 7500

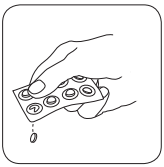
24 mm'lik küveti **10 ml numune** ile doldurun.

Küveti(küvetleri) kapatın.

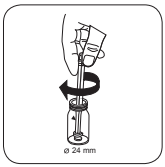


Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.

• • •



ALKA-M-PHOTOMETER tablet ilave edin.



Tableti(tabletleri) hafifçe döndürerek ezin.

Küveti(küvetleri) kapatın.

TR Metotlar Kilavuzu 01/20

Klor T M100

0.01 - 6.0 mg/L Cl_2 [a] CL6

DPD

TR

Malzeme

Gerekli materyal (kısmen isteğe bağlı):

Ayıraçlar	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 hidroksitin su ile çözünmüş hali ile).

Notlar

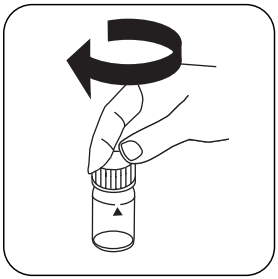
1. Evo tabletleri, karşılık gelen standart tablete alternatif olarak kullanılabilir (ör. DPD No. 3 yerine DPD No. 3 Evo).

TR

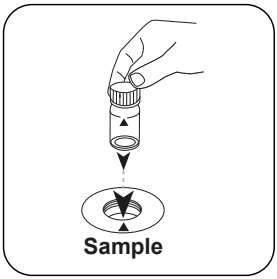
Tespitin uygulanması Tabletle birlikte serbest klor

Cihazda metot seçin.

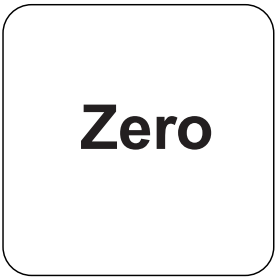
24 mm'lik küveti **10 mL numune** ile doldurun.



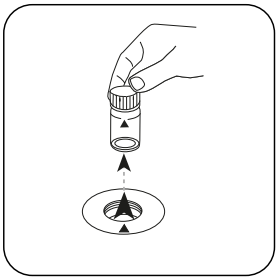
Küveti(küvetleri) kapatın.



Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.

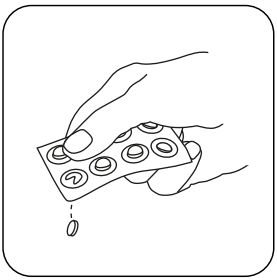


ZERO tuşuna basın.

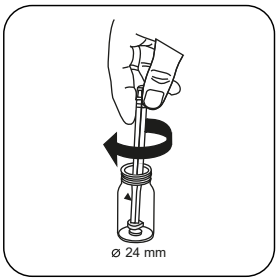


Küveti ölçüm haznesinden alın.

Küveti birkaç damla kalacak kadar boşaltın.

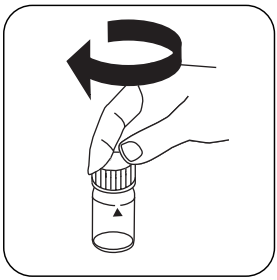


DPD No. 1 tablet ilave edin.

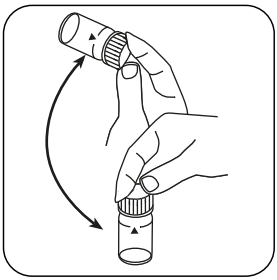


Tableti(tabletleri) hafifçe döndürerek ezin.

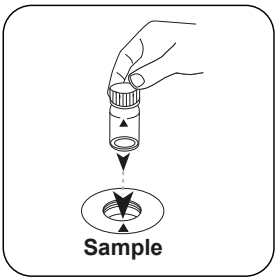
Küveti **10 mL işaretine** kadar **numune** ile doldurun.



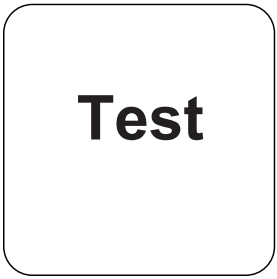
Küveti(küvetleri) kapatın.



Tableti(tabletleri) sallayarak çözdürün.



Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.



TEST (XD: **START**) tuşuna basın.

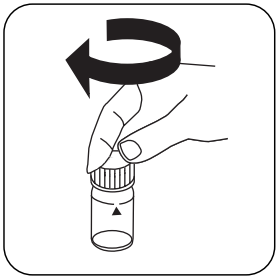
Ekranda sonuç mg/L serbest klor cinsinden belirir.

Tespitin uygulanması Tabletle birlikte toplam klor

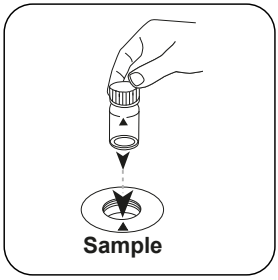
Cihazda metot seçin.

Buna ek olarak tespiti seçin: toplam

24 mm'lik küveti **10 mL numune** ile doldurun.

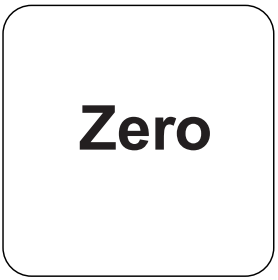


Küveti(küvetleri) kapatın.

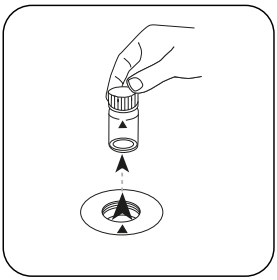


Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.

TR

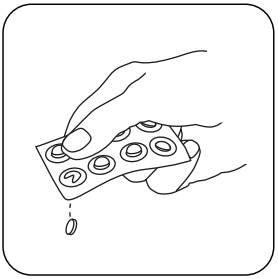


ZERO tuşuna basın.

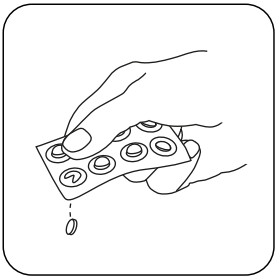


Küveti ölçüm haznesinden alın.

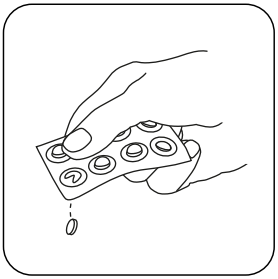
Küveti birkaç damla kalacak kadar boşaltın.



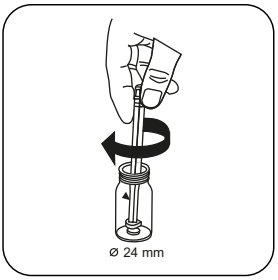
DPD No. 1 tablet ilave edin.



DPD No. 3 tablet ilave edin.

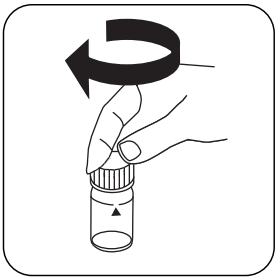


DPD No 1 ve No. 3 tablet alternatif olarak, 1 DPD No 4 tablet eklenebilir.

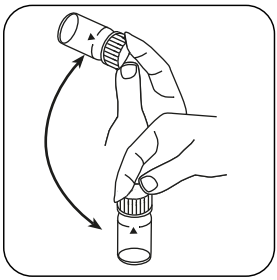


Tableti(tabletleri) hafifçe döndürerek ezin.

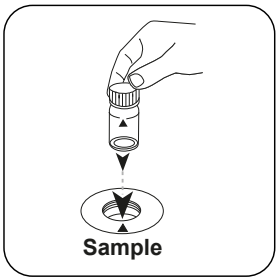
Küveti **10 mL işaretine** kadar **numune** ile doldurun.



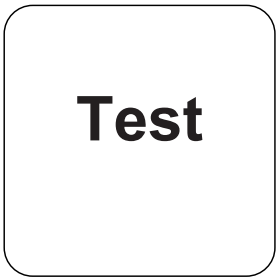
Küveti(küvetleri) kapatın.



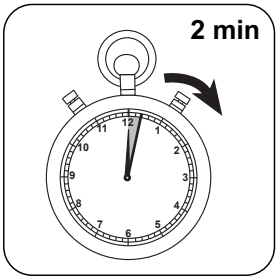
Tableti(tabletleri) sallayarak çözdürün.



Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.



TEST (XD: **START**) tuşuna basın.



2 dakika tepkime süresi bekleyin.

Tepkime süresinin sona ermesinden sonra ölçüm otomatik gerçekleşir.

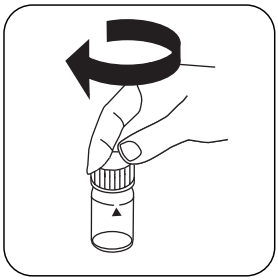
Ekranda sonuç mg/L toplam klor cinsinden belirir.

Tespitin uygulanması Tabletle birlikte ayrılmış klor

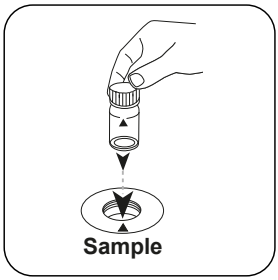
Cihazda metot seçin.

Buna ek olarak tespiti seçin: ayrılmış

24 mm'lik küveti **10 mL numune** ile doldurun.

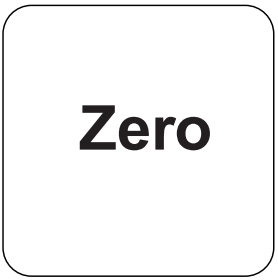


Küveti(küvetleri) kapatın.

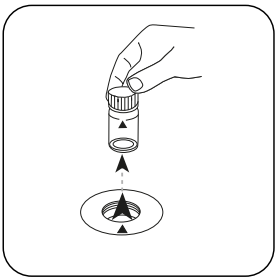


Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.

TR

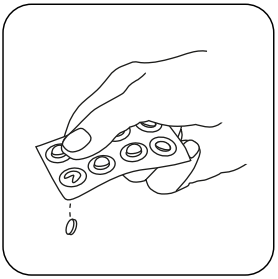


ZERO tuşuna basın.

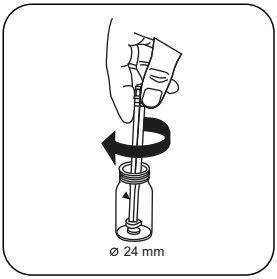


Küveti ölçüm haznesinden alın.

Küveti birkaç damla kalacak kadar boşaltın.



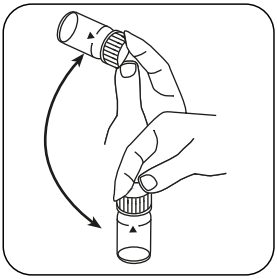
DPD No. 1 tablet ilave edin.



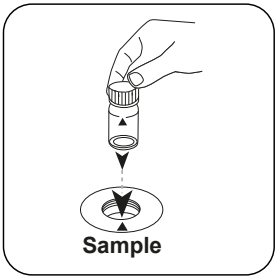
Tableti(tabletleri) hafifçe döndürerek ezin.

Küveti **10 mL işaretine** kadar **numune** ile doldurun.

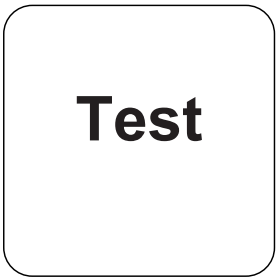
Küveti(küvetleri) kapatın.



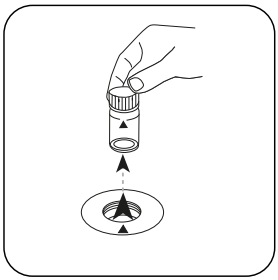
Tableti(tabletleri) sallayarak çözdürün.



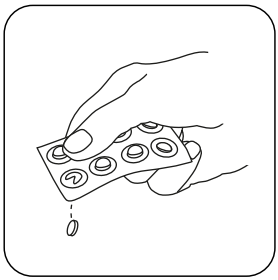
Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.



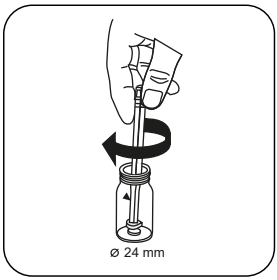
TEST (XD: **START**) tuşuna basın.



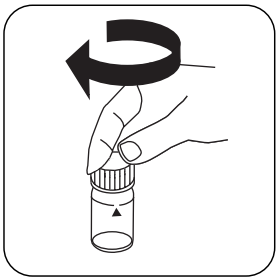
Küveti ölçüm haznesinden alın.



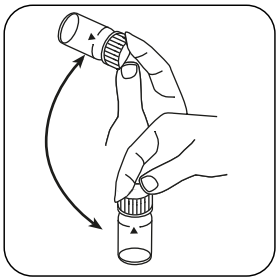
DPD No. 3 tablet ilave edin.



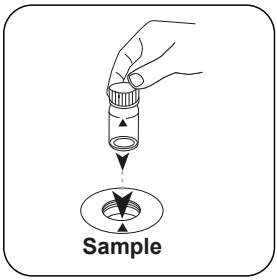
Tableti(tabletleri) hafifçe döndürerek ezin.



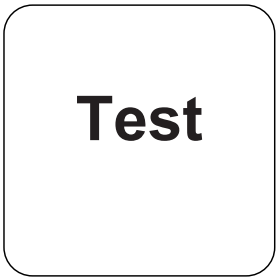
Küveti(küvetleri) kapatın.



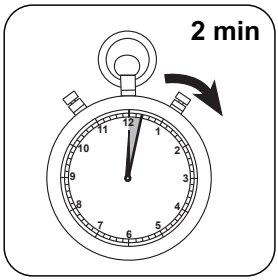
Tableti(tabletleri) sallayarak çözdürün.



Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.



TEST (XD: **START**) tuşuna basın.



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

Yöntem Doğrulama

Algılama Limiti	0.02 mg/L
Belirleme Limiti	0.06 mg/L
Ölçüm Aralığı Sonu	6 mg/L
Hassasiyet	2.05 mg/L / Abs
Güven Aralığı	0.04 mg/L
Standart Sapma	0.019 mg/L
Varyasyon Katsayısı	0.87 %

Uygunluk

EN ISO 7393-2

[a] Serbest, bağlı ve toplam değerin belirlenmesi | [e] 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 Cl_2 [a] CL6

DPD

TR

Malzeme

Gerekli materyal (kısmen isteğe bağlı):

Ayıraçlar	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 Ayıraç çözeltisi, yeşil şişe	15 mL	471020
DPD 1 ayıraç çözeltisi	100 mL	471021
DPD 1 6'lı pakette ayıraç 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 ayıraç seti	1 adetler	471056

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 hidroksitin su ile çözünmüş hali ile).

Notlar

1. Kullandıktan sonra damla şişeleri aynı renkteki kilitli kapak ile derhal kapatılmalıdır.
2. Ayıraç seti +6 °C ila +10 °C'de soğuk depolanmalıdır.

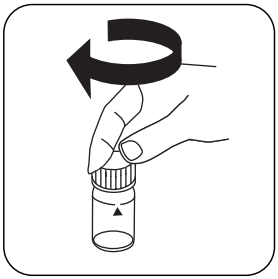
Tespitin uygulanması Klor, sıvı reaktifle birlikte serbest

Cihazda metot seçin.

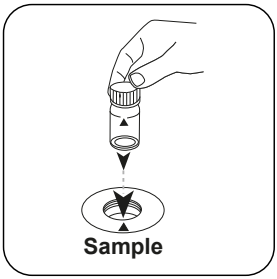
Buna ek olarak tespiti seçin: serbest

TR

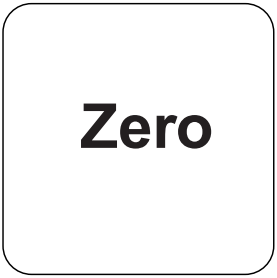
24 mm'lik küveti **10 mL numune** ile doldurun.



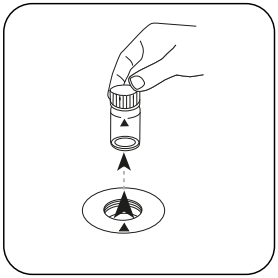
Küveti(küvetleri) kapatın.



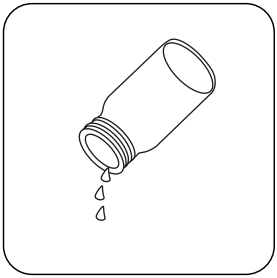
Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.



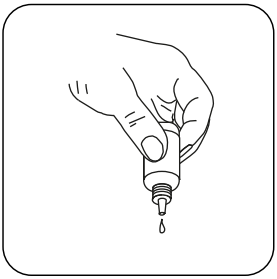
ZERO tuşuna basın.



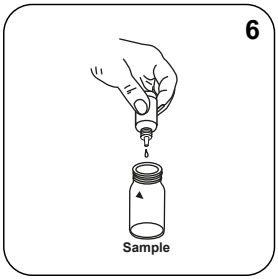
Küveti ölçüm haznesinden alın.



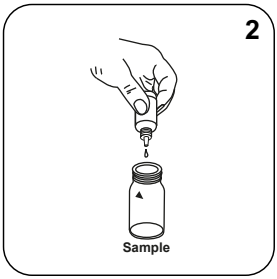
Küveti boşaltın.



Damla şişelerini dik tutun ve yavaşça pompalayarak aynı büyüklükte damlalar ilave edin.

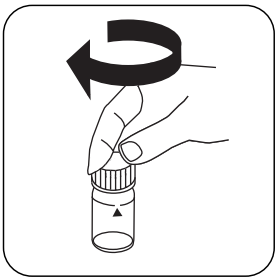


Numune küvetine 6 damla DPD 1 Buffer Solution ilave edin.

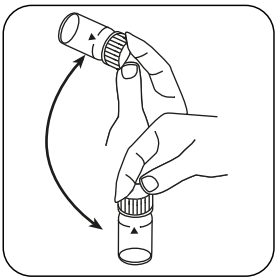


Numune küvetine 2 damla DPD 1 Reagent Solution ilave edin.

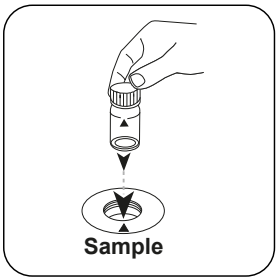
Küveti **10 mL işaretine** kadar **numune** ile doldurun.



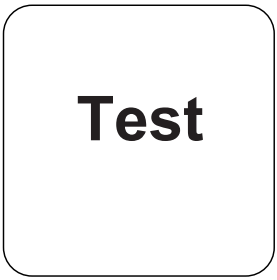
Küveti(küvetleri) kapatın.



Sallayarak içeriği karıştırın.



Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.



TEST (XD: **START**) tuşuna basın.

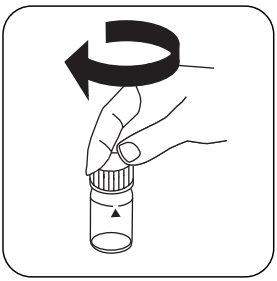
Ekranda sonuç mg/L serbest klor cinsinden belirir.

Tespitin uygulanması Klor, sıvı reaktifle birlikte toplam

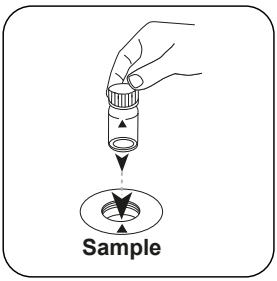
Cihazda metot seçin.

Buna ek olarak tespiti seçin: toplam

24 mm'lik küveti **10 mL numune** ile doldurun.

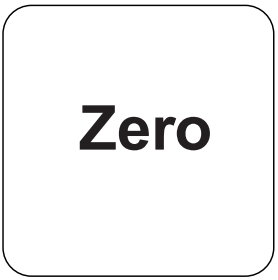


Küveti(küvetleri) kapatın.

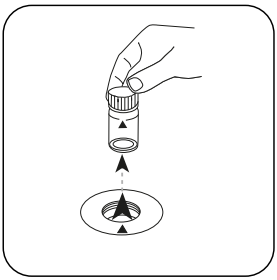


Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.

TR

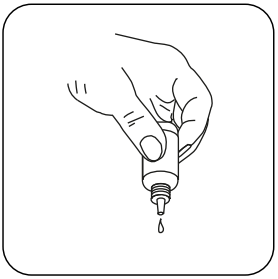


ZERO tuşuna basın.

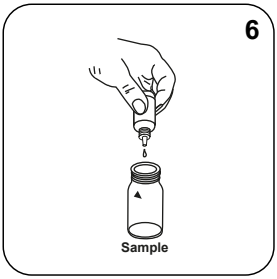


Küveti ölçüm haznesinden alın.

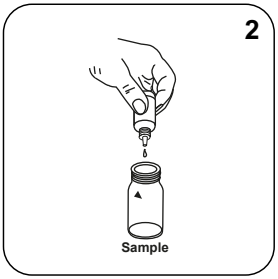
Küveti boşaltın.



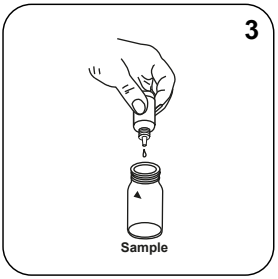
Damla şişelerini dik tutun ve yavaşça pompalayarak aynı büyüklükte damlalar ilave edin.



Numune küvetine 6 damla DPD 1 Buffer Solution ilave edin.

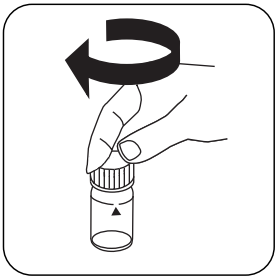


Numune küvetine 2 damla DPD 1 Reagent Solution ilave edin.

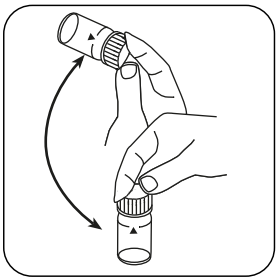


Numune küvetine 3 damla DPD 3 Solution ilave edin.

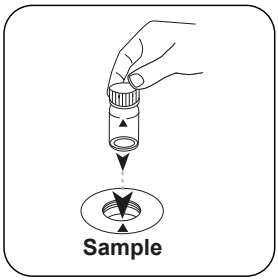
Küveti **10 mL işaretine** kadar **numune** ile doldurun.



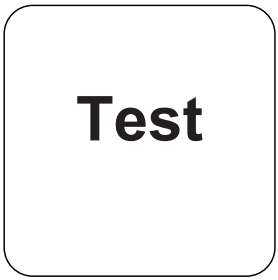
Küveti(küvetleri) kapatın.



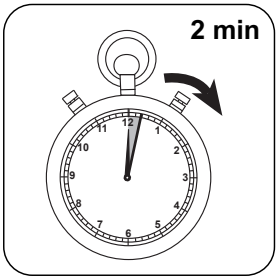
Sallayarak içeriği karıştırın.



Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.



TEST (XD: **START**) tuşuna basın.



2 dakika tepkime süresi bekleyin.

Tepkime süresinin sona ermesinden sonra ölçüm otomatik gerçekleşir.

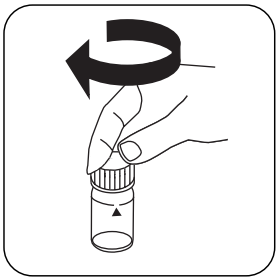
Ekranda sonuç mg/L toplam klor cinsinden belirir.

Tespitin uygulanması Klor, sıvı reaktifle birlikte ayrımlaştırılmış

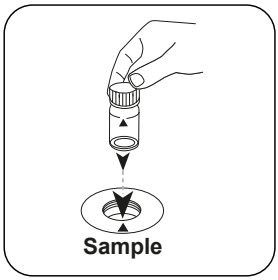
Cihazda metot seçin.

Buna ek olarak tespiti seçin: ayrılmış

24 mm'lik küveti **10 mL numune** ile doldurun.

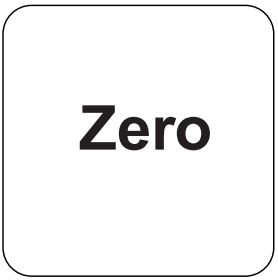


Küveti(küvetleri) kapatın.

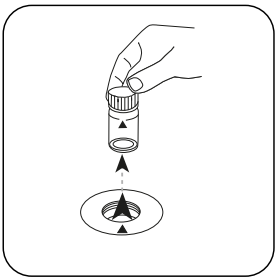


Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.

TR

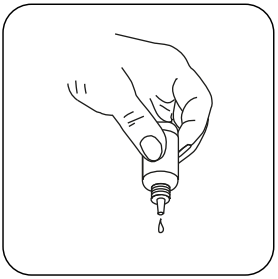


ZERO tuşuna basın.

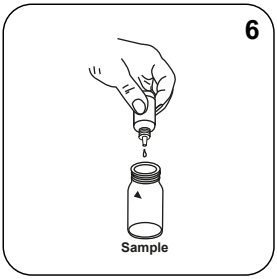


Küveti ölçüm haznesinden alın.

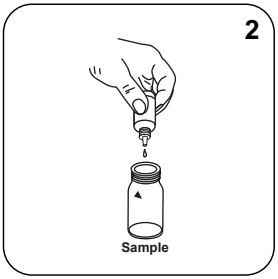
Küveti boşaltın.



Damla şişelerini dik tutun ve yavaşça pompalayarak aynı büyüklükte damlalar ilave edin.

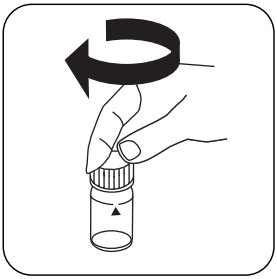


Numune küvetine 6 damla DPD 1 Buffer Solution ilave edin.

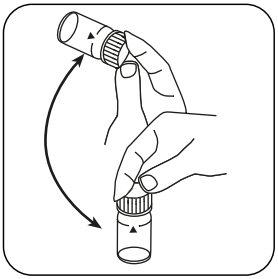


Numune küvetine 2 damla DPD 1 Reagent Solution ilave edin.

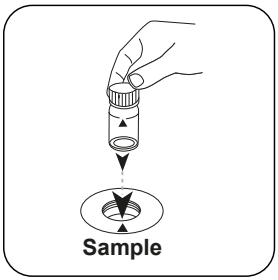
Küveti **10 mL işaretine** kadar **numune** ile doldurun.



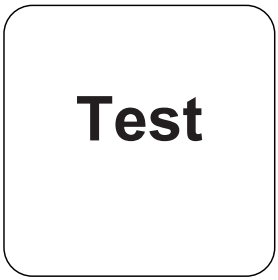
Küveti(küvetleri) kapatın.



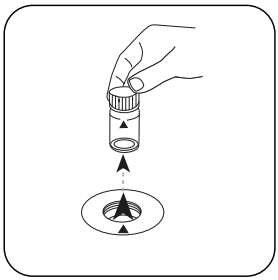
Sallayarak içeriği karıştırın.



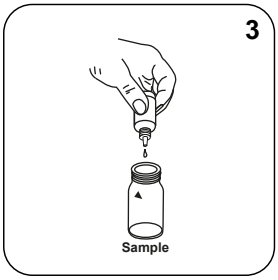
Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.



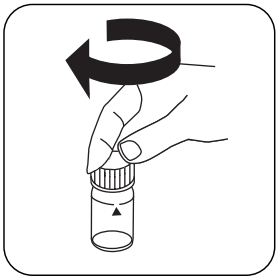
TEST (XD: **START**) tuşuna basın.



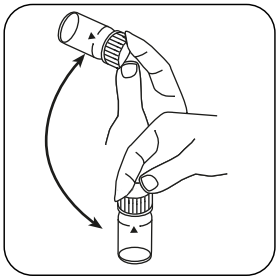
Küveti ölçüm haznesinden alın.



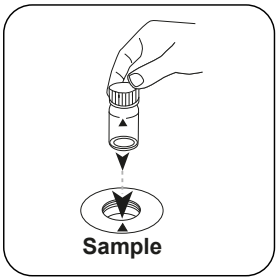
Numune küvetine 3 damla DPD 3 Solution ilave edin.



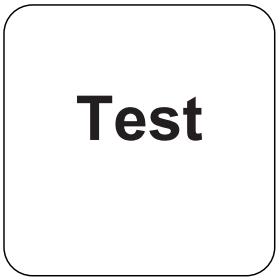
Küveti(küvetleri) kapatın.



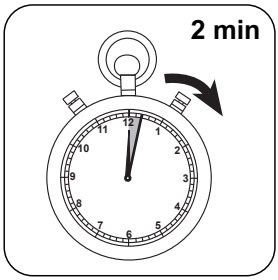
Sallayarak içeriği karıştırın.



Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.



TEST (XD: **START**) tuşuna basın.



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 ayıraçların 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 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 T M103

0.1 - 10 mg/L Cl_2 [a] CL10

DPD

TR

Malzeme

Gerekli materyal (kısmen isteğe bağlı):

Ayıraçlar	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 [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.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 hidroksitin 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).

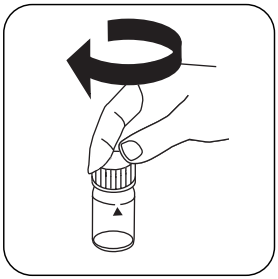
Tespitin uygulanması Tabletle birlikte serbest klor HR

Cihazda metot seçin.

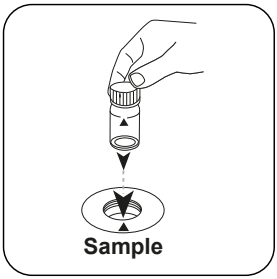
Buna ek olarak tespiti seçin: serbest

TR

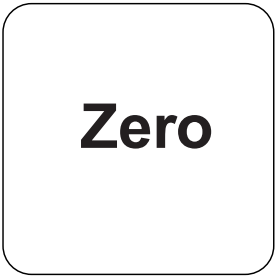
24 mm'lik küveti **10 mL numune** ile doldurun.



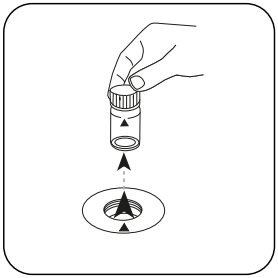
Küveti(küvetleri) kapatın.



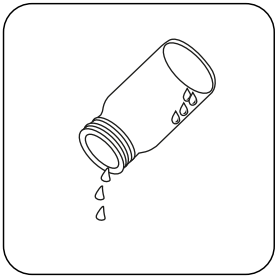
Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.



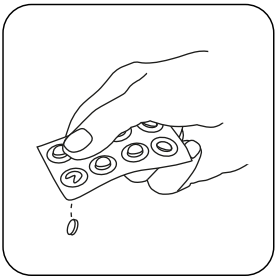
ZERO tuşuna basın.



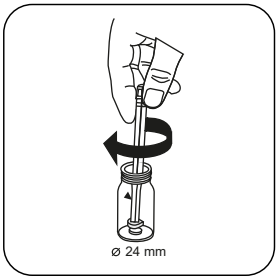
Küveti ölçüm haznesinden alın.



Küveti birkaç damla kalacak kadar boşaltın.

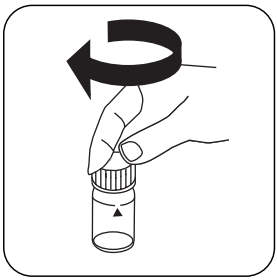


DPD No. 1 HR tablet ilave edin.

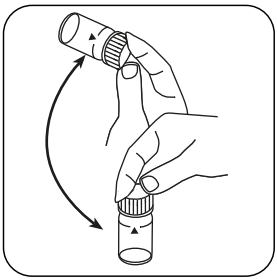


Tableti(tabletleri) hafifçe döndürerek ezin.

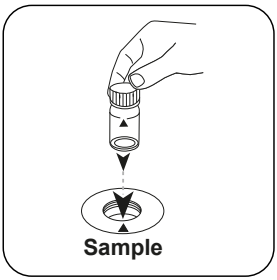
Küveti **10 mL işaretine** kadar **numune** ile doldurun.



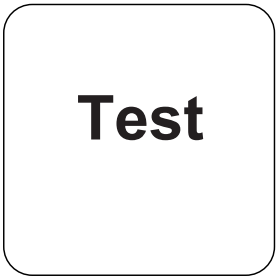
Küveti(küvetleri) kapatın.



Tableti(tabletleri) sallayarak çözdürün.



Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.



TEST (XD: **START**) tuşuna basın.

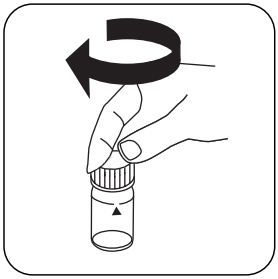
Ekranda sonuç mg/L serbest klor cinsinden belirir.

Tespitin uygulanması Tabletle birlikte toplam klor HR

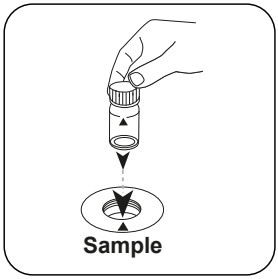
Cihazda metot seçin.

Buna ek olarak tespiti seçin: toplam

24 mm'lik küveti **10 mL numune** ile doldurun.

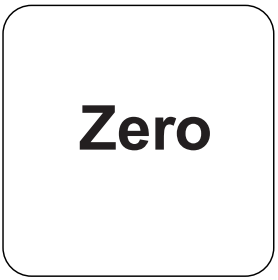


Küveti(küvetleri) kapatın.

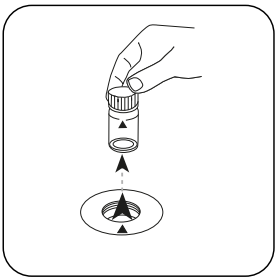


Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.

TR

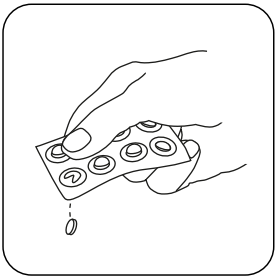


ZERO tuşuna basın.

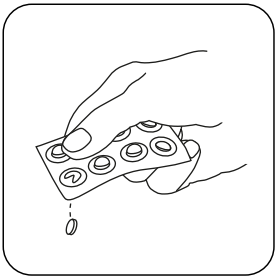


Küveti ölçüm haznesinden alın.

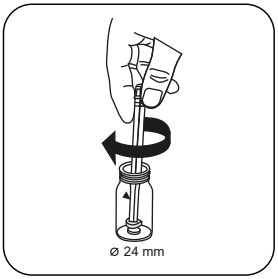
Küveti birkaç damla kalacak kadar boşaltın.



DPD No. 1 HR tablet ilave edin.

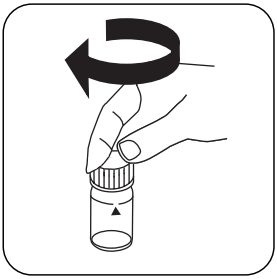


DPD No. 3 HR tablet ilave edin.

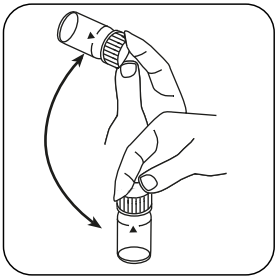


Tableti(tabletleri) hafifçe döndürerek ezin.

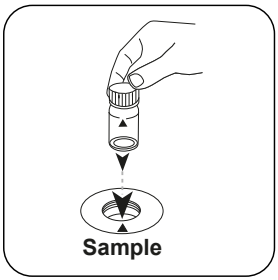
Küveti **10 mL işaretine** kadar **numune** ile doldurun.



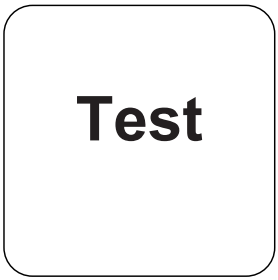
Küveti(küvetleri) kapatın.



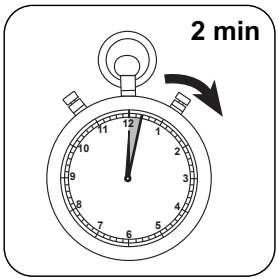
Tableti(tabletleri) sallayarak çözdürün.



Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.



TEST (XD: **START**) tuşuna basın.



2 dakika tepkime süresi bekleyin.

TR

Tepkime süresinin sona ermesinden sonra ölçüm otomatik gerçekleşir.

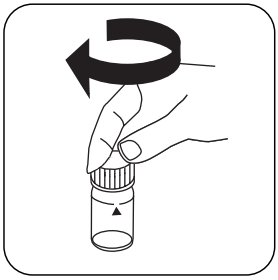
Ekranda sonuç mg/L toplam klor cinsinden belirir.

Tespitin uygulanması Tabletle birlikte ayrılmış klor HR

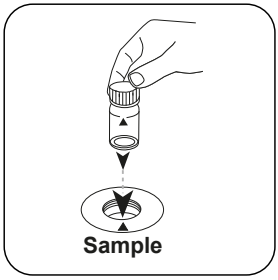
Cihazda metot seçin.

Buna ek olarak tespiti seçin: ayrılmış

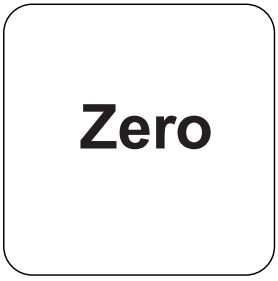
24 mm'lik küveti **10 mL numune** ile doldurun.



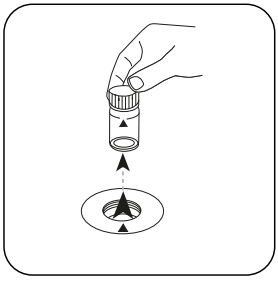
Küveti(küvetleri) kapatın.



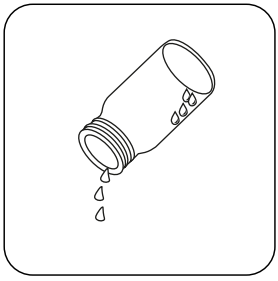
Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.



ZERO tuşuna basın.

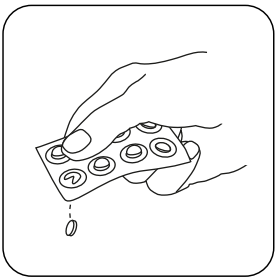


Küveti ölçüm haznesinden alın.

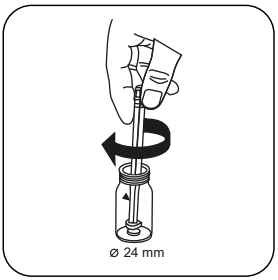


Küveti birkaç damla kalacak kadar boşaltın.

TR

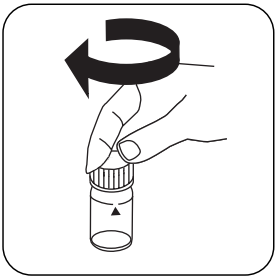


DPD No. 1 HR tablet ilave edin.

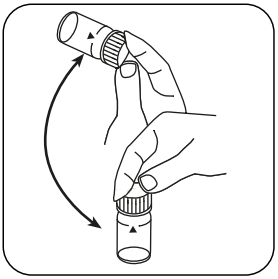


Tableti(tabletleri) hafifçe döndürerek ezin.

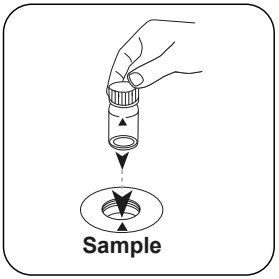
Küveti **10 mL işaretine** kadar **numune** ile doldurun.



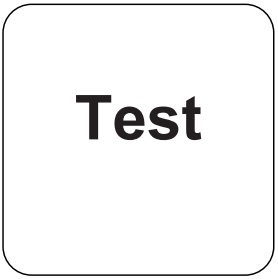
Küveti(küvetleri) kapatın.



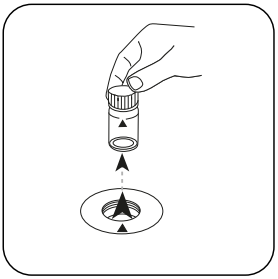
Tableti(tabletleri) sallayarak çözdürün.



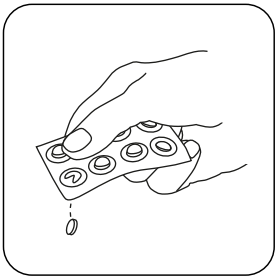
Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.



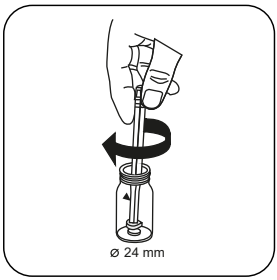
TEST (XD: **START**) tuşuna basın.



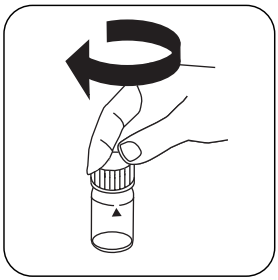
Küveti ölçüm haznesinden alın.



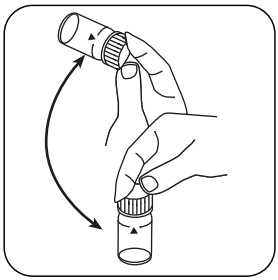
DPD No. 3 HR tablet ilave edin.



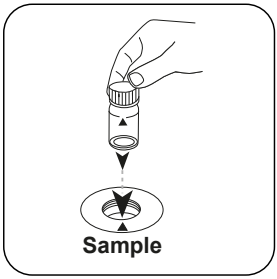
Tableti(tabletleri) hafifçe döndürerek ezin.



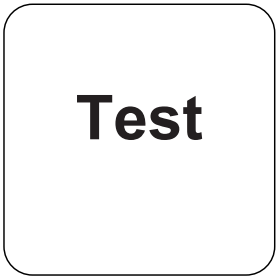
Küveti(küvetleri) kapatın.



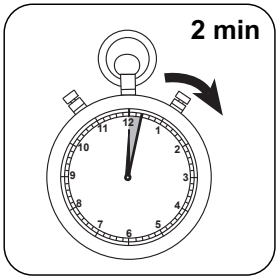
Tableti(tabletleri) sallayarak çözdürün.



Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.



TEST (XD: **START**) tuşuna basın.



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.

Uygunluk

EN ISO 7393-2

[a)] Serbest, bağlı ve toplam değerin belirlenmesi | [e)] 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 Cl_2 [a)] CL2

DPD

TR

Malzeme

Gerekli materyal (kısmen isteğe bağlı):

Ayıraçlar	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

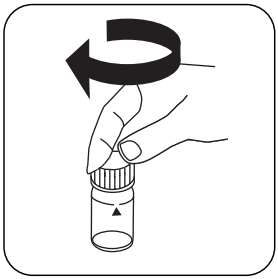
1. Küvetlerin temizlenmesi:
   Birçok ev tipi temizleyici (ör. bulaşık deterjanı) azaltıcı maddeler içerdiğinden klor tespitinde ehemmiyetsiz miktarda bulgulara ulaşılabilir. Bu ölçüm hatasına ihtimal vermemek için cam aletler klordan etkilenmeyecek şekilde olmalıdır. Bunun için cam aletler bir saatliğine 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 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).

Tespitin uygulanması toz poşetleriyle birlikte serbest klor

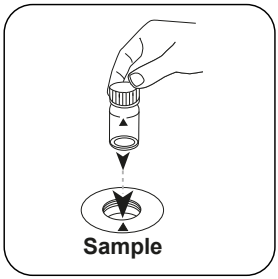
Cihazda metot seçin.

Buna ek olarak tespiti seçin: serbest

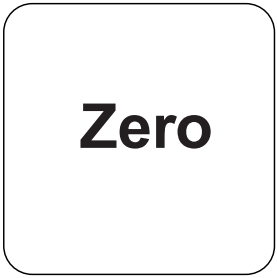
24 mm'lik küveti **10 mL numune** ile doldurun.



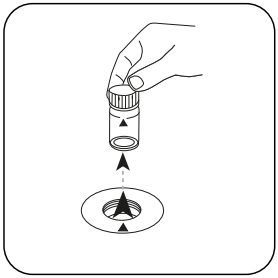
Küveti(küvetleri) kapatın.



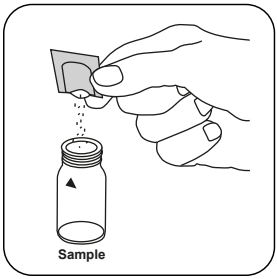
Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.



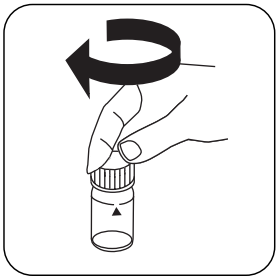
ZERO tuşuna basın.



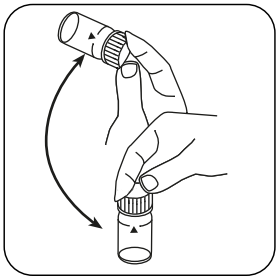
Küveti ölçüm haznesinden alın.



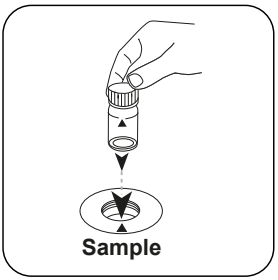
Chlorine FREE-DPD/ F10 toz paketi ilave edin.



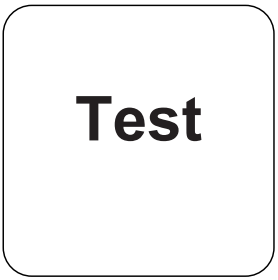
Küveti(küvetleri) kapatın.



Sallayarak içeriği karıştırın (20 sec.).



Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.



TEST (XD: **START**) tuşuna basın.

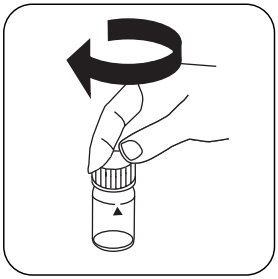
Ekranda sonuç mg/L serbest klor cinsinden belirir.

Tespitin uygulanması toz poşetleriyle birlikte toplam klor

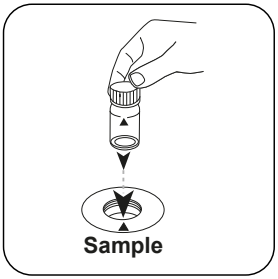
Cihazda metot seçin.

Buna ek olarak tespiti seçin: toplam

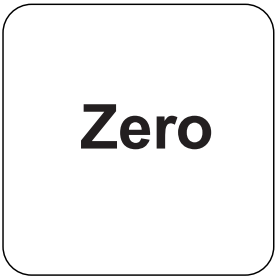
24 mm'lik küveti **10 mL numune** ile doldurun.



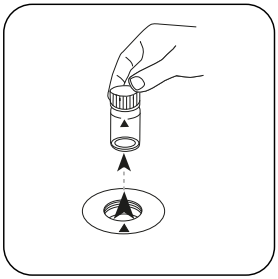
Küveti(küvetleri) kapatın.



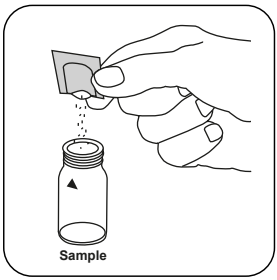
Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.



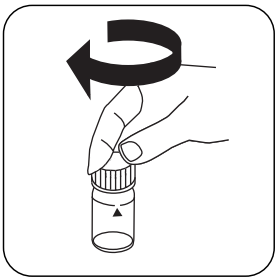
ZERO tuşuna basın.



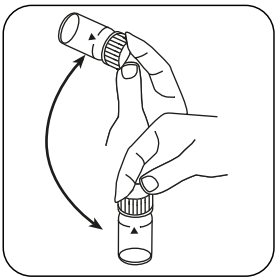
Küveti ölçüm haznesinden alın.



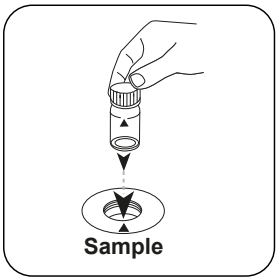
Chlorine TOTAL-DPD/ F10 toz paketi ilave edin.



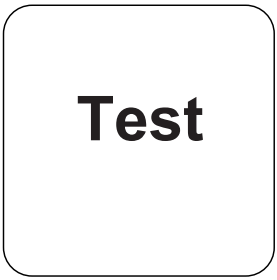
Küveti(küvetleri) kapatın.



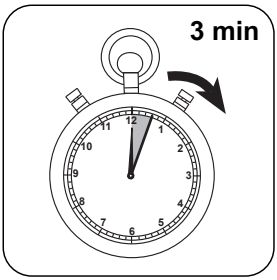
Sallayarak içeriği karıştırın (20 sec.).



Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.



TEST (XD: **START**) tuşuna basın.



3 dakika tepkime süresi bekleyin.

Tepkime süresinin sona ermesinden sonra ölçüm otomatik gerçekleşir.

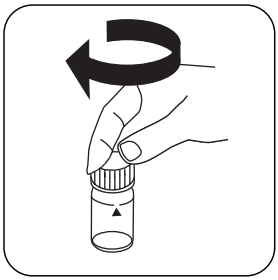
Ekranda sonuç mg/L toplam klor cinsinden belirir.

Tespitin uygulanması toz poşetleriyle birlikte ayrılmış klor

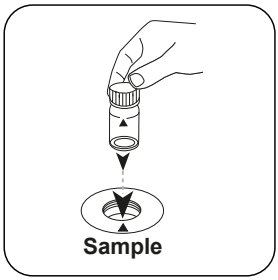
Cihazda metot seçin.

Buna ek olarak tespiti seçin: ayrılmış

24 mm'lik küveti **10 mL numune** ile doldurun.

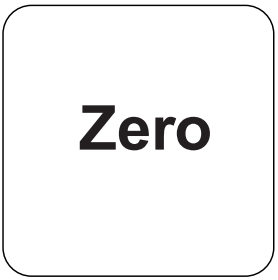


Küveti(küvetleri) kapatın.

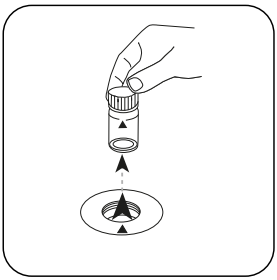


Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.

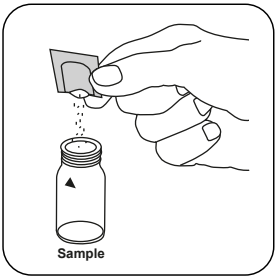
TR



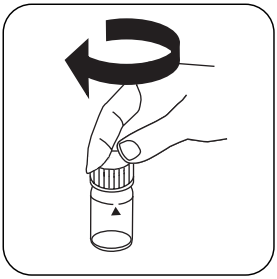
ZERO tuşuna basın.



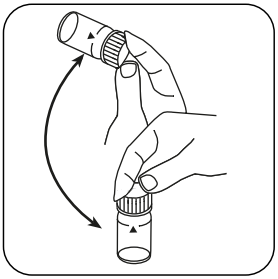
Küveti ölçüm haznesinden alın.



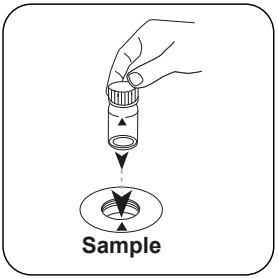
Chlorine FREE-DPD/ F10 toz paketi ilave edin.



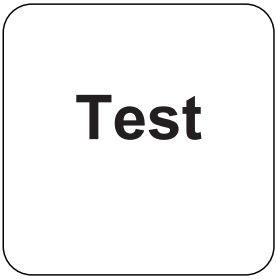
Küveti(küvetleri) kapatın.



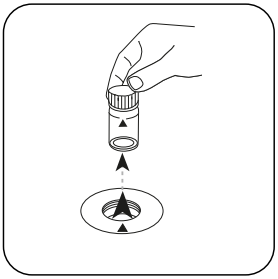
Sallayarak içeriği karıştırın (20 sec.).



Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.



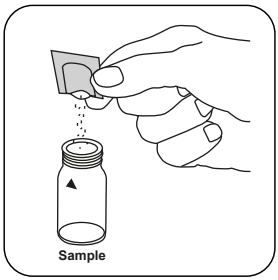
TEST (XD: **START**) tuşuna basın.



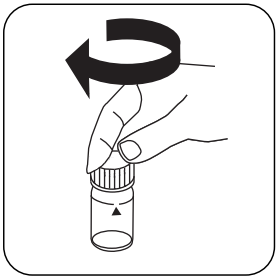
Küveti ölçüm haznesinden alın.

Küveti ve küvet kapağını iyice temizleyin.

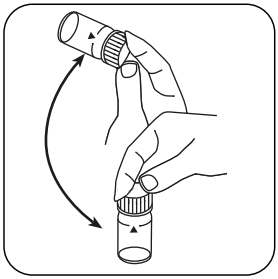
24 mm'lik küveti **10 mL numune** ile doldurun.



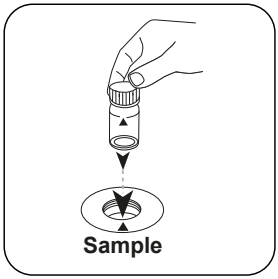
TOTAL-DPD/ F10 toz paketi ilave edin.



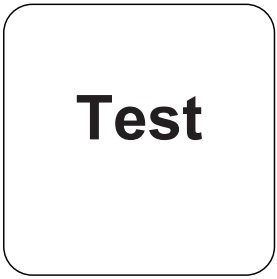
Küveti(küvetleri) kapatın.



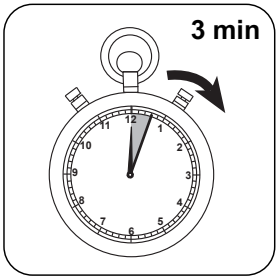
Sallayarak içeriği karıştırın (20 sec.).



Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.



TEST (XD: **START**) tuşuna basın.



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

Yöntem Doğrulama

Algılama Limiti	0.01 mg/L
Belirleme Limiti	0.03 mg/L
Ölçüm Aralığı Sonu	2 mg/L
Hassasiyet	1.68 mg/L / Abs
Güven Aralığı	0.033 mg/L
Standart Sapma	0.014 mg/L
Varyasyon Katsayısı	1.34 %

Uygunluk

EN ISO 7393-2

[a] Serbest, bağlı ve toplam değerin belirlenmesi

Klor HR 2 PP M112

0.1 - 10 mg/L Cl_2

DPD

TR

Malzeme

Gerekli materyal (kısmen isteğe bağlı):

Ayıraçlar	Paketleme Birimi	Ürün No
VARIO Serbest klor DPD F25-100	Toz / 100 adetler	530110
VARIO Toplam klor DPD F25-100	Toz / 100 adetler	530130

Numune Alma

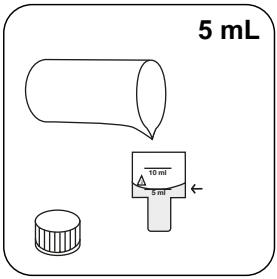
1. Numune ön hazırlığı esnasında ör. pipetleme ve çalkalama ile klorun gazlaşması önlenmelidir.
2. Analiz numune alımından hemen sonra yapılmalıdır.

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 hidroksitin su ile çözünmüş hali ile).

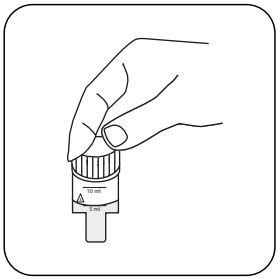
Tespitin uygulanması toz poşetleriyle birlikte serbest klor HR 2

Cihazda metot seçin.

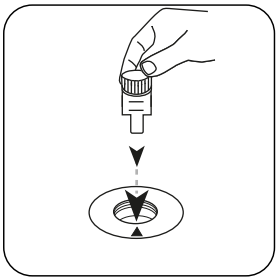


10 mm'lik küveti **5 mL numune** ile doldurun.

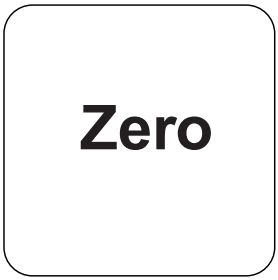
MD50: 24 mm'lik küveti **10 mL numune** ile doldurun.



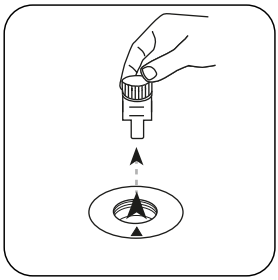
Küveti(küvetleri) kapatın.



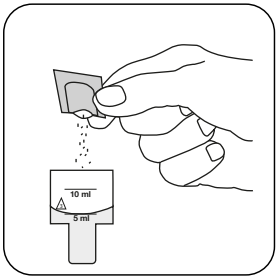
Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.



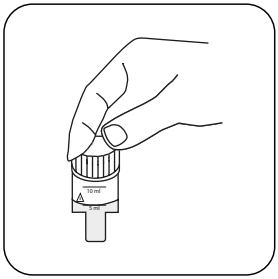
ZERO tuşuna basın.



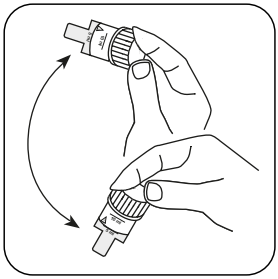
Küveti ölçüm haznesinden alın.



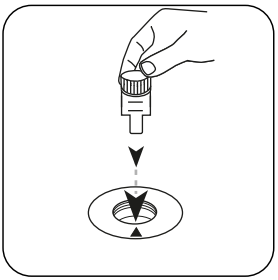
Vario Chlorine Free / F25 toz paketi ilave edin.



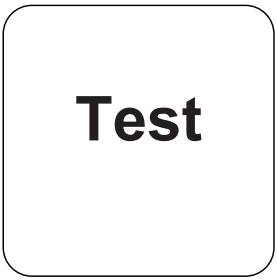
Küveti(küvetleri) kapatın.



Sallayarak içeriği karıştırın (20 sec.).



Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.

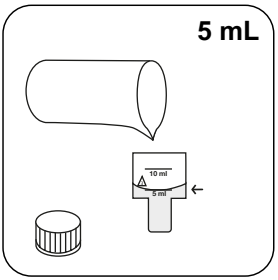


TEST (XD: **START**) tuşuna basın.

Ekranda sonuç mg/L klor cinsinden belirir.

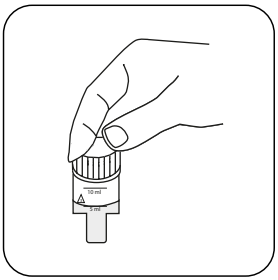
Tespitin uygulanması toz poşetleriyle birlikte toplam klor HR 2

Cihazda metot seçin.

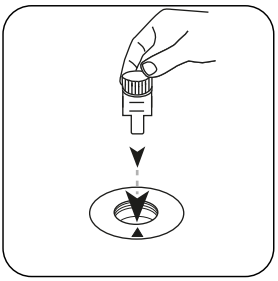


10 mm'lik küveti **5 mL numune** ile doldurun.

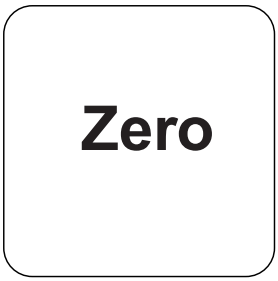
MD50: 24 mm'lik küveti **10 mL numune** ile doldurun.



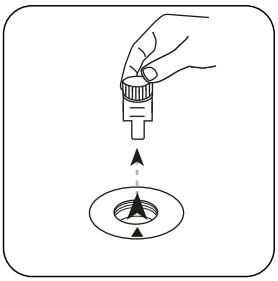
Küveti(küvetleri) kapatın.



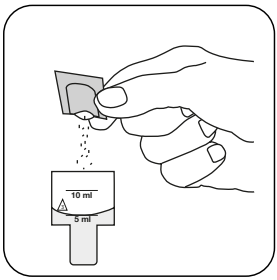
Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.



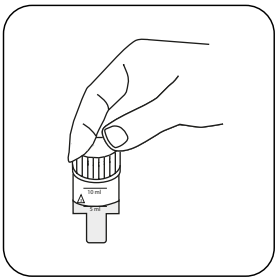
ZERO tuşuna basın.



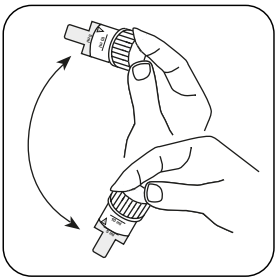
Küveti ölçüm haznesinden alın.



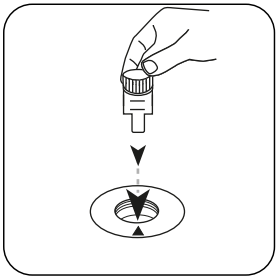
Vario Chlorine Total / F25 toz paketi ilave edin.



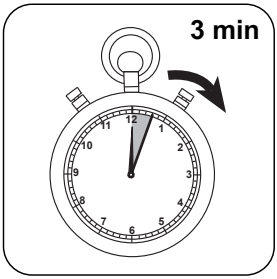
Küveti(küvetleri) kapatın.



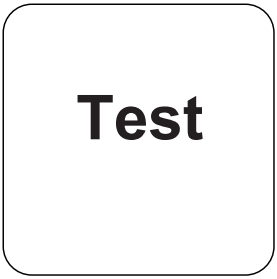
Sallayarak içeriği karıştırın (20 sec.).



Numune küvetini ölçüm haznesine koyun. Doğru konumlandırılmasına dikkat edin.



3 dakika tepkime süresi bekleyin.



TEST (XD: **START**) tuşuna basın.

Ekranda sonuç mg/L klor cinsinden belirir.

Kimyasal Metod

DPD

Apandis

TR

Girişim Metni

Kalıcı Girişimler

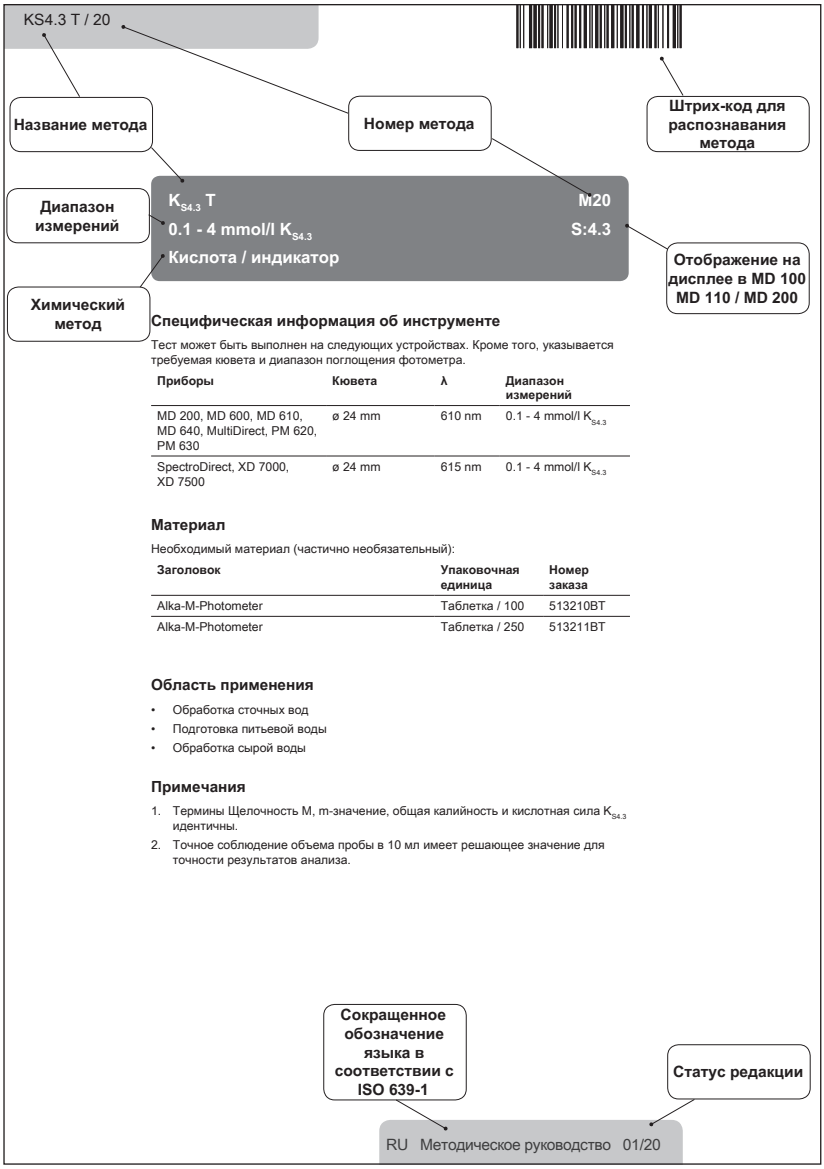
- Numunelerde bulunan tüm oksidasyon malzemeleri tıpkı klor gibi tepkime verir ve bu da fazla miktarda bulguya sebep olur.

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


KS4.3 T / 20
Название метода
Номер метода
Штрих-код для распознавания метода
Диапазон измерений
K S4.3 T
M20
0.1 - 4 mmol/l K S4.3
S:4.3
Кислота / индикатор
Отображение на дисплее в MD 100 MD 110 / MD 200
Химический метод
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 S4.3
SpectroDirect, XD 7000, XD 7500 | ø 24 mm | 615 nm | 0.1 - 4 mmol/l K S4.3
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 S4.3 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

Выполнение измерения

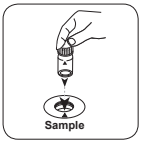
Выполнение определения Кислотная сила $K_{S4.3}$ с таблеткой

Выберите метод в устройстве.

Для этого метода измерения нуля не требуется для следующих устройств: XD 7000, XD 7500

24-Наполните кювету -мм **10** пробой мл.

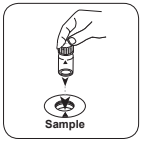
Закройте кювету(ы).



Поместите кювету для проб в измерительную шахту. Обращайте внимание на позиционирование.

■ ■ ■

Растворите таблетку (таблетки) покачиванием.



Поместите кювету для проб в измерительную шахту. Обращайте внимание на позиционирование.

Нажмите клавишу ТЕСТ (XD: СТАРТ).

На дисплее отображается результат в виде Кислотная сила $K_{S4.3}$.

Хлор T M100

0.01 - 6.0 mg/L Cl_2 [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

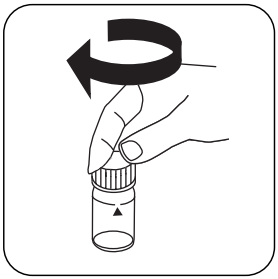
1. Таблетки Evo могут использоваться в качестве альтернативы соответствующим стандартным таблеткам (например, DPD № 3 Evo вместо DPD № 3).

RU

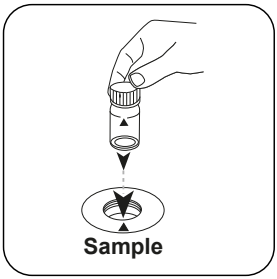
Выполнение определения Свободный хлор, с использованием таблетки

Выберите метод в устройстве.

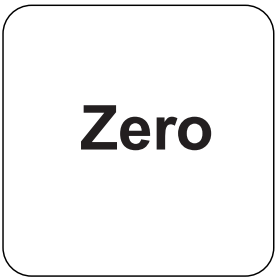
24-Наполните кювету -мм **10 пробой мл**.



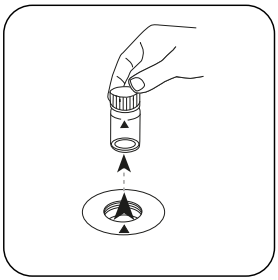
Закройте кювету(ы).



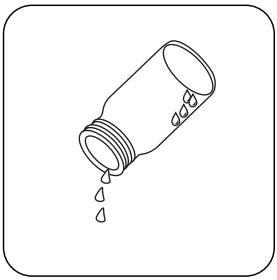
Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.



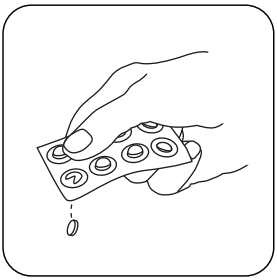
Нажмите клавишу **НОЛЬ** .



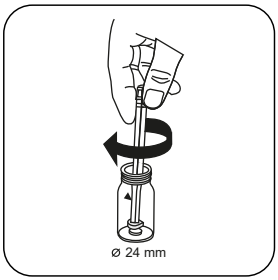
Извлеките кювету из измерительной шахты.



Опорожните кювету до нескольких капель.

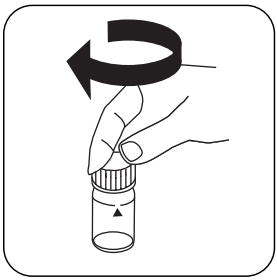


Добавить **таблетку DPD No. 1**.

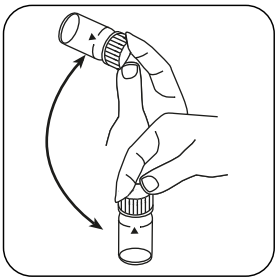


Раздавите таблетку (таблетки) легким вращением.

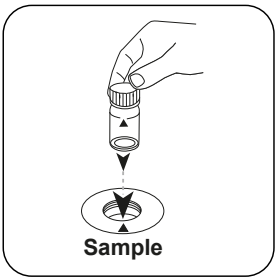
Наполните кювету **пробой** до **отметки 10 мл** .



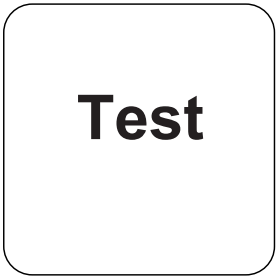
Закройте кювету(ы).



Растворите таблетку (таблетки) покачиванием.



Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.



Нажмите клавишу **ТЕСТ** (XD: **СТАРТ**).

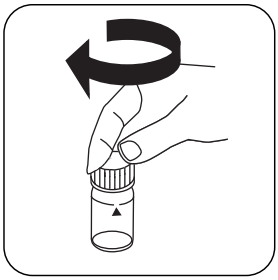
На дисплее отображается результат в мг/л Свободный хлор.

Выполнение определения Общий Хлор с использованием таблетки

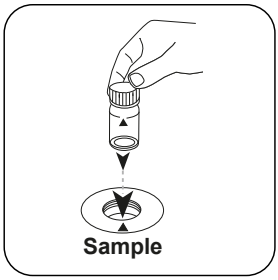
Выберите метод в устройстве.

Также выберите определение: общего.

24-Наполните кювету -мм **10 пробой мл**.



Закройте кювету(ы).



Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.

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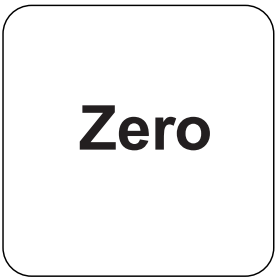
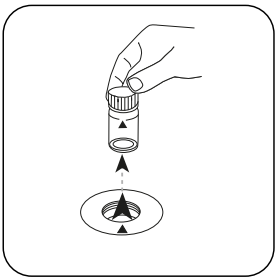
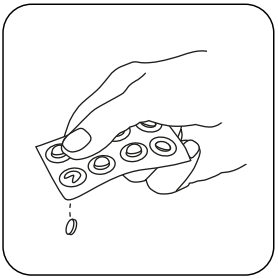


Нажмите клавишу **НОЛЬ** .

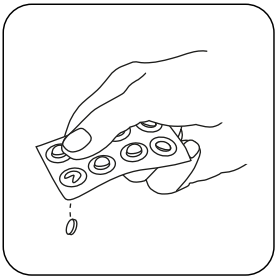


Извлеките кювету из измерительной шахты.

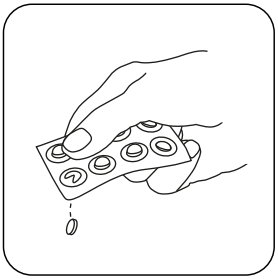
Опорожните кювету до нескольких капель.



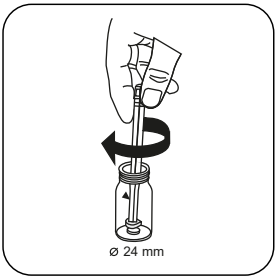
Добавить **таблетку DPD No. 1**.



Добавить **таблетку DPD No. 3**.

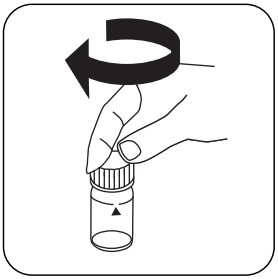


В качестве альтернативы таблеткам DPD №1 и №3 можно добавить 1 таблетку DPD №4.

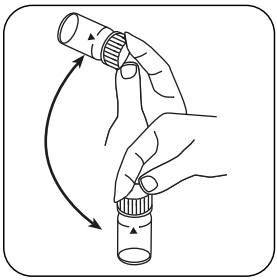


Раздавите таблетку (таблетки) легким вращением.

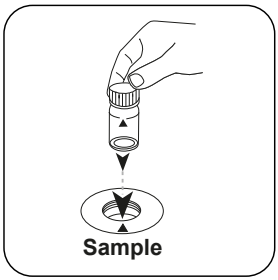
Наполните кювету **пробой** до **отметки 10 мл** .



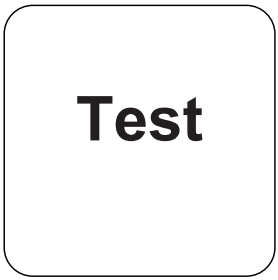
Закройте кювету(ы).



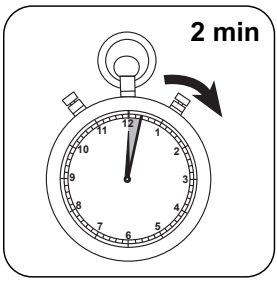
Растворите таблетку (таблетки) покачиванием.



Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.



Нажмите клавишу **ТЕСТ** (XD: **СТАРТ**).



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.

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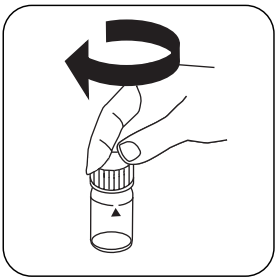
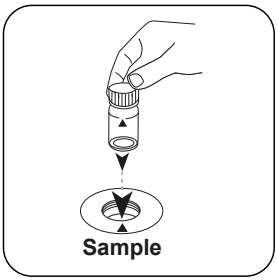
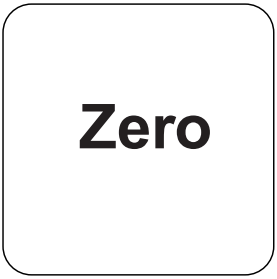
24-Наполните кювету -мм **10 пробой мл**.



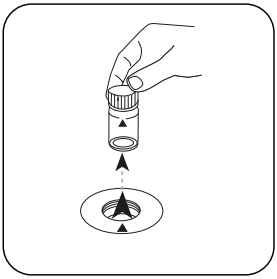
Закройте кювету(ы).



Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.

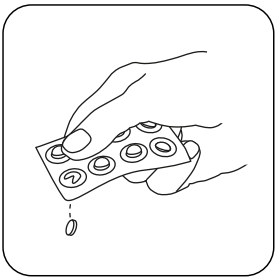


Нажмите клавишу **НОЛЬ** .

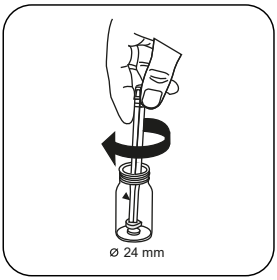


Извлеките кювету из измерительной шахты.

Опорожните кювету до нескольких капель.

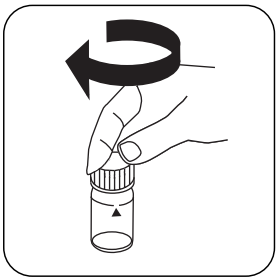


Добавить **таблетку DPD No. 1**.

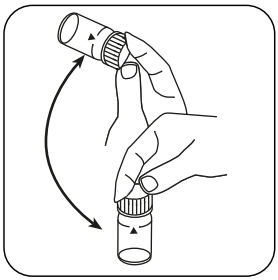


Раздавите таблетку (таблетки) легким вращением.

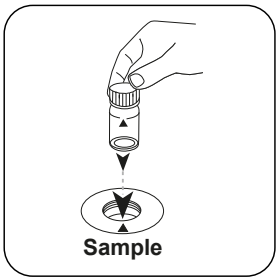
Наполните кювету **пробой** до **отметки 10 мл** .



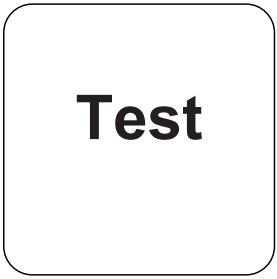
Закройте кювету(ы).



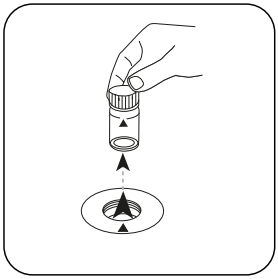
Растворите таблетку (таблетки) покачиванием.



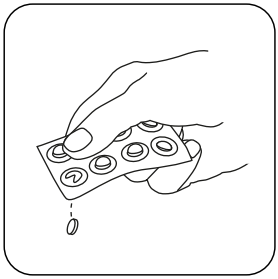
Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.



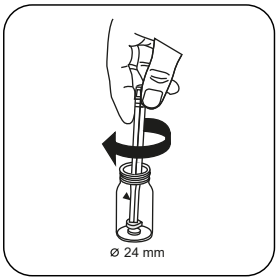
Нажмите клавишу **ТЕСТ** (XD: **СТАРТ**).



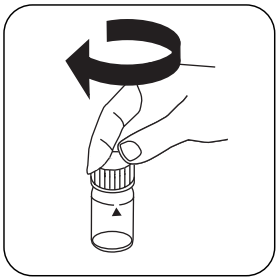
Извлеките кювету из измерительной шахты.



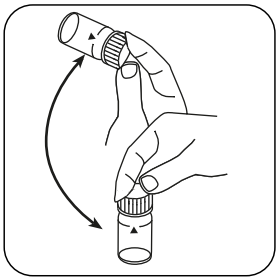
Добавить **таблетку DPD No. 3**.



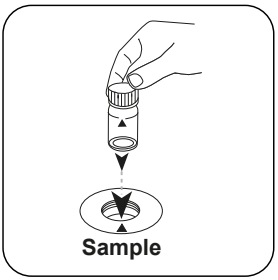
Раздавите таблетку (таблетки) легким вращением.



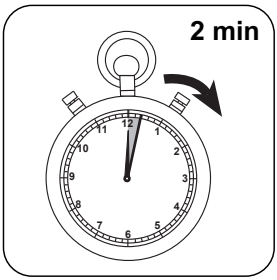
Закройте кювету(ы).



Растворите таблетку (таблетки) покачиванием.



Test



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Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.

Нажмите клавишу **ТЕСТ** (XD: **СТАРТ**).

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 оксидационные 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 таблетка 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

Проверка метода

Предел обнаружения	0.02 mg/L
Предел детерминации	0.06 mg/L
Конечное значение диапазона измерений	6 mg/L
Восприимчивость	2.05 mg/L / Abs
Доверительная область	0.04 mg/L
Среднеквадратическое отклонение процесса	0.019 mg/L
Коэффициент вариации метода	0.87 %

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 Cl_2 [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.

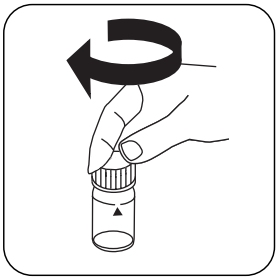
Выполнение определения Свободный хор, с использованием жидкого реагента

Выберите метод в устройстве.

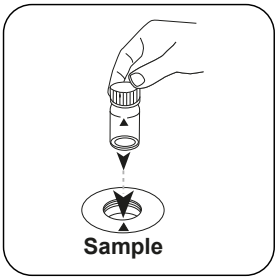
Также выберите определение: свободного.

RU

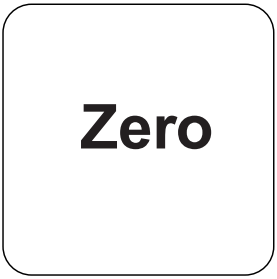
24-Наполните кювету -мм **10 пробой мл**.



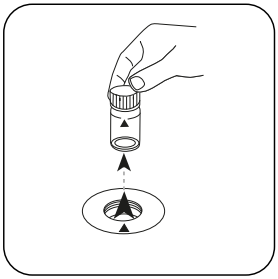
Закройте кювету(ы).



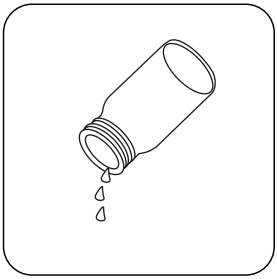
Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.



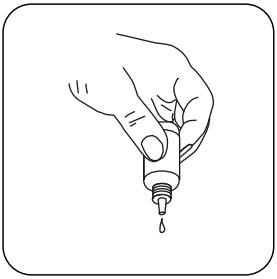
Нажмите клавишу **НОЛЬ** .



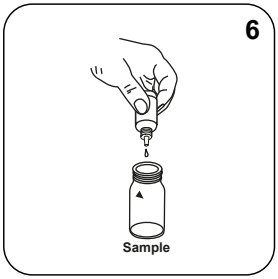
Извлеките кювету из измерительной шахты.



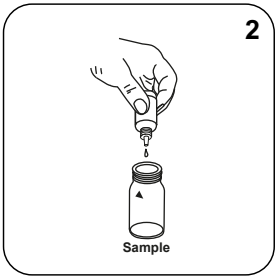
Опорожните кювету.



Держите капельницы вертикально и добавляйте капли того же размера, медленно нажимая на них.

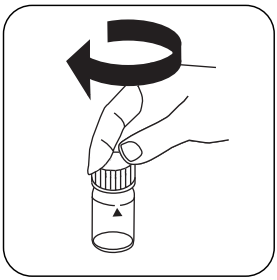


Добавьте **6 капли DPD 1 Buffer Solution** в кювету для проб.

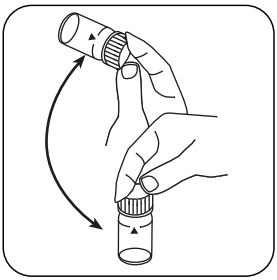


Добавьте **2 капли DPD 1 Reagent Solution** в кювету для проб.

Наполните кювету **пробой** до **отметки 10 мл**
.

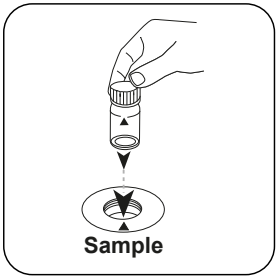


Закройте кювету(ы).

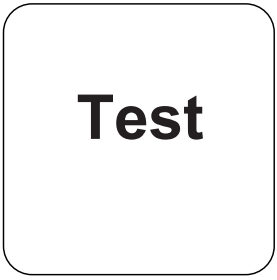


Перемешайте содержимое покачиванием.

RU



Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.



Нажмите клавишу **ТЕСТ** (XD: **СТАРТ**).

На дисплее отображается результат в мг/л Свободный хлор.

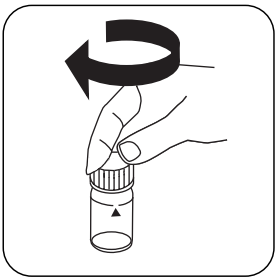
Выполнение определения Общий хлор, с использованием жидкого реагента

Выберите метод в устройстве.

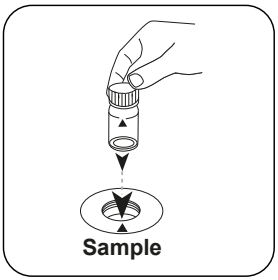
Также выберите определение: общего.

RU

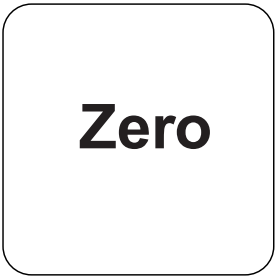
24-Наполните кювету -мм **10 пробой мл**.



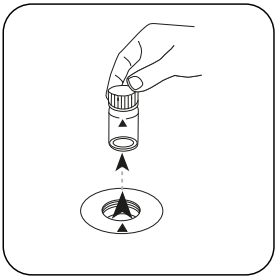
Закройте кювету(ы).



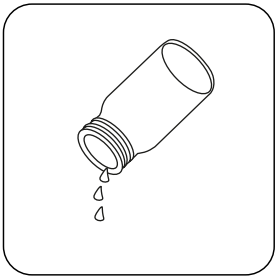
Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.



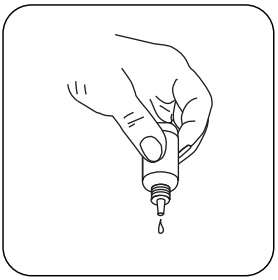
Нажмите клавишу **НОЛЬ** .



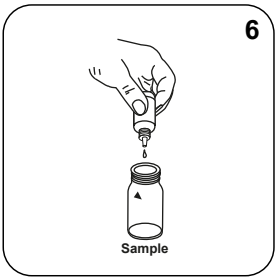
Извлеките кювету из измерительной шахты.



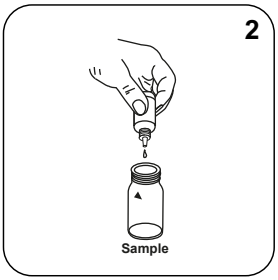
Опорожните кювету.



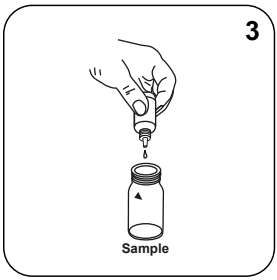
Держите капельницы вертикально и добавляйте капли того же размера, медленно нажимая на них.



Добавьте **6 капли DPD 1 Buffer Solution** в кювету для проб.

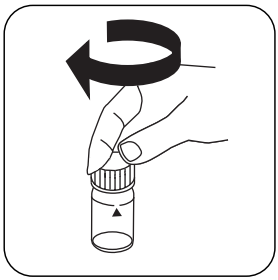


Добавьте **2 капли DPD 1 Reagent Solution** в кювету для проб.

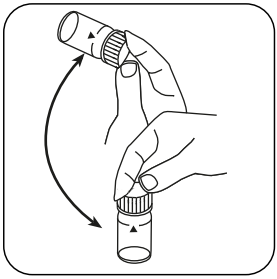


Добавьте **3 капли DPD 3 Solution** в кювету для проб.

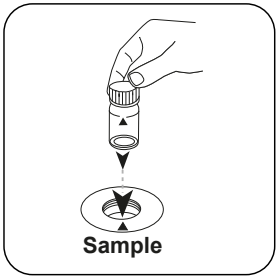
Наполните кювету **пробой** до **отметки 10 мл** .



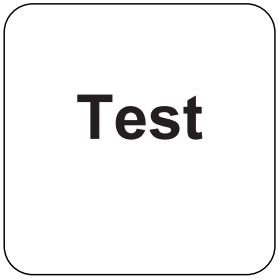
Закройте кювету(ы).



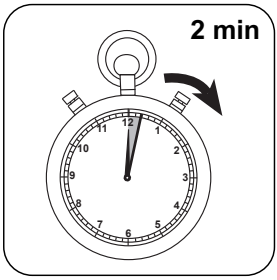
Перемешайте содержимое покачиванием.



Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.



Нажмите клавишу **ТЕСТ** (XD: **СТАРТ**).



Выдержите **2 минут(ы) времени реакции**.

По истечении времени реакции измерение выполняется автоматически.

На дисплее отображается результат в мг/л общего хлора.

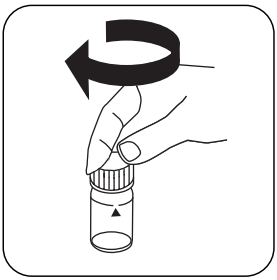
Выполнение определения Хлор, дифференцированное определение, с использованием жидкого реагента

Выберите метод в устройстве.

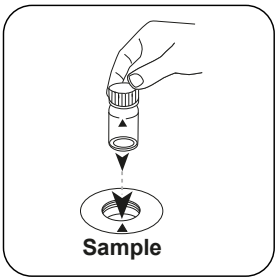
Также выберите определение: дифференцированное.

RU

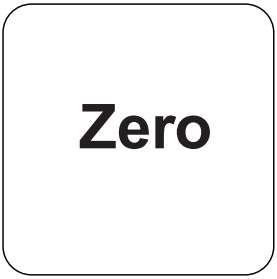
24-Наполните кювету -мм **10 пробой мл**.



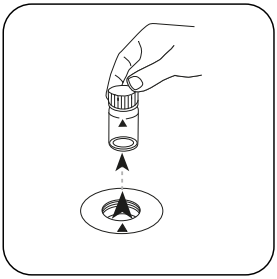
Закройте кювету(ы).



Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.

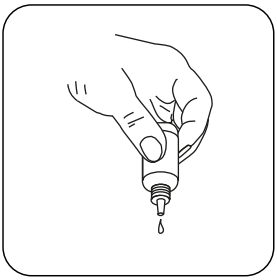


Нажмите клавишу **НОЛЬ** .

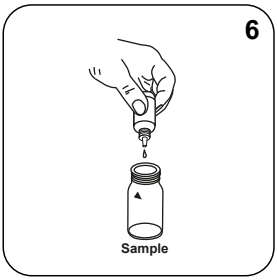


Извлеките кювету из измерительной шахты.

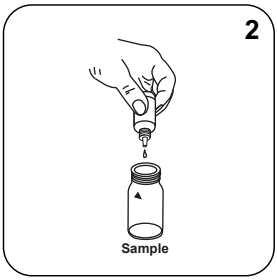
Опорожните кювету.



Держите капельницы вертикально и добавляйте капли того же размера, медленно нажимая на них.

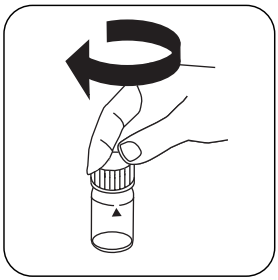


Добавьте **6 капли DPD 1 Buffer Solution** в кювету для проб.

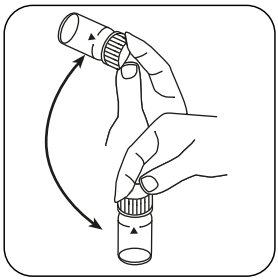


Добавьте **2 капли DPD 1 Reagent Solution** в кювету для проб.

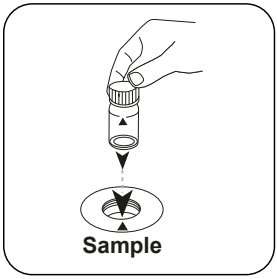
Наполните кювету **пробой** до **отметки 10 мл** .



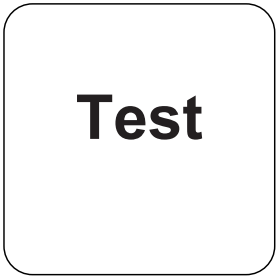
Закройте кювету(ы).



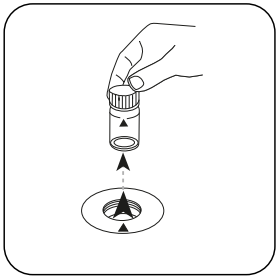
Перемешайте содержимое покачиванием.



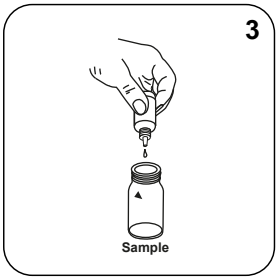
Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.



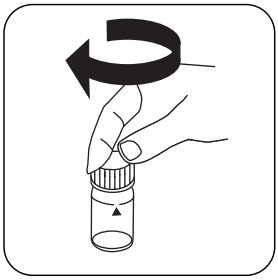
Нажмите клавишу **ТЕСТ** (XD: **СТАРТ**).



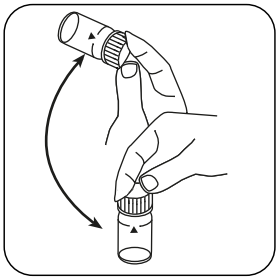
Извлеките кювету из измерительной шахты.



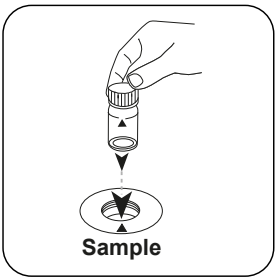
Добавьте **3 капли DPD 3 Solution** в кювету для проб.

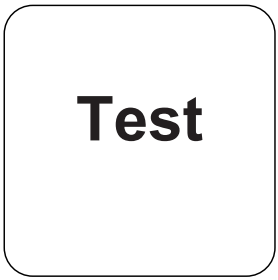


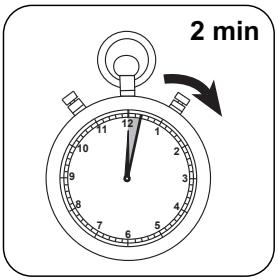
Закройте кювету(ы).



Перемешайте содержимое покачиванием.







RU

Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.

Нажмите клавишу **ТЕСТ** (XD: **СТАРТ**).

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 оксидационные 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 Cl_2 [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).

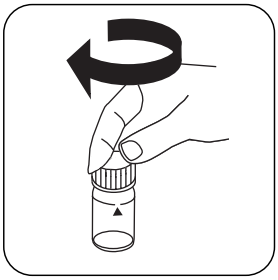
Выполнение определения Свободный хлор HR, с использованием таблетки

Выберите метод в устройстве.

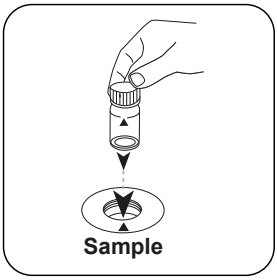
Также выберите определение: свободного.

RU

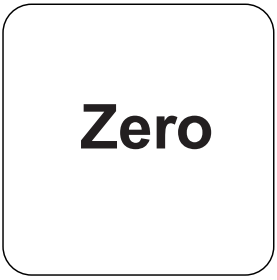
24-Наполните кювету -мм **10 пробой мл**.



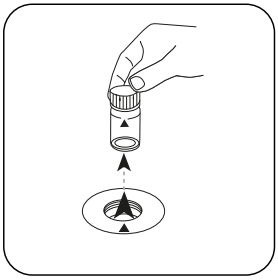
Закройте кювету(ы).



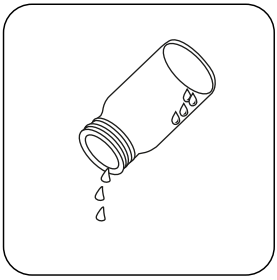
Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.



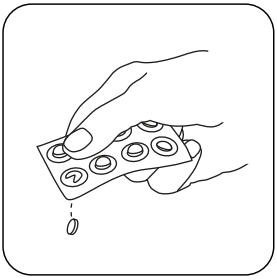
Нажмите клавишу **НОЛЬ** .



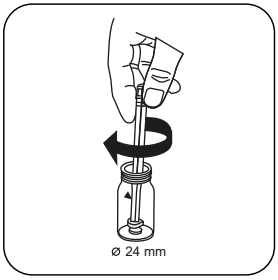
Извлеките кювету из измерительной шахты.



Опорожните кювету до нескольких капель.

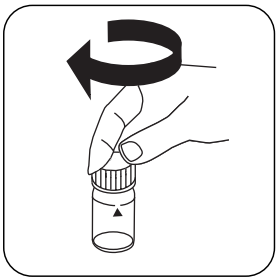


Добавить **таблетку DPD No. 1 HR** .

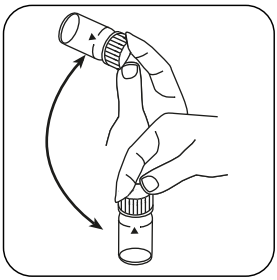


Раздавите таблетку (таблетки) легким вращением.

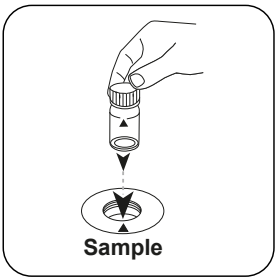
Наполните кювету **пробой** до **отметки 10 мл** .



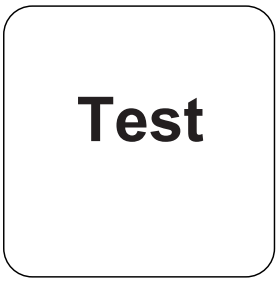
Закройте кювету(ы).



Растворите таблетку (таблетки) покачиванием.



Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.



Нажмите клавишу **ТЕСТ** (XD: **СТАРТ**).

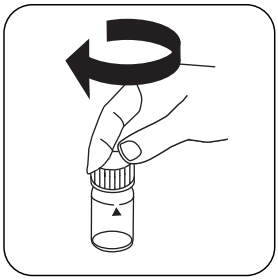
На дисплее отображается результат в мг/л Свободный хлор.

Выполнение определения Общий Хлор HR с использованием таблетки

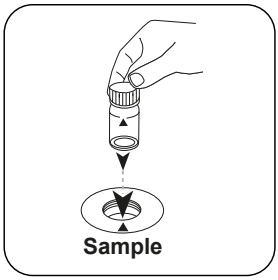
Выберите метод в устройстве.

Также выберите определение: общего.

24-Наполните кювету -мм **10 пробой мл**.



Закройте кювету(ы).



Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.

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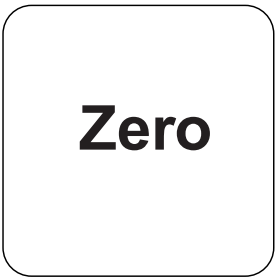
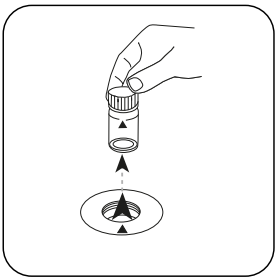
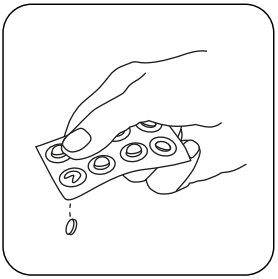


Нажмите клавишу **НОЛЬ** .

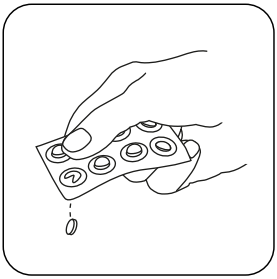


Извлеките кювету из измерительной шахты.

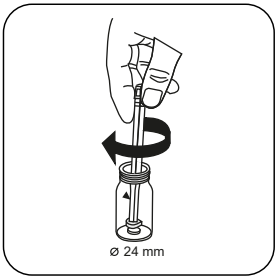
Опорожните кювету до нескольких капель.



Добавить **таблетку DPD No. 1 HR** .



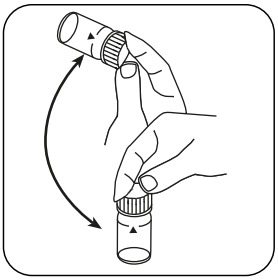
Добавить **таблетку DPD No. 3 HR** .



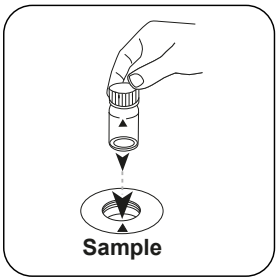
Раздавите таблетку (таблетки) легким вращением.

Наполните кювету **пробой** до **отметки 10 мл** .

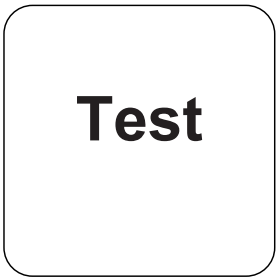
Закройте кювету(ы).



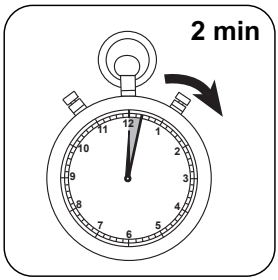
Растворите таблетку (таблетки) покачиванием.



Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.



Нажмите клавишу **ТЕСТ** (XD: **СТАРТ**).



Выдержите **2 минут(ы) времени реакции**.

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По истечении времени реакции измерение выполняется автоматически.

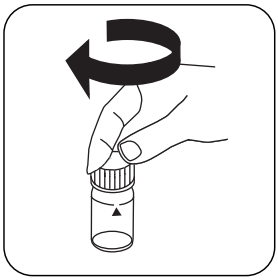
На дисплее отображается результат в мг/л общего хлора.

Выполнение определения Хлор HR, дифференцированное, с использованием таблетки

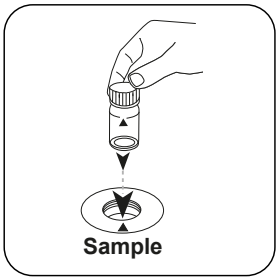
Выберите метод в устройстве.

Также выберите определение: дифференцированное.

24-Наполните кювету -мм **10 пробой мл**.



Закройте кювету(ы).



Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.

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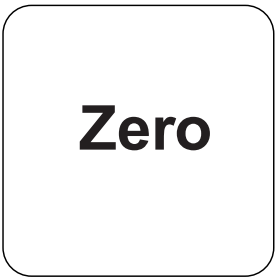
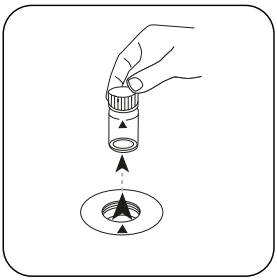
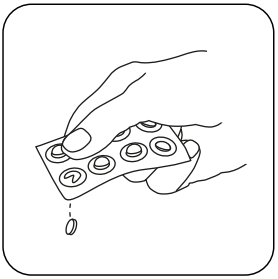


Нажмите клавишу **НОЛЬ** .

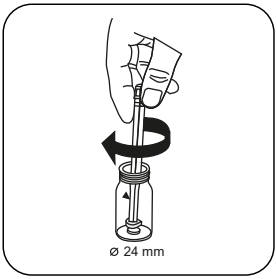


Извлеките кювету из измерительной шахты.

Опорожните кювету до нескольких капель.



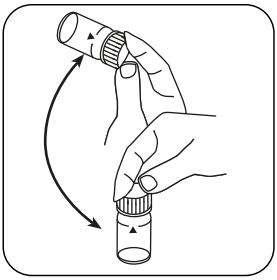
Добавить **таблетку DPD No. 1 HR** .



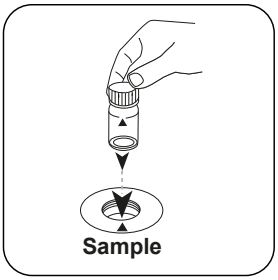
Раздавите таблетку (таблетки) легким вращением.

Наполните кювету **пробой** до **отметки 10 мл** .

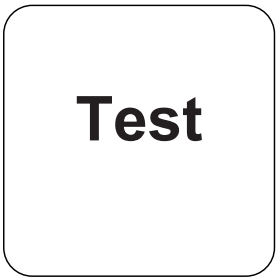
Закройте кювету(ы).



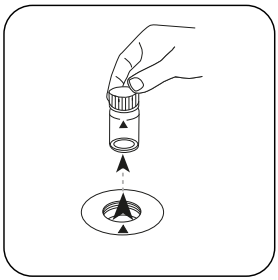
Растворите таблетку (таблетки) покачиванием.



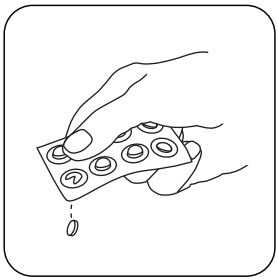
Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.



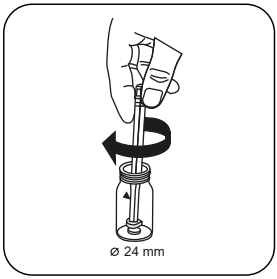
Нажмите клавишу **ТЕСТ** (XD: **СТАРТ**).



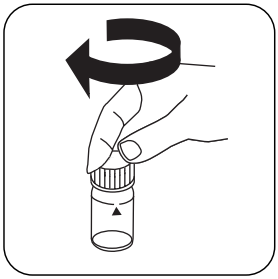
Извлеките кювету из измерительной шахты.



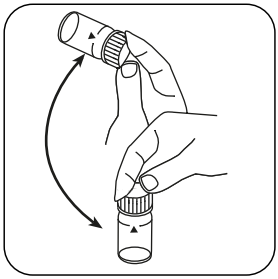
Добавить **таблетку DPD No. 3 HR** .



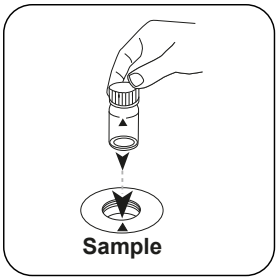
Раздавите таблетку (таблетки) легким вращением.



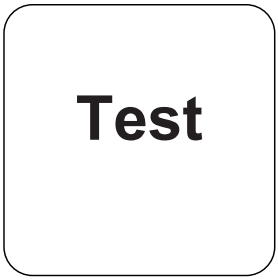
Закройте кювету(ы).



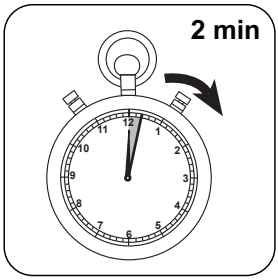
Растворите таблетку (таблетки) покачиванием.



Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.



Нажмите клавишу **ТЕСТ** (XD: **СТАРТ**).



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

RU

Нарушения

Постоянные нарушения

- Все оксидационные 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 PP M110

0.02 - 2 mg/L Cl_2 [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 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.

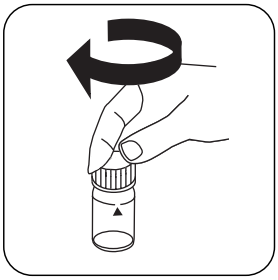
Выполнение определения Свободный хлор, с использованием порошкообразного реагента

Выберите метод в устройстве.

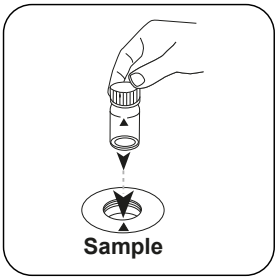
Также выберите определение: свободного.

RU

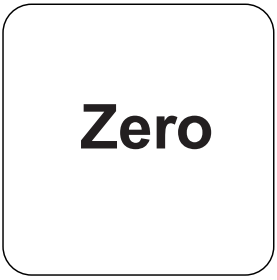
24-Наполните кювету -мм **10 пробой мл**.



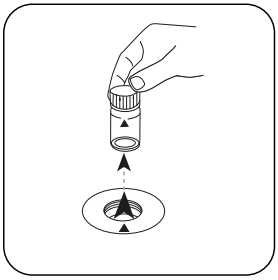
Закройте кювету(ы).



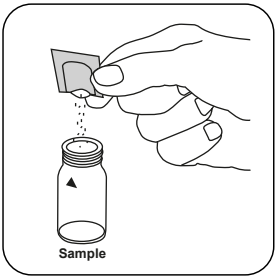
Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.



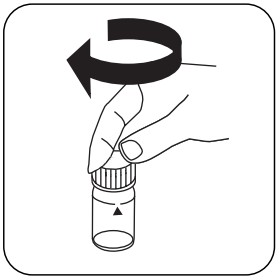
Нажмите клавишу **НОЛЬ** .



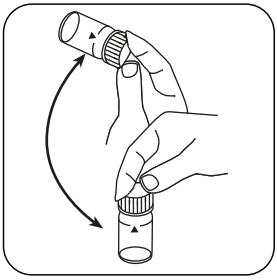
Извлеките кювету из измерительной шахты.



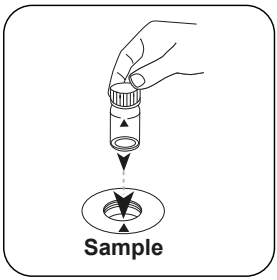
Добавьте **упаковку порошка Chlorine FREE-DPD/ F10**.



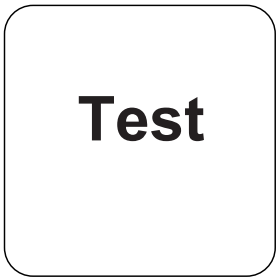
Закройте кювету(ы).



Перемешайте содержимое покачиванием (20 sec.).



Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.



Нажмите клавишу **ТЕСТ** (XD: **СТАРТ**).

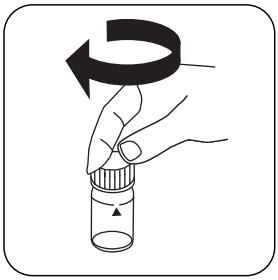
На дисплее отображается результат в мг/л Свободный хлор.

Выполнение определения Общий хлор, с использованием порошкообразного реагента

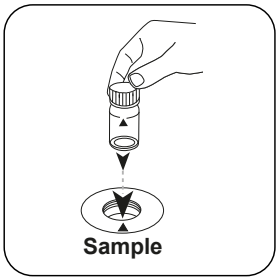
Выберите метод в устройстве.

Также выберите определение: общего.

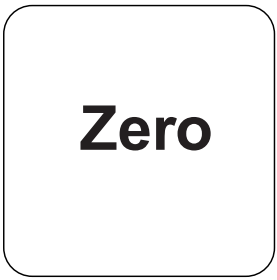
24-Наполните кювету -мм **10 пробой мл**.



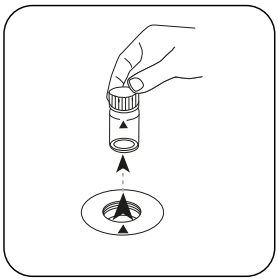
Закройте кювету(ы).



Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.

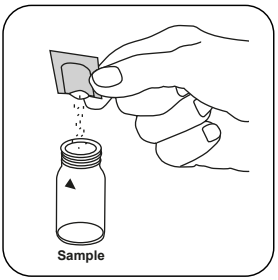


Нажмите клавишу **НОЛЬ** .

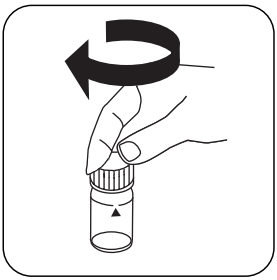


Извлеките кювету из измерительной шахты.

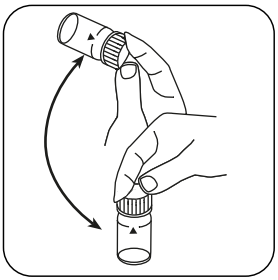
RU



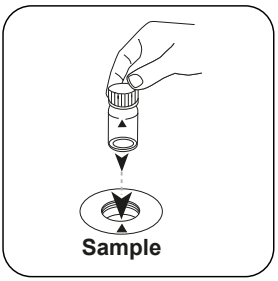
Добавьте **упаковку порошка Chlorine TOTAL-DPD/ F10**.



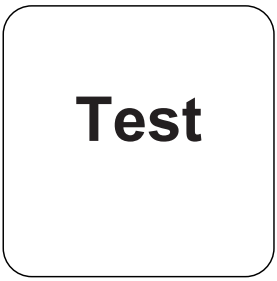
Закройте кювету(ы).



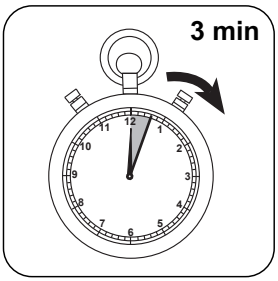
Перемешайте содержимое покачиванием (20 sec.).



Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.



Нажмите клавишу **ТЕСТ** (XD: **СТАРТ**).



Выдержите **3 минут(ы) времени реакции**.

По истечении времени реакции измерение выполняется автоматически.

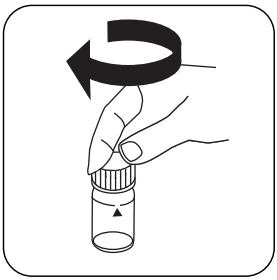
На дисплее отображается результат в мг/л общего хлора.

Выполнение определения Хлор, дифференцированное определение, с использованием порошкообразного реагента

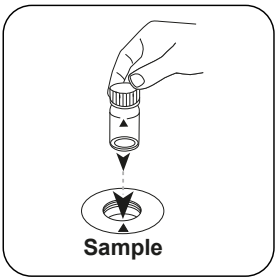
Выберите метод в устройстве.

Также выберите определение: дифференцированное.

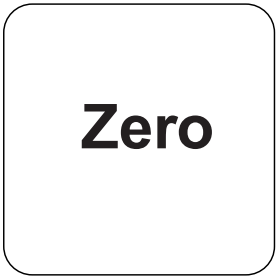
24-Наполните кювету -мм **10 пробой мл**.



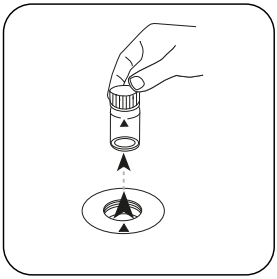
Закройте кювету(ы).



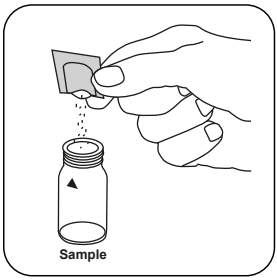
Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.



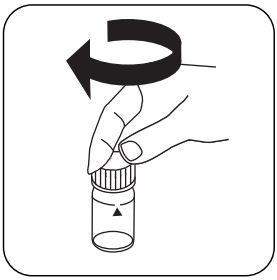
Нажмите клавишу **НОЛЬ** .



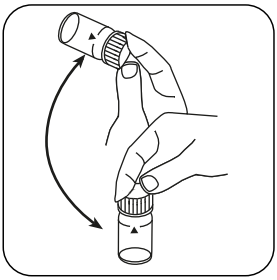
Извлеките кювету из измерительной шахты.



Добавьте **упаковку порошка Chlorine FREE-DPD/ F10**.



Закройте кювету(ы).



Перемешайте содержимое покачиванием (20 sec.).

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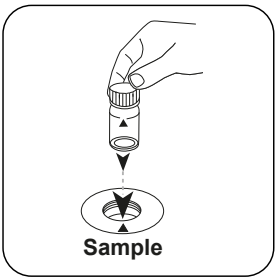
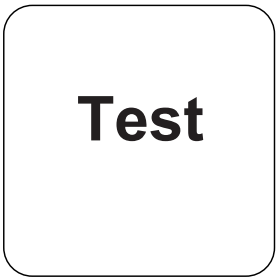
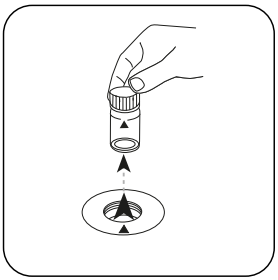


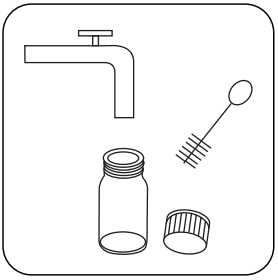
Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.



Нажмите клавишу **ТЕСТ** (XD: **СТАРТ**).

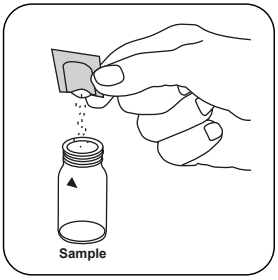


Извлеките кювету из измерительной шахты.

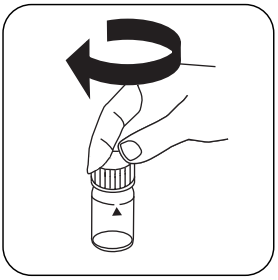


Тщательно очистите кювету и крышку для кювет.

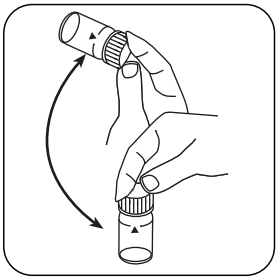
24-Наполните кювету -мм **10 пробой мл**.



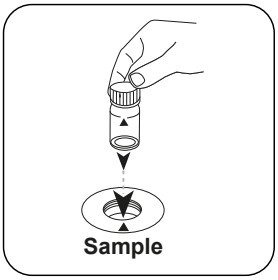
Добавьте **упаковку порошка TOTAL-DPD/ F10**.



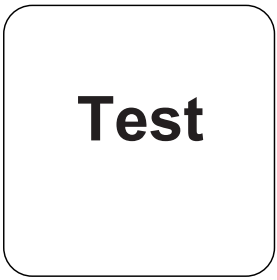
Закройте кювету(ы).

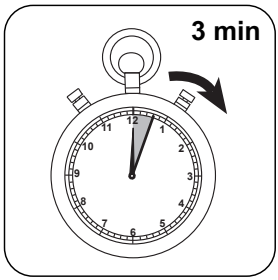


Перемешайте содержимое покачиванием (20 sec.).



Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.





Нажмите клавишу **ТЕСТ** (XD: **СТАРТ**).

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 оксидационные 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

Проверка метода

Предел обнаружения	0.01 mg/L
Предел детерминации	0.03 mg/L
Конечное значение диапазона измерений	2 mg/L
Восприимчивость	1.68 mg/L / Abs
Доверительная область	0.033 mg/L
Среднеквадратическое отклонение процесса	0.014 mg/L
Коэффициент вариации метода	1.34 %

Соответствует

EN ISO 7393-2

[a)] определение свободного, связанного и общего содержания

Хлор HR 2 PP M112

0.1 - 10 mg/L Cl_2

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

Отбор проб

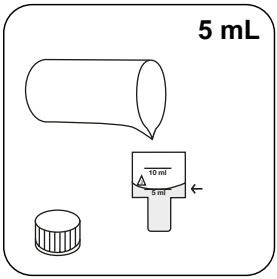
1. Во время подготовки пробы необходимо избегать выделения хлора, например, из-за пипетирования и встряхивания.
2. Анализ должен проводиться сразу же после отбора проб.

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.

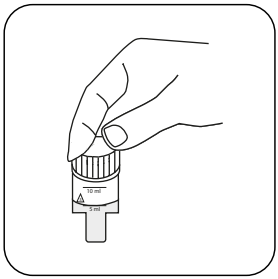
Выполнение определения Свободный хлор, верхний диапазон 2, с использованием порошкообразного реагента

Выберите метод в устройстве.

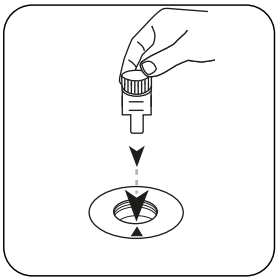


10-Наполните кювету -мм **5 пробой мл**.

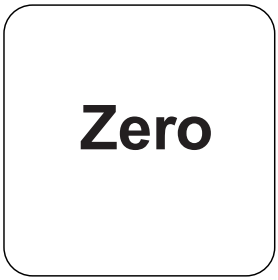
MD50: 24-Наполните кювету -мм **10 пробой мл**.



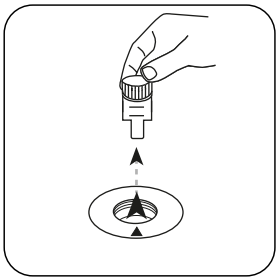
Закройте кювету(ы).



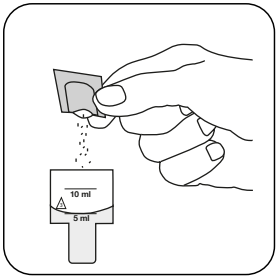
Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.



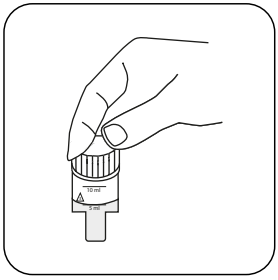
Нажмите клавишу **НОЛЬ** .



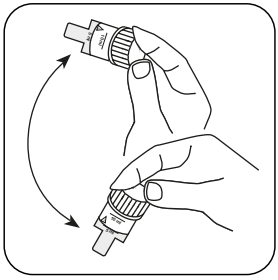
Извлеките **кювету** из измерительной шахты.



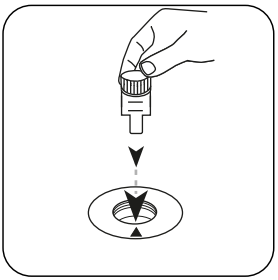
Добавьте **упаковку порошка Vario Chlorine Free / F25**.



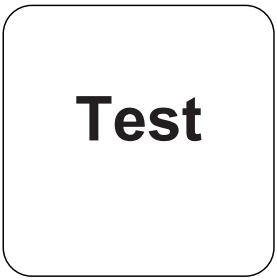
Закройте кювету(ы).



Перемешайте содержимое покачиванием (20 sec.).



Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.

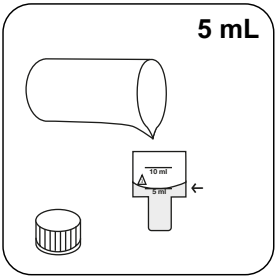


Нажмите клавишу **ТЕСТ** (XD: **СТАРТ**).

На дисплее отображается результат в мг/л хлор.

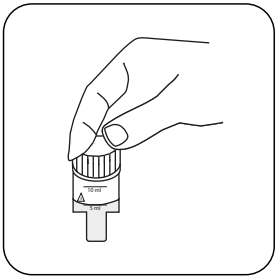
Выполнение определения общего хлора, верхний диапазон 2, с использованием порошкообразного реагента

Выберите метод в устройстве.

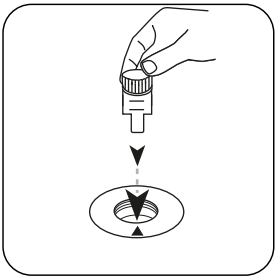


10-Наполните кювету -мм **5 пробой мл**.

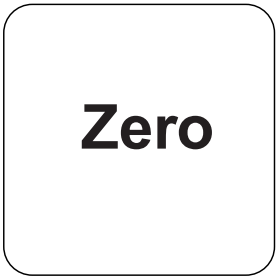
MD50: 24-Наполните кювету -мм **10 пробой мл**.



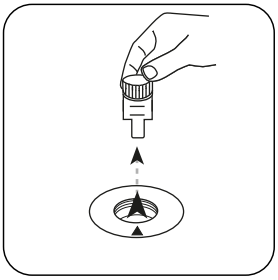
Закройте кювету(ы).



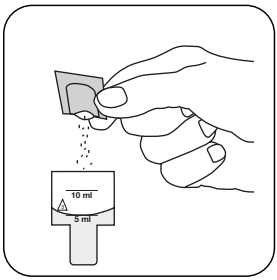
Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.



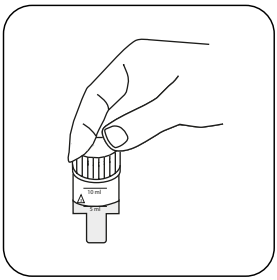
Нажмите клавишу **НОЛЬ** .



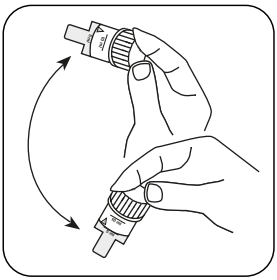
Извлеките **кювету** из измерительной шахты.



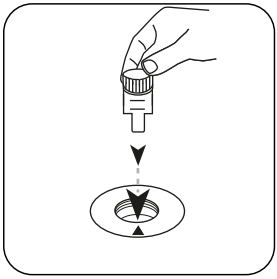
Добавьте **упаковку порошка Vario Chlorine Total / F25**.



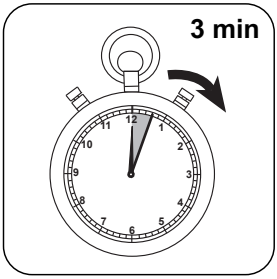
Закройте кювету(ы).



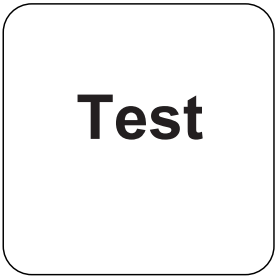
Перемешайте содержимое покачиванием (20 sec.).



Поместите **кювету для проб** в измерительную шахту. Обращайте внимание на позиционирование.



Выдержите **3 минут(ы) времени реакции**.



Нажмите клавишу **ТЕСТ** (XD: **СТАРТ**).

На дисплее отображается результат в мг/л хлор.

Химический метод

DPD

Приложение

RU

Нарушения

Постоянные нарушения

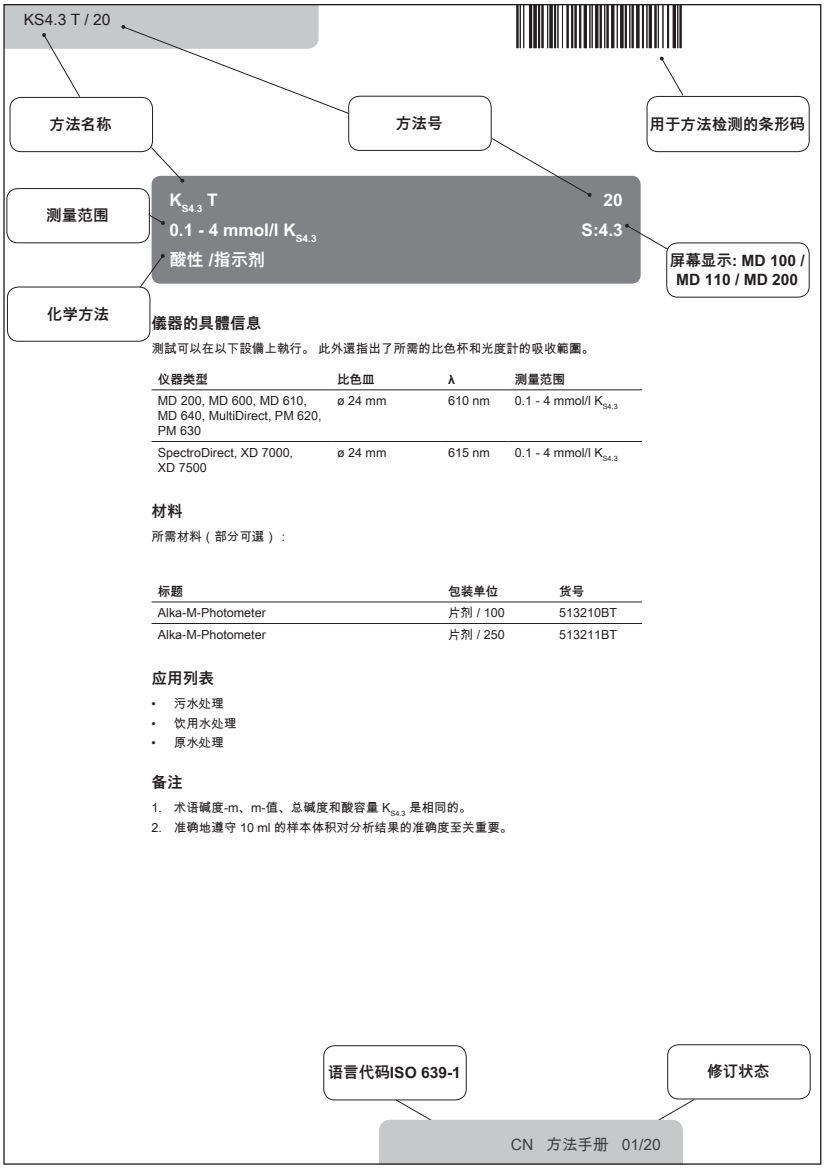
- Все оксидационные средства, присутствующие в пробах, реагируют как хлор, что приводит к повышенным результатам.

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



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。

仪器类型	比色皿	λ	测量范围
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 $K_{S4.3}$

材料

所需材料（部分可選）：

标题	包装单位	货号
Alka-M-Photometer	片剂 / 100	513210BT
Alka-M-Photometer	片剂 / 250	513211BT

应用列表

- 污水处理
- 饮用水处理
- 原水处理

备注

1. 术语碱度-m、m-值、总碱度和酸容量 $K_{S4.3}$ 是相同的。
2. 准确地遵守 10 ml 的样本体积对分析结果的准确度至关重要。

KS4.3 T / 20

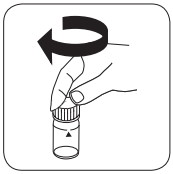
开始测量

进行测定 $K_{S4.3}$ 片剂酸容量

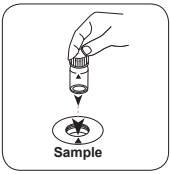
选择设备中的方法。

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 比色杯。

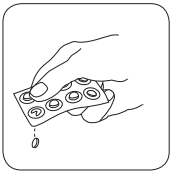


密封比色杯。

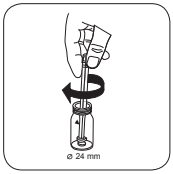


将样本比色杯放入测量轴中。注意定位。

• • •



加入 **ALKA-M-PHOTOMETER** 片剂。



用轻微的扭转压碎片剂。

密封比色杯。

CN 方法手册 01/20

T 氯 M100

0.01 - 6.0 mg/L Cl_2 [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。

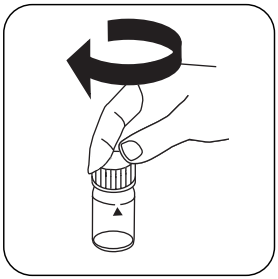
备注

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）。

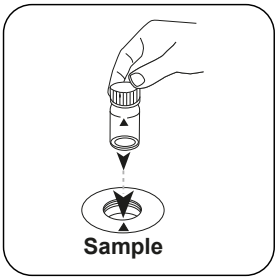
进行测定 余氯 片剂法

选择设备中的方法。

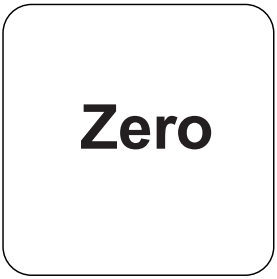
用 **10 mL 样本**填充 24 mm 比色杯。



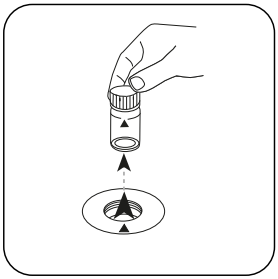
密封比色杯。



将**样本比色杯**放入测量轴中。注意定位。

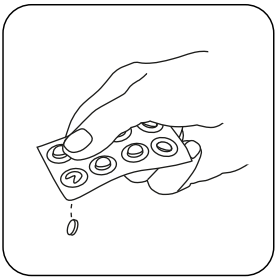


按下 **ZERO** 按钮。

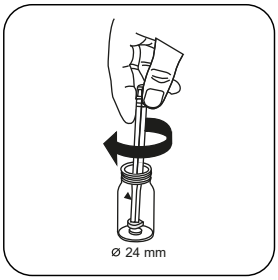


从测量轴上取下比色杯。

将比色杯倒空。

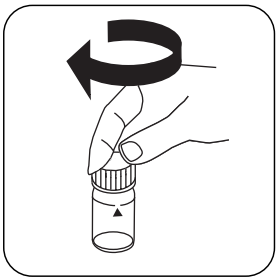


加入 **DPD No. 1 片剂** 。

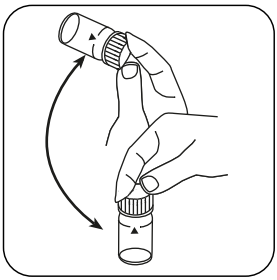


用轻微的扭转压碎片剂。

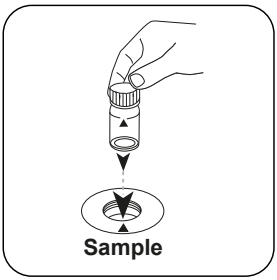
用**样本**将比色杯填充至 **10 mL 刻度**处。



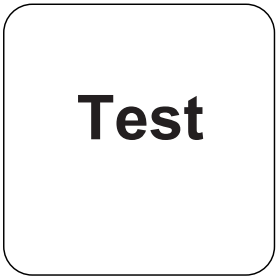
密封比色杯。



通过旋转溶解片剂。



将**样本比色杯**放入测量轴中。注意定位。



按下 **TEST** (XD: **START**) 按钮。

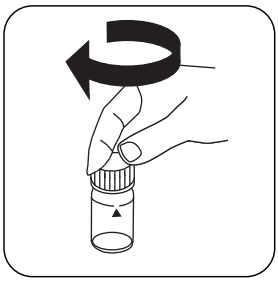
结果在显示屏上显示为 mg / l 余氯。

进行测定 总氯 片剂法

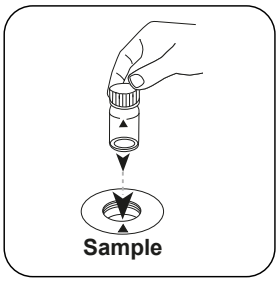
选择设备中的方法。

另外选择测定：总氯

用 **10 mL 样本**填充 24 mm 比色杯。

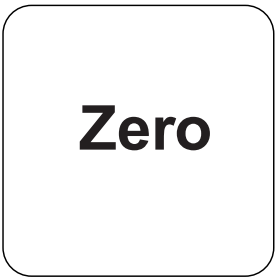


密封比色杯。

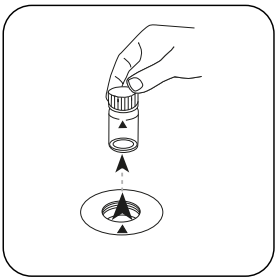


将**样本比色杯**放入测量轴中。注意定位。

ZH

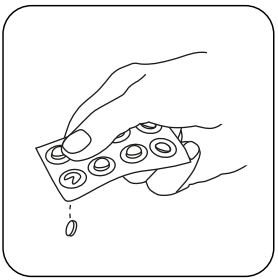


按下 **ZERO** 按钮。

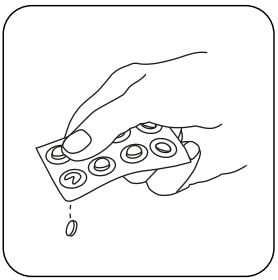


从测量轴上取下比色杯。

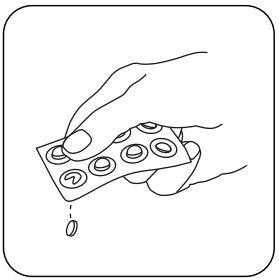
将比色杯倒空。



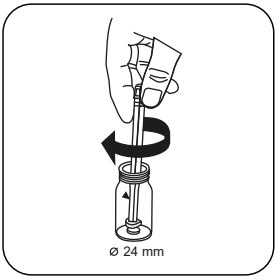
加入 **DPD No. 1 片剂** 。



加入 **DPD No. 3 片剂** 。



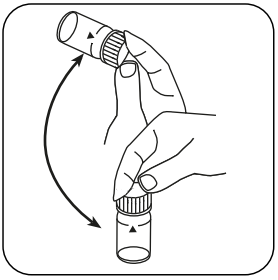
作为DPD 1号和3号片剂的替代品，可以添加1个DPD 4号片剂。



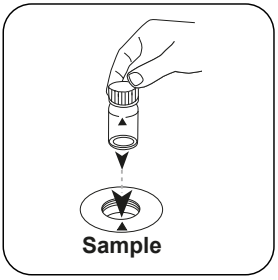
用轻微的扭转压碎片剂。

用**样本**将比色杯填充至 **10 mL 刻度**处。

密封比色杯。

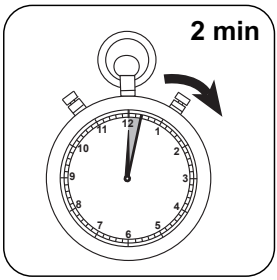


通过旋转溶解片剂。



将**样本比色杯**放入测量轴中。注意定位。

按下 **TEST** (XD: **START**) 按钮。



等待 **2 分钟反应时间** 。

反应时间结束后，自动进行测量。

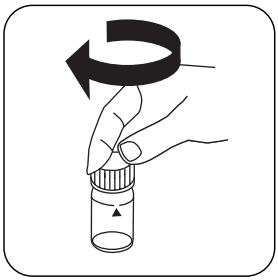
结果在显示屏上显示为 mg / l 总氯。

进行测定 结合氯 片剂法

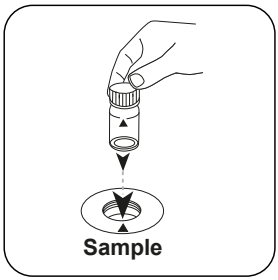
选择设备中的方法。

另外选择测定：结合氯

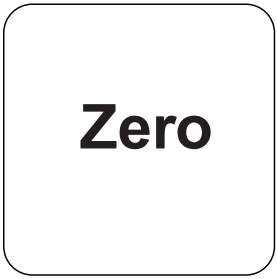
用 **10 mL 样本**填充 24 mm 比色杯。



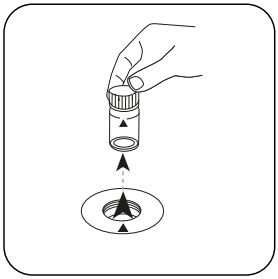
密封比色杯。



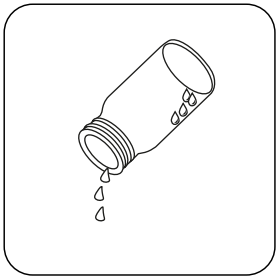
将**样本比色杯**放入测量轴中。注意定位。



按下 **ZERO** 按钮。

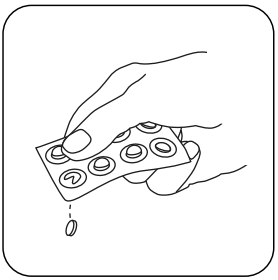


从测量轴上取下比色杯。

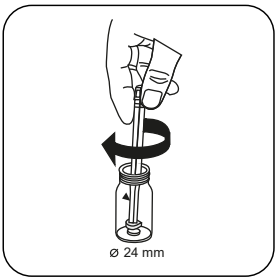


将比色杯倒空。

ZH

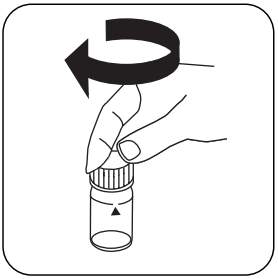


加入 **DPD No. 1 片剂** 。

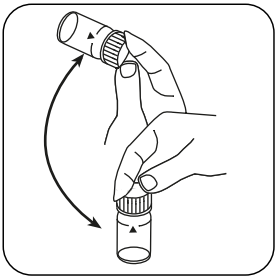


用轻微的扭转压碎片剂。

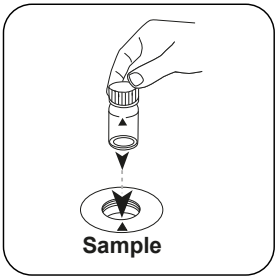
用**样本**将比色杯填充至**10 mL 刻度**处。



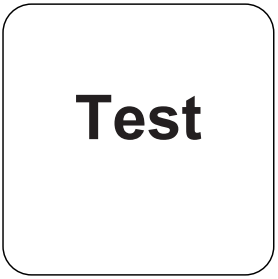
密封比色杯。



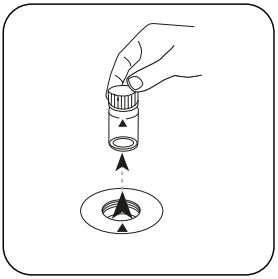
通过旋转溶解片剂。



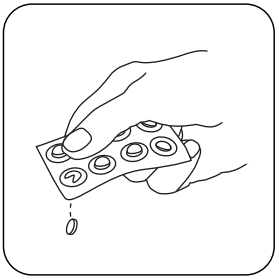
将**样本比色杯**放入测量轴中。注意定位。



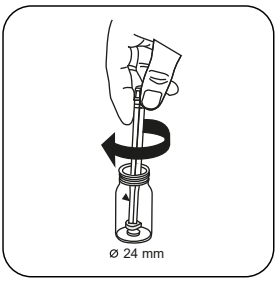
按下 **TEST** (XD: **START**) 按钮。



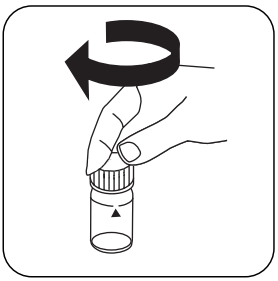
从测量轴上取下比色杯。



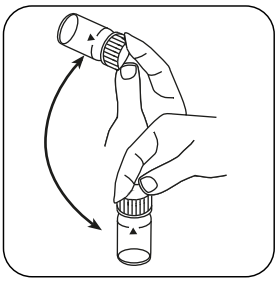
加入 **DPD No. 3 片剂** 。



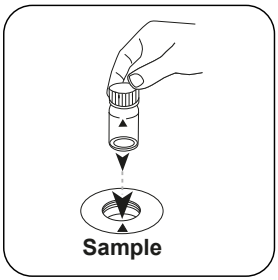
用轻微的扭转压碎片剂。



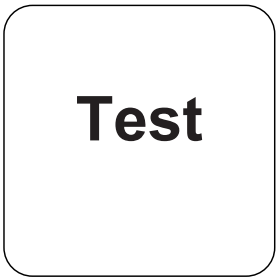
密封比色杯。



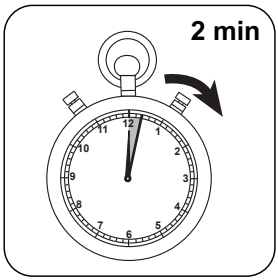
通过旋转溶解片剂。



将**样本比色杯**放入测量轴中。注意定位。



按下 **TEST** (XD: **START**) 按钮。



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。
- 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）。

干擾	從/ [mg/l]
CrO_4^{2-}	0.01
MnO_2	0.01

方法验证

检出限	0.02 mg/L
测定下限	0.06 mg/L
测量上限	6 mg/L
灵敏度	2.05 mg/L / Abs
置信范围	0.04 mg/L
标准偏差	0.019 mg/L
变异系数	0.87 %

一致性

EN ISO 7393-2

[a] 测定余氯，总氯和结合氯 | [e] 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 Cl_2 [a)] CL6

DPD

材料
所需材料（部分可選）：

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

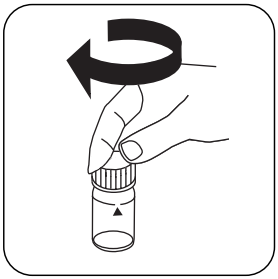
1. 使用后滴瓶必须立即用相同颜色的瓶盖重新密封。
2. 将试剂盒冷藏在 +6 °C至 + 10 °C。

进行测定 余氯 水剂法

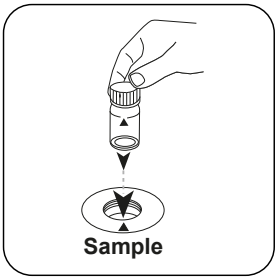
选择设备中的方法。

另外选择测定：余氯

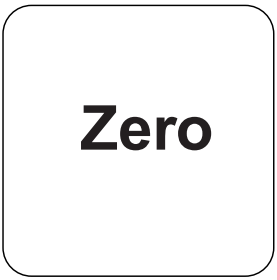
用 **10 mL 样本**填充 24 mm 比色杯。



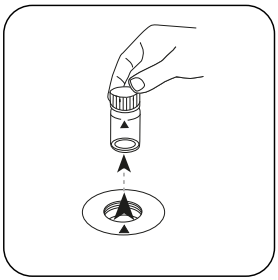
密封比色杯。



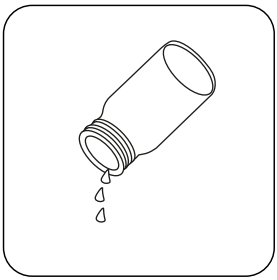
将**样本比色杯**放入测量轴中。注意定位。



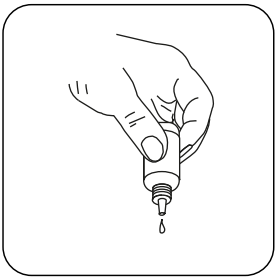
按下 **ZERO** 按钮。



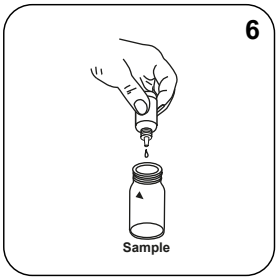
从测量轴上取下比色杯。



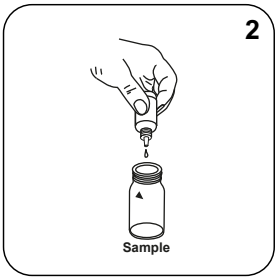
倒空比色杯。



垂直握住滴瓶，慢慢加入相同大小的滴剂。

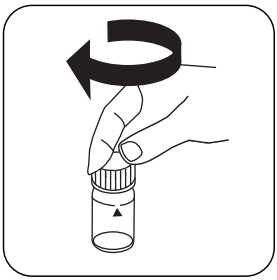


将 **6 滴 DPD 1 Buffer Solution** 添加到样本比色杯中。

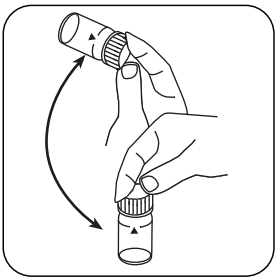


将 **2 滴 DPD 1 Reagent Solution** 添加到样本比色杯中。

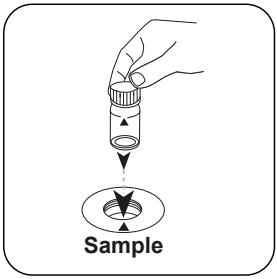
用**样本**将比色杯填充至**10 mL 刻度**处。



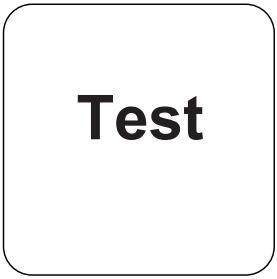
密封比色杯。



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。



按下 **TEST** (XD: **START**) 按钮。

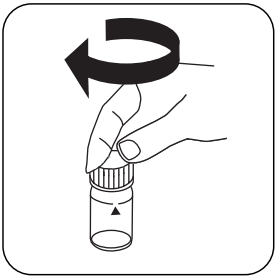
结果在显示屏上显示为 mg / l 余氯。

进行测定 总氯 水剂法

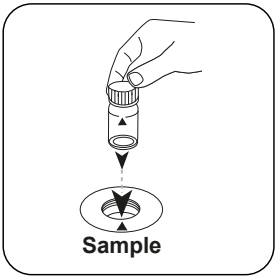
选择设备中的方法。

另外选择测定：总氯

用 **10 mL 样本**填充 24 mm 比色杯。



密封比色杯。

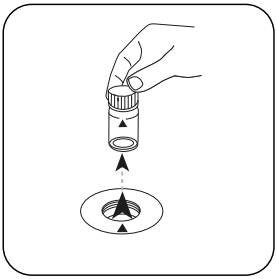


将**样本比色杯**放入测量轴中。注意定位。

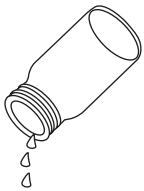
ZH

Zero

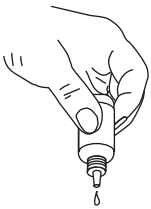
按下 **ZERO** 按钮。



从测量轴上取下比色杯。



倒空比色杯。



垂直握住滴瓶，慢慢加入相同大小的滴剂。

6

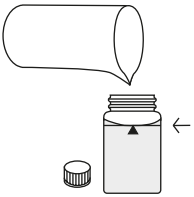
将 **6 滴 DPD 1 Buffer Solution** 添加到样本比色杯中。

2

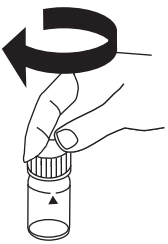
将 **2 滴 DPD 1 Reagent Solution** 添加到样本比色杯中。

3

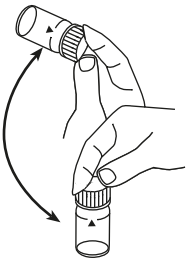
将 **3 滴 DPD 3 Solution** 添加到样本比色杯中。



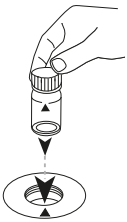
用**样本**将比色杯填充至 **10 mL 刻度**处。



密封比色杯。



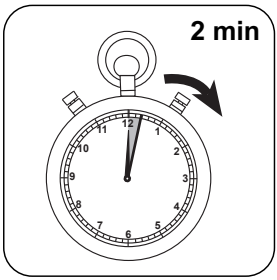
通过旋转混合内容物。



将**样本比色杯**放入测量轴中。注意定位。

Test

按下 **TEST** (XD: **START**) 按钮。



等待 **2 分钟反应时间** 。

反应时间结束后，自动进行测量。

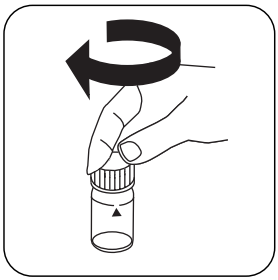
结果在显示屏上显示为 mg / l 总氯。

进行测定 结合氯 水剂法

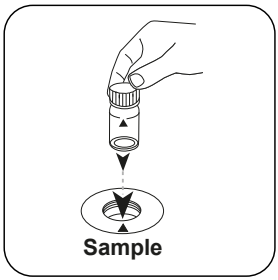
选择设备中的方法。

另外选择测定：结合氯

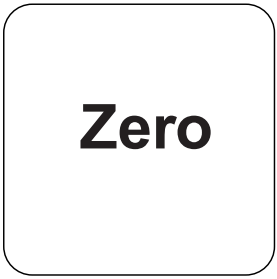
用 **10 mL 样本**填充 24 mm 比色杯。



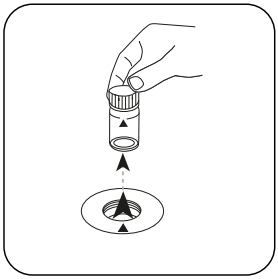
密封比色杯。



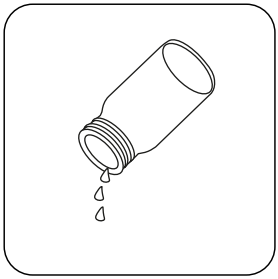
将**样本比色杯**放入测量轴中。注意定位。



按下 **ZERO** 按钮。

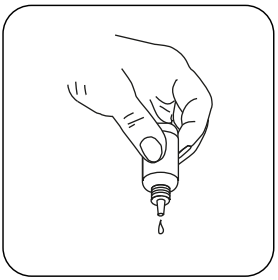


从测量轴上取下比色杯。

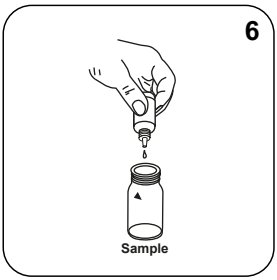


倒空比色杯。

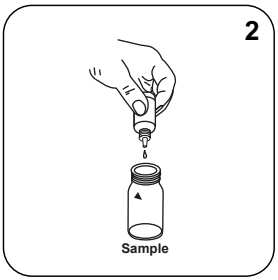
ZH



垂直握住滴瓶，慢慢加入相同大小的滴剂。

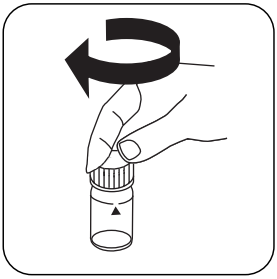


将 **6 滴 DPD 1 Buffer Solution** 添加到样本比色杯中。

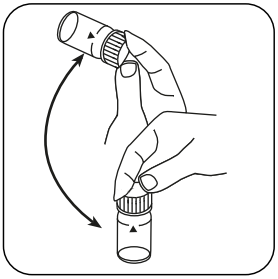


将 **2 滴 DPD 1 Reagent Solution** 添加到样本比色杯中。

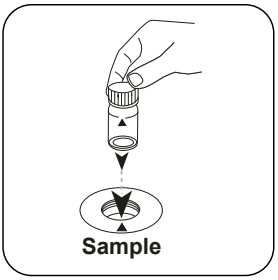
用**样本**将比色杯填充至 **10 mL 刻度**处。



密封比色杯。

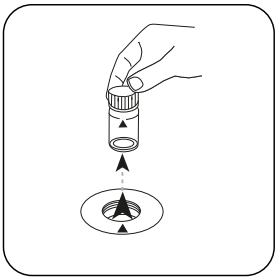


通过旋转混合内容物。

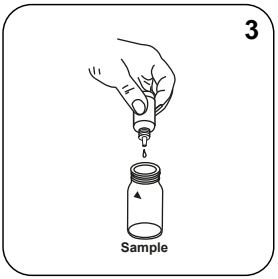


将**样本比色杯**放入测量轴中。注意定位。

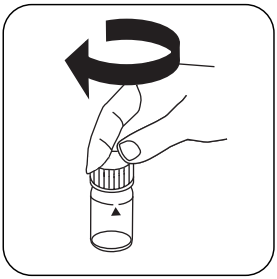
按下 **TEST** (XD: **START**) 按钮。



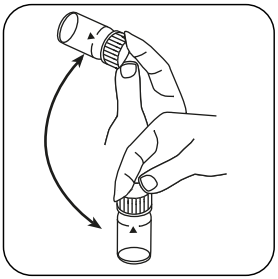
从测量轴上取下比色杯。



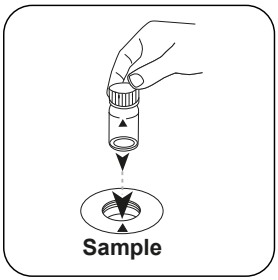
将 **3 滴 DPD 3 Solution** 添加到样本比色杯中。



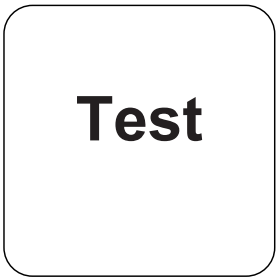
密封比色杯。



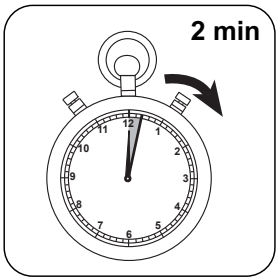
通过旋转混合内容物。



将**样本比色杯**放入测量轴中。注意定位。



按下 **TEST** (XD: **START**) 按钮。



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 Cl_2 [a] CL10

DPD

材料
所需材料（部分可選）：

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#	各100次	517791BT
套件 DPD No.1 HR/No.3 HR#	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。

备注

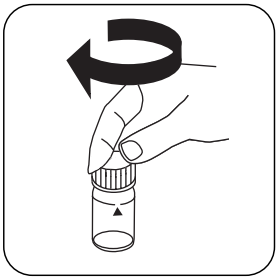
1. Evo片剂可以作为相应标准片剂的替代品（如DPD No.3 Evo代替DPD No.3）。

进行测定 余氯 HR 片剂法

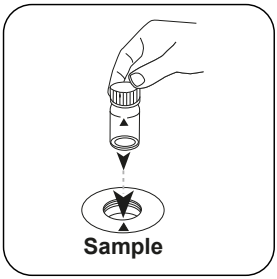
选择设备中的方法。

另外选择测定：余铜

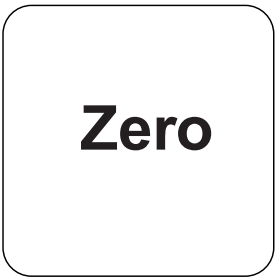
用 **10 mL 样本**填充 24 mm 比色杯。



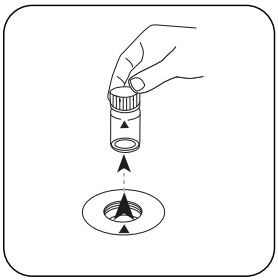
密封比色杯。



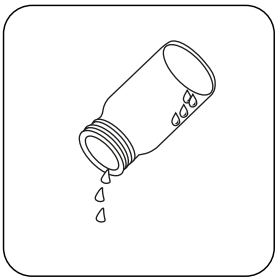
将**样本比色杯**放入测量轴中。注意定位。



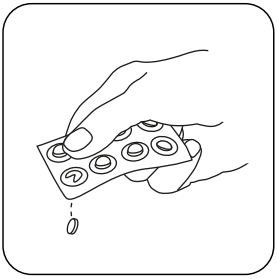
按下 **ZERO** 按钮。



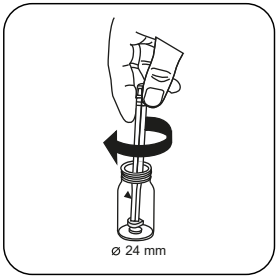
从测量轴上取下比色杯。



将比色杯倒空。

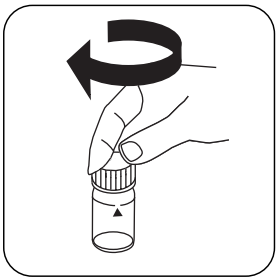


加入 **DPD No. 1 HR 片剂**。

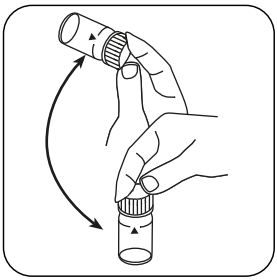


用轻微的扭转压碎片剂。

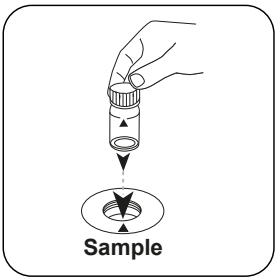
用**样本**将比色杯填充至 **10 mL 刻度**处。



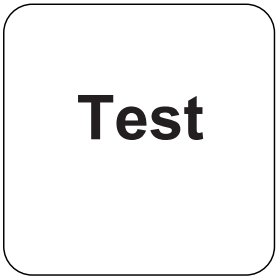
密封比色杯。



通过旋转溶解片剂。



将**样本比色杯**放入测量轴中。注意定位。



按下 **TEST** (XD: **START**) 按钮。

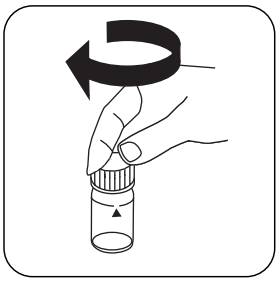
结果在显示屏上显示为 mg / l 余氯。

进行测定 总氯 HR 片剂法

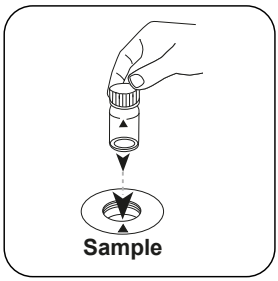
选择设备中的方法。

另外选择测定：总铜

用 **10 mL 样本**填充 24 mm 比色杯。

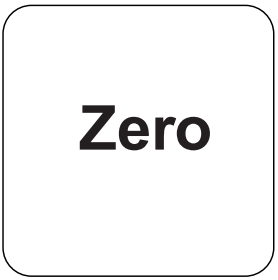


密封比色杯。

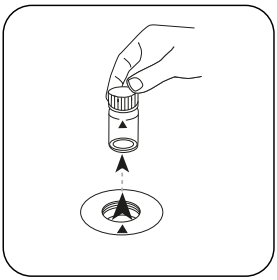


将**样本比色杯**放入测量轴中。注意定位。

ZH

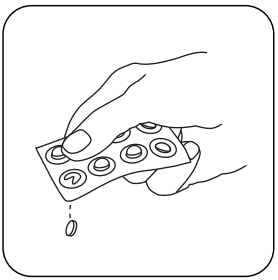


按下 **ZERO** 按钮。

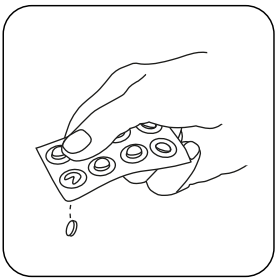


从测量轴上取下比色杯。

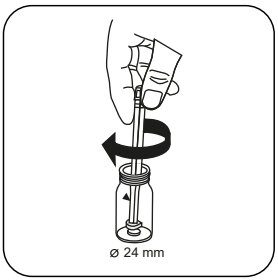
将比色杯倒空。



加入 **DPD No. 1 HR 片剂**。

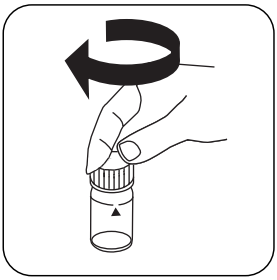


加入 **DPD No. 3 HR 片剂**。

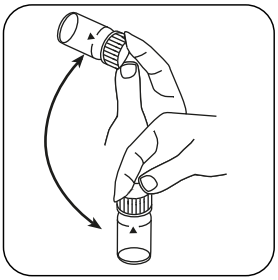


用轻微的扭转压碎片剂。

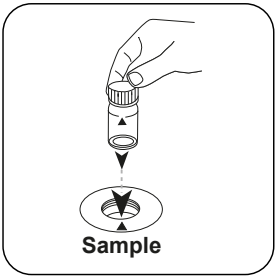
用**样本**将比色杯填充至 **10 mL 刻度**处。



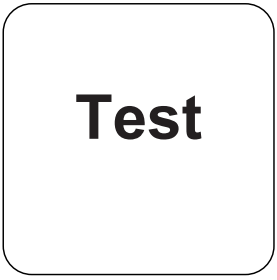
密封比色杯。



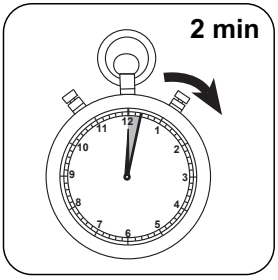
通过旋转溶解片剂。



将**样本比色杯**放入测量轴中。注意定位。



按下 **TEST** (XD: **START**) 按钮。



等待 **2 分钟反应时间** 。

反应时间结束后，自动进行测量。

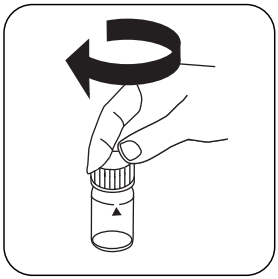
结果在显示屏上显示为 mg / l 总氯。

进行测定 结合氯HR 片剂法

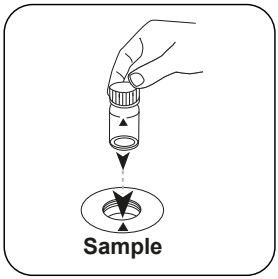
选择设备中的方法。

另外选择测定：差值

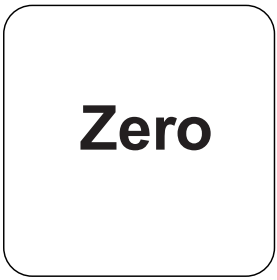
用 **10 mL 样本**填充 24 mm 比色杯。



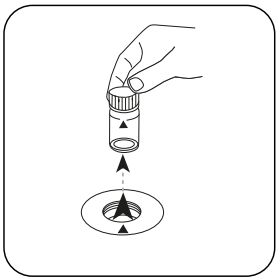
密封比色杯。



将**样本比色杯**放入测量轴中。注意定位。

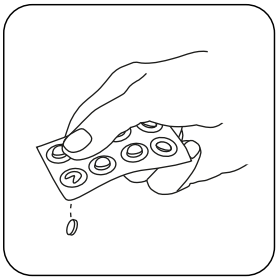


按下 **ZERO** 按钮。

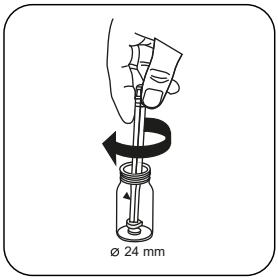


从测量轴上取下比色杯。

将比色杯倒空。



加入 **DPD No. 1 HR 片剂**。

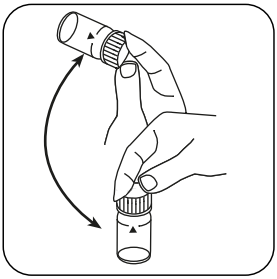


用轻微的扭转压碎片剂。

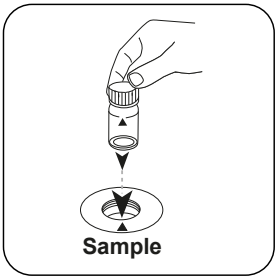
用**样本**将比色杯填充至 **10 mL 刻度**处。

ZH

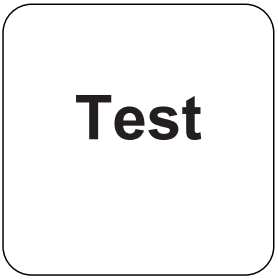
密封比色杯。



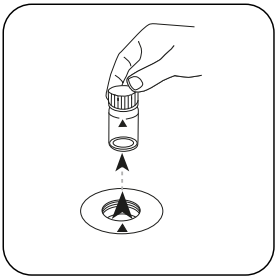
通过旋转溶解片剂。



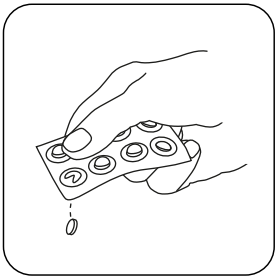
将**样本比色杯**放入测量轴中。注意定位。



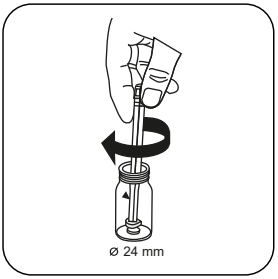
按下 **TEST** (XD: **START**) 按钮。



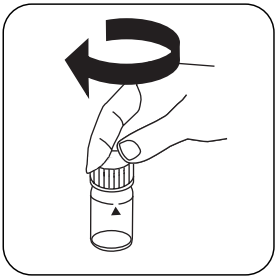
从测量轴上取下比色杯。



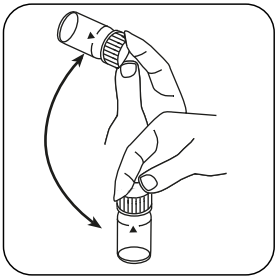
加入 **DPD No. 3 HR 片剂**。



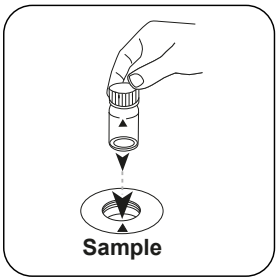
用轻微的扭转压碎片剂。



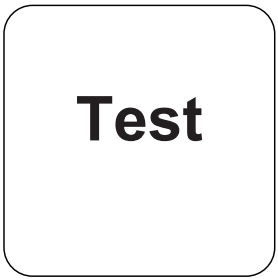
密封比色杯。



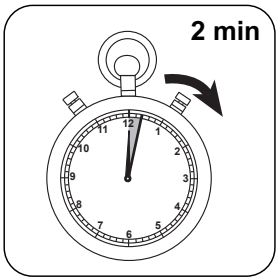
通过旋转溶解片剂。



将**样本比色杯**放入测量轴中。注意定位。



按下 **TEST** (XD: **START**) 按钮。



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。
- 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 | [e] 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 | * i含搅拌棒, 10cm

PP 氯 M110

0.02 - 2 mg/L Cl_2 [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

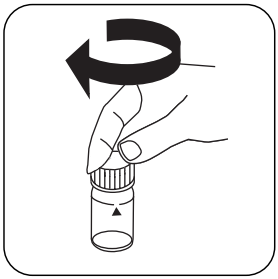
1. 清洗比色杯：
   由于许多家用清洁剂（例如洗碗用洗涤剂）含有还原剂，所以测定的氯结果可能会不足。为了排除这种测量误差，玻璃器皿应无氯。为此，将玻璃器皿在次氯酸钠溶液（0.1 g/L）下存放 1 小时，然后用去离子水（软化水）彻底冲洗。
2. 对于游离氯和总氯的单独测定，使用一套相应单独的比色杯是有意义的（参见 EN ISO 7393-2，第 5.3 段）。
3. DPD 显色发生在 pH 值在 6.2 至 6.5 时。因此该试剂含有用于调节 pH 值的缓冲液。但在分析前（用 0.5 mol/l 硫酸或 1 mol/l 氢氧化钠溶液）必须将强碱性或酸性水的 pH 范围调节到 6 和 7 之间。

进行测定 余氯 粉剂法

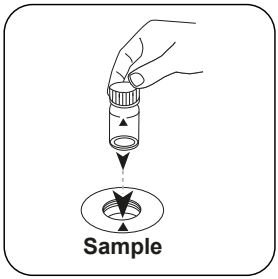
选择设备中的方法。

另外选择测定：余氯

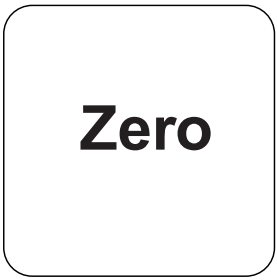
用 **10 mL 样本**填充 24 mm 比色杯。



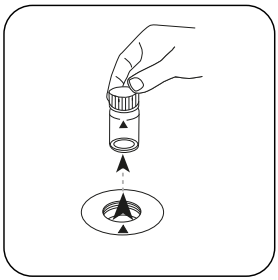
密封比色杯。



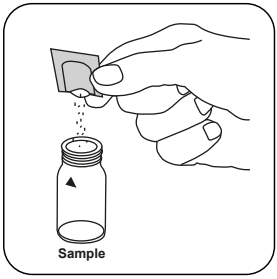
将**样本比色杯**放入测量轴中。注意定位。



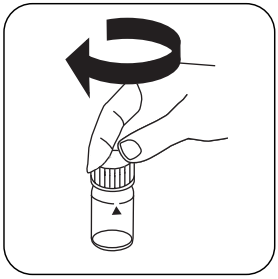
按下 **ZERO** 按钮。



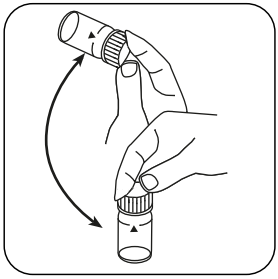
从测量轴上取下比色杯。



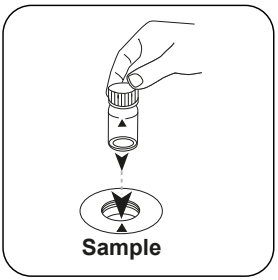
加入 **Chlorine FREE-DPD/ F10 粉包** 。



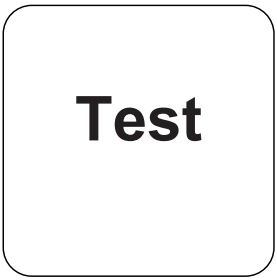
密封比色杯。



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。



按下 **TEST** (XD: **START**) 按钮。

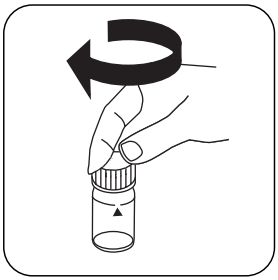
结果在显示屏上显示为 mg / l 余**氯**。

进行测定 总氯 粉剂法

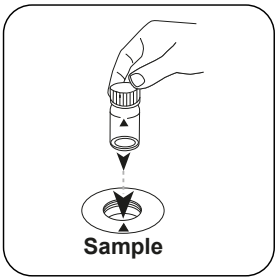
选择设备中的方法。

另外选择测定：总**氯**

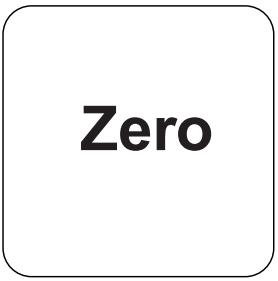
用 **10 mL 样本**填充 24 mm 比色杯。



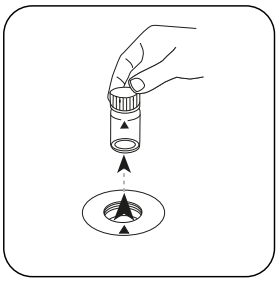
密封比色杯。



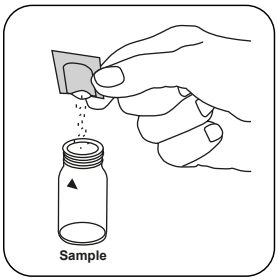
将**样本比色杯**放入测量轴中。注意定位。



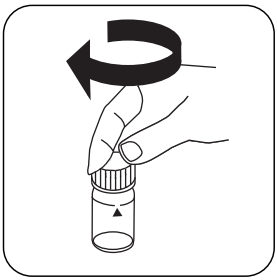
按下 **ZERO** 按钮。



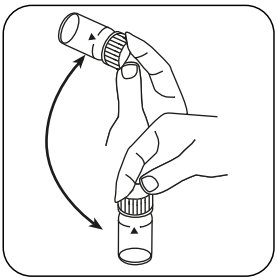
从测量轴上取下比色杯。



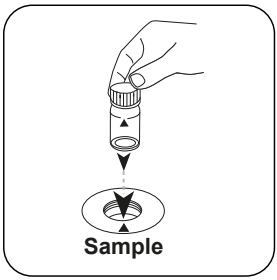
加入 **Chlorine TOTAL-DPD/ F10 粉包** 。



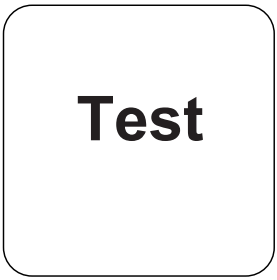
密封比色杯。



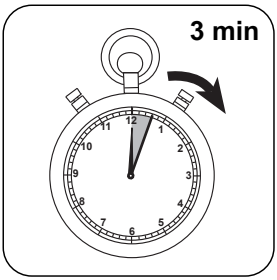
通过旋转混合内容物（20 sec.）。



将**样本比色杯**放入测量轴中。注意定位。



按下 **TEST** (XD: **START**) 按钮。



等待 **3 分钟反应时间** 。

反应时间结束后，自动进行测量。

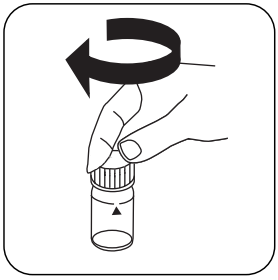
结果在显示屏上显示为 mg / l 总氯。

进行测定 结合氯 粉剂法

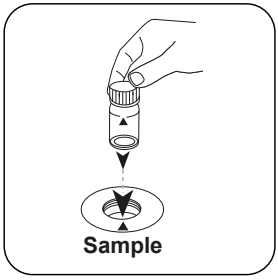
选择设备中的方法。

另外选择测定：结合氯

用 **10 mL 样本**填充 24 mm 比色杯。

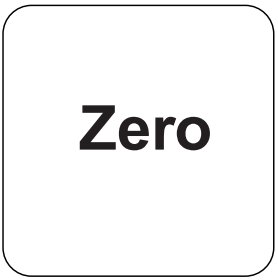


密封比色杯。

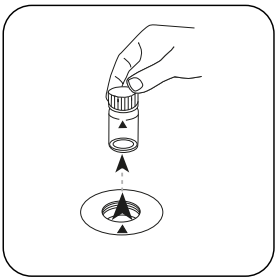


将**样本比色杯**放入测量轴中。注意定位。

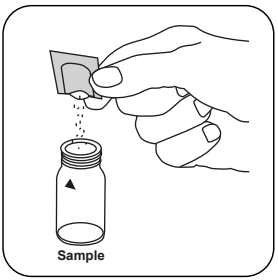
ZH



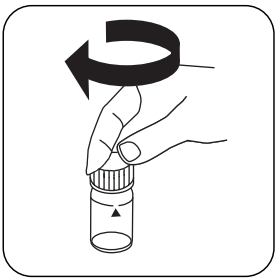
按下 **ZERO** 按钮。



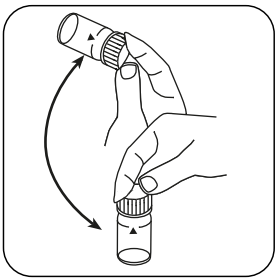
从测量轴上取下比色杯。



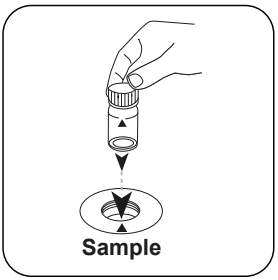
加入 **Chlorine FREE-DPD/ F10 粉包** 。



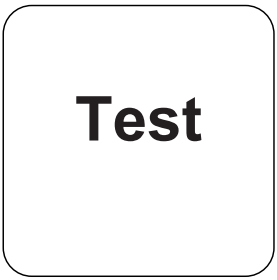
密封比色杯。



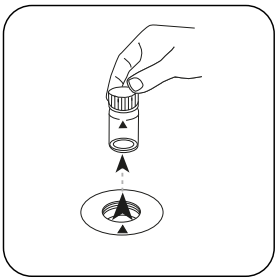
通过旋转混合内容物（20 sec.）。



将**样本比色杯**放入测量轴中。注意定位。



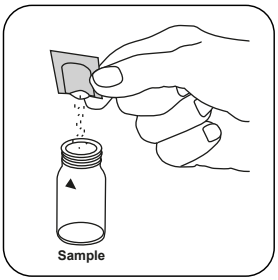
按下 **TEST** (XD: **START**) 按钮。



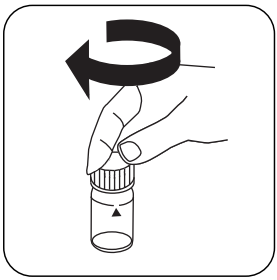
从测量轴上取下比色杯。

彻底清洗比色杯和比色杯杯盖。

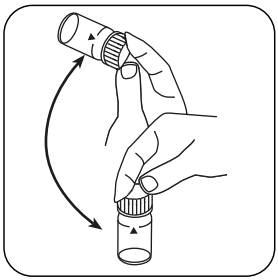
用 **10 mL 样本**填充 24 mm 比色杯。



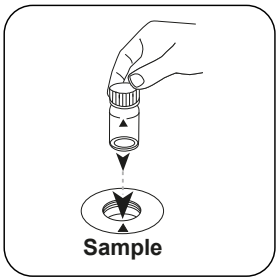
加入 **TOTAL-DPD/ F10 粉包** 。



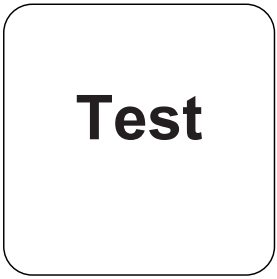
密封比色杯。



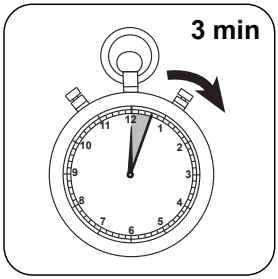
通过旋转混合内容物（20 sec.）。



将**样本比色杯**放入测量轴中。注意定位。



按下 **TEST** (XD: **START**) 按钮。



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

方法验证

检出限	0.01 mg/L
测定下限	0.03 mg/L
测量上限	2 mg/L
灵敏度	1.68 mg/L / Abs
置信范围	0.033 mg/L
标准偏差	0.014 mg/L
变异系数	1.34 %

一致性

EN ISO 7393-2

[a] 测定余氯，总氯和结合氯

HR 2 PP 氯 M112

0.1 - 10 mg/L Cl_2

DPD

材料
所需材料（部分可選）：

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

取样

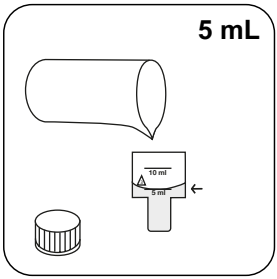
1. 在样本制备中，通过移液和摇动来避免氯的排气。
2. 取样后必须立即进行分析。

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。

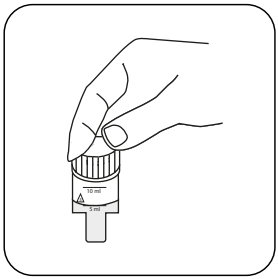
进行测定 余氯HR 2 粉剂法

选择设备中的方法。

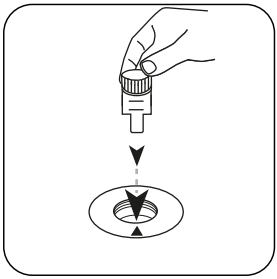


用 **5 mL 样本**填充 10 mm 比色杯。

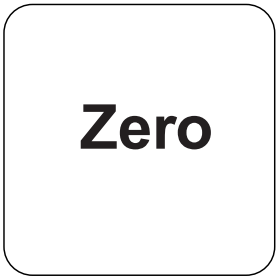
MD50: 用 **10 mL 样本**填充 24 mm 比色杯。



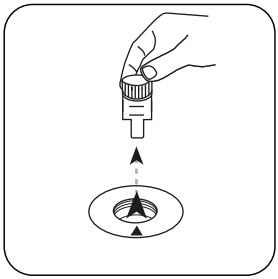
密封比色杯。



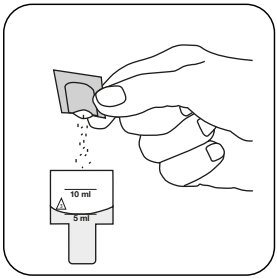
将**样本比色杯**放入测量轴中。注意定位。



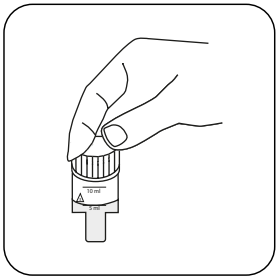
按下 **ZERO** 按钮。



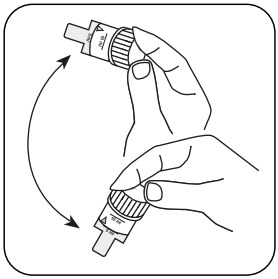
从测量轴上取下**比色杯**。



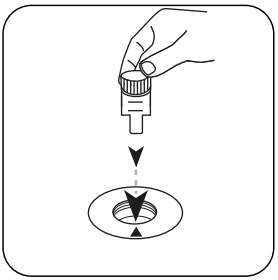
加入 **Vario Chlorine Free / F25 粉包** 。



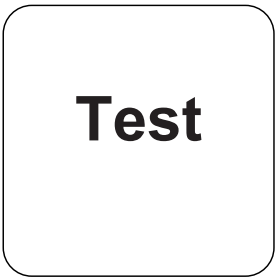
密封比色杯。



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。

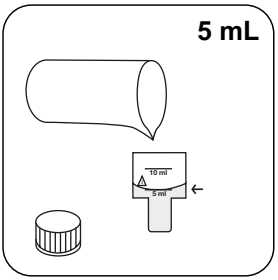


按下 **TEST** (XD: **START**) 按钮。

结果在显示屏上显示为 mg / l 氯。

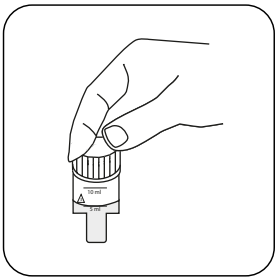
进行测定 总氯HR 2粉剂法

选择设备中的方法。

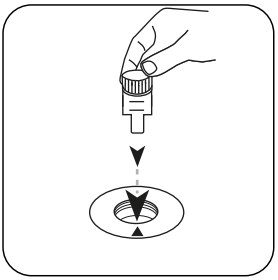


用 **5 mL 样本**填充 10 mm 比色杯。

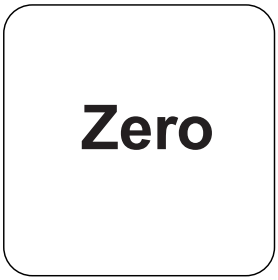
MD50: 用 **10 mL 样本**填充 24 mm 比色杯。



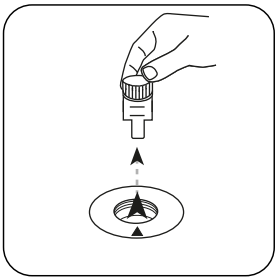
密封比色杯。



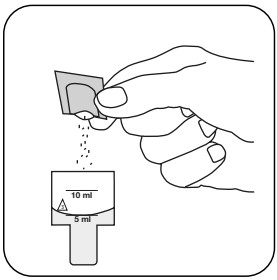
将**样本比色杯**放入测量轴中。注意定位。



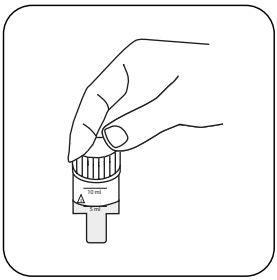
按下 **ZERO** 按钮。



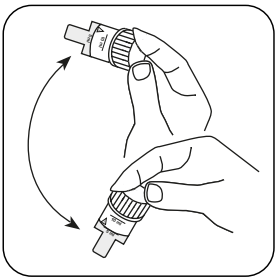
从测量轴上取下**比色杯**。



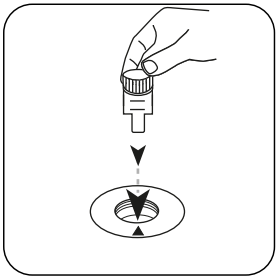
加入 **Vario Chlorine Total / F25 粉包** 。



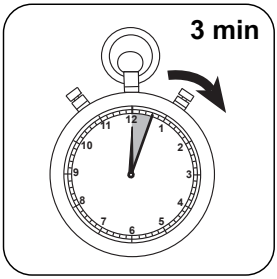
密封比色杯。



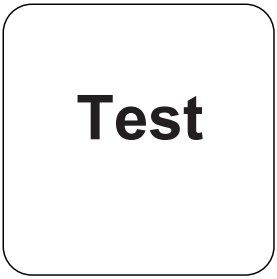
通过旋转混合内容物（20 sec.）。



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** 。



按下 **TEST** (XD: **START**) 按钮。

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

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