Lovibond® Water Testing

Tintometer® Group

Water Safety Kit Deluxe Chemical Kit

www.lovibond.com

Ammonia T M60

0.02 - 1 mg/l N A

Indophenole Blue

Instrument specific information

The test can be performed on the following devices. In addition, the required cuvette and the absorption range of the photometer are indicated.

Instrument Type	Cuvette	λ	Measuring Range
MD 100, MD 110, MD 600, MD 610, MD 640, MultiDirect, PM 620, PM 630	ø 24 mm	610 nm	0.02 - 1 mg/l N
SpectroDirect, XD 7000, XD 7500	ø 24 mm	676 nm	0.02 - 1 mg/l N

Material

Required material (partly optional):

Reagents	Packaging Unit	Part Number
Ammonia No. 1	Tablet / 100	512580BT
Ammonia No. 1	Tablet / 250	512581BT
Ammonia No. 2	Tablet / 100	512590BT
Ammonia No. 2	Tablet / 250	512591BT
Set Ammonia No. 1/No. 2 100 Pc.#	100 each	517611BT
Set Ammonia No. 1/No. 2 250 Pc.#	250 each	517612BT
Ammonia Conditioning Powder	Powder / 15 g	460170

Application List

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

Preperation

1. Sea water samples:
   Ammonia conditioning reagent is required when testing sea water or brackish water samples to prevent precipitation (settlement) of salts.
   Fill the test tube with the sample to the 10 ml mark and add one level spoonful of Aluminium Conditioning Powder. Close the vials with the caps and swirl until the powder has dissolved. Then proceed as described.

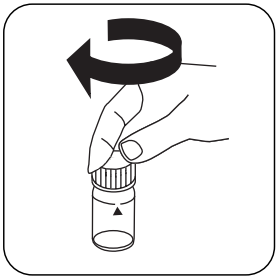
Notes

1. The AMMONIA No. 1 tablet will only dissolve completely after the AMMONIA No. 2 Tablet has been added.
2. The temperature of the sample is important for full colour development. At temperatures of below 20 °C the reaction period is 15 minutes.

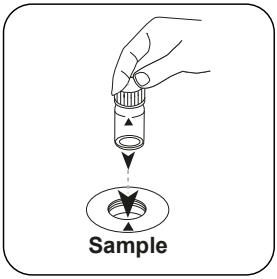
Implementation of the provision Ammonium with Tablet

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

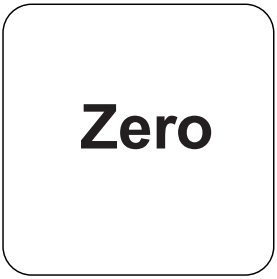
Fill 24 mm vial with **10 ml sample**.



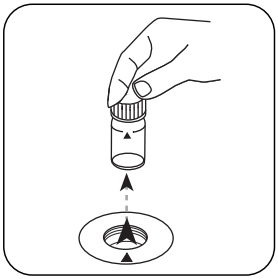
Close vial(s).



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

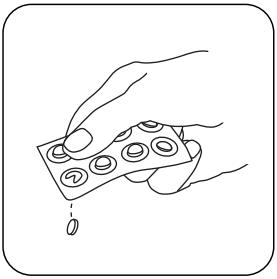


Press the **ZERO** button.

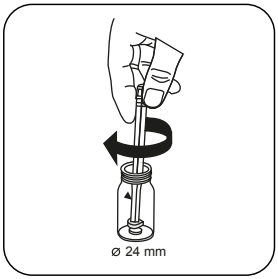


Remove the vial from the sample chamber.

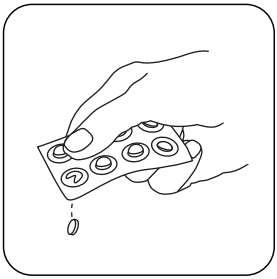
For devices that require **no ZERO measurement** , **start here**.



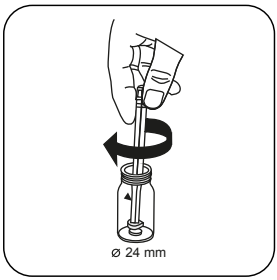
Add **AMMONIA No. 1 tablet** .



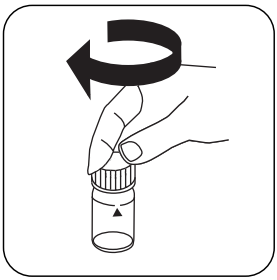
Crush tablet(s) by rotating slightly.



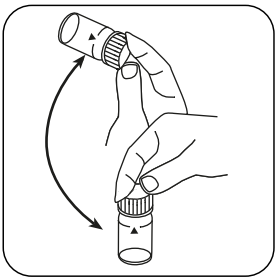
Add **AMMONIA No. 2 tablet** .



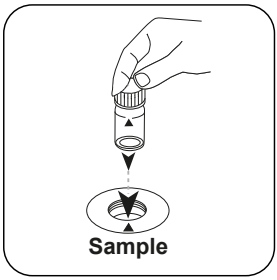
Crush tablet(s) by rotating slightly.



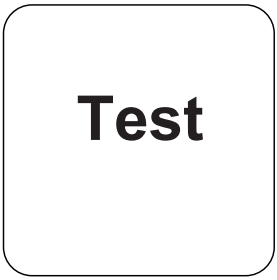
Close vial(s).



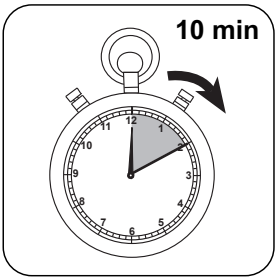
Dissolve tablet(s) by inverting.



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



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



Wait for **10 minute(s) reaction time**.

Once the reaction period is finished, the measurement takes place automatically.
The result in mg/l Ammonium appears on the display.

Analyses

The following table identifies the output values can be converted into other citation forms.

Unit	Cite form	Scale Factor
mg/l	N	1
mg/l	NH_4	1.2878
mg/l	NH_3	1.2158

Chemical Method

Indophenole Blue

Appendix

Calibration function for 3rd-party photometers

Conc. = a + b•Abs + c•Abs^2 + d•Abs^3 + e•Abs^4 + f•Abs^5

	ø 24 mm	□ 10 mm
a	$-3.54512 \cdot 10^{-2}$	$-3.54512 \cdot 10^{-2}$
b	$6.22226 \cdot 10^{-1}$	$1.33779 \cdot 10^{+0}$
c		
d		
e		
f		

Interferences

Persistant Interferences

- Sulphides, cyanides, rhodanide, aliphatic amine and aniline interfere in higher concentrations.

Bibliography

Photometrische Analyseverfahren, Schwendt, Wissenschaftliche Verlagsgesellschaft mbH, Stuttgart 1989

According to

APHA Method 4500-NH3 F

including stirring rod, 10 cm

Chlorine T M100

0.01 - 6.0 mg/l Cl_2 [a] CL6

DPD

Instrument specific information

The test can be performed on the following devices. In addition, the required cuvette and the absorption range of the photometer are indicated.

Instrument Type	Cuvette	λ	Measuring Range
MD 100, MD 110, MD 200, MD 600, MD 610, MD 640, MultiDirect, PM 600, PM 620, PM 630, Scuba II	ø 24 mm	530 nm	0.01 - 6.0 mg/l Cl_2 [a]
XD 7000, XD 7500	ø 24 mm	510 nm	0.01 - 6.0 mg/l Cl_2 [a]
SpectroDirect	ø 24 mm	510 nm	0.02 - 6.0 mg/l Cl_2 [a]

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
Refill Pack Scuba II	1 pc.	525600

Available Standards

Title	Packaging Unit	Part Number
ValidCheck Chlorine 1,5 mg/l	98.5 + 1.5 ml	48105510

Application List

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

Sampling

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

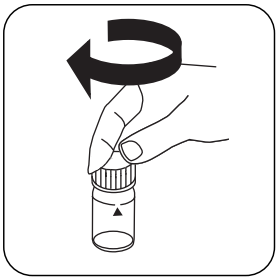
Preperation

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).

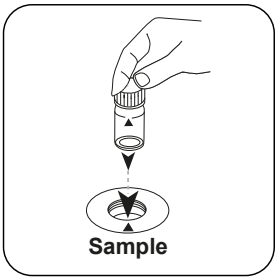
Implementation of the provision free chlorine with tablet

Select the method on the device
In addition, choose the test: free
For this method, no ZERO measurements are to be carried out with the following devices: XD 7000, XD 7500

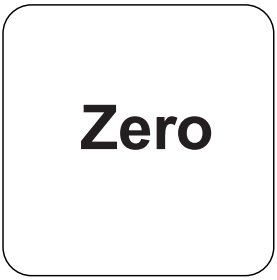
Fill 24 mm vial with **10 ml sample**.



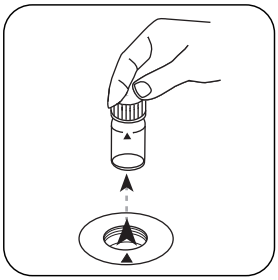
Close vial(s).



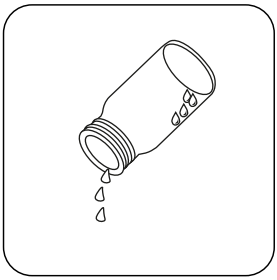
Place **sample vial** in the sample chamber. • Pay attention to the positioning.



Press the **ZERO** button.

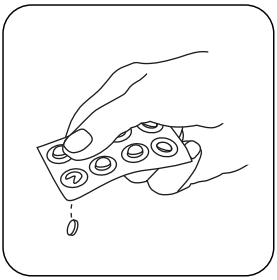


Remove the vial from the sample chamber.

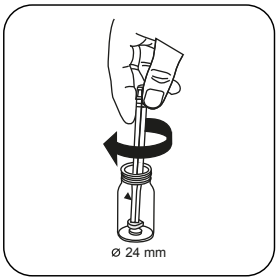


Empty vial except for a few drops.

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

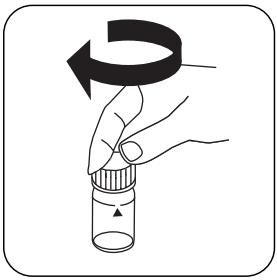


Add **DPD No. 1 tablet** .

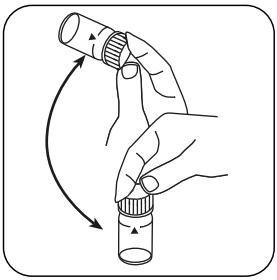


Crush tablet(s) by rotating slightly.

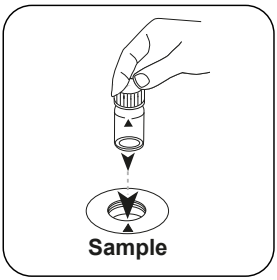
Fill up vial with **sample** to the **10 ml mark**.



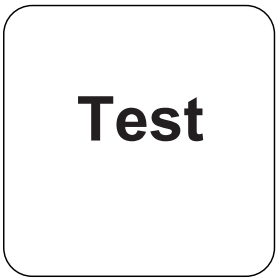
Close vial(s).



Dissolve tablet(s) by inverting.



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

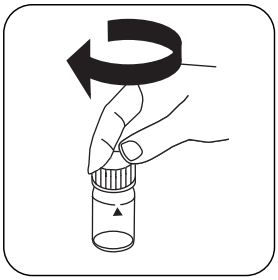


Press the **TEST** (XD: **START**)button.
The result in mg/l free chlorine appears on the display.

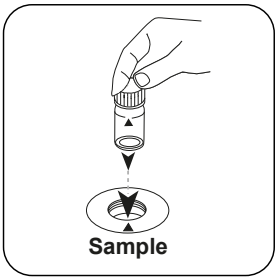
Implementation of the provision total Chlorine with tablet

Select the method on the device
In addition, choose the test: total
For this method, no ZERO measurements are to be carried out with the following devices: XD 7000, XD 7500

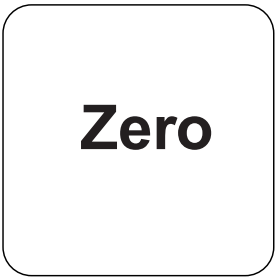
Fill 24 mm vial with **10 ml sample**.



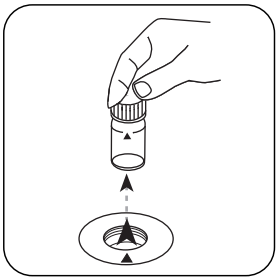
Close vial(s).



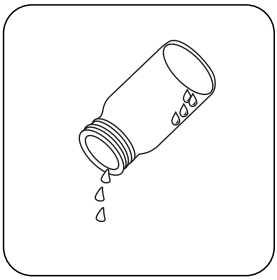
Place **sample vial** in the sample chamber. • Pay attention to the positioning.



Press the **ZERO** button.

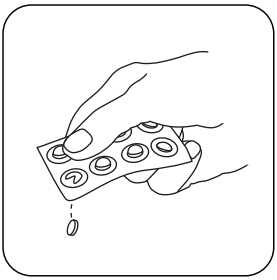


Remove the vial from the sample chamber.

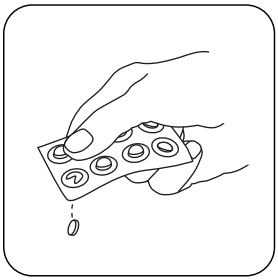


Empty vial except for a few drops.

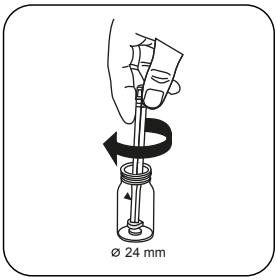
For devices that require **no ZERO measurement** , **start here**.



Add **DPD No. 1 tablet** .

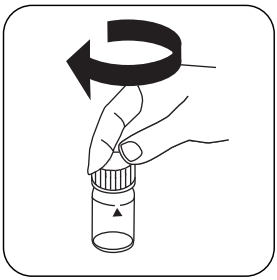


Add **DPD No. 3 tablet** .

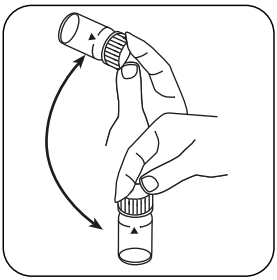


Crush tablet(s) by rotating slightly.

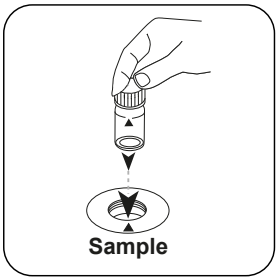
Fill up vial with **sample** to the **10 ml mark**.



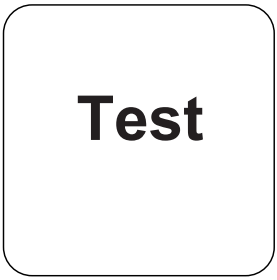
Close vial(s).



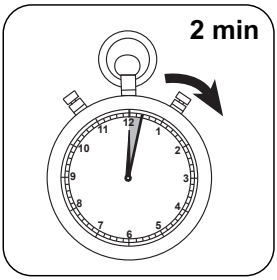
Dissolve tablet(s) by inverting.



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



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



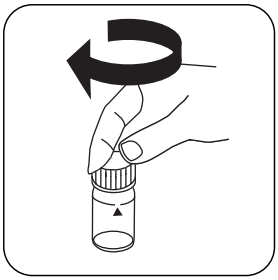
Wait for **2 minute(s) reaction time**.

Once the reaction period is finished, the measurement takes place automatically.
The result in mg/l total Chlorine appears on the display.

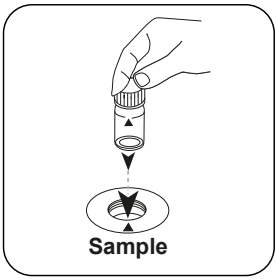
Implementation of the provision Chlorine differentiated with tablet

Select the method on the device
In addition, choose the test: differentiated
For this method, no ZERO measurements are to be carried out with the following devices: XD 7000, XD 7500

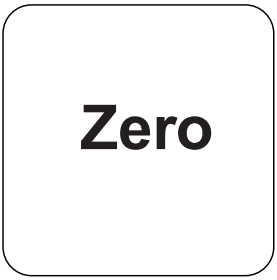
Fill 24 mm vial with **10 ml sample**.



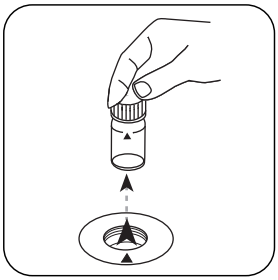
Close vial(s).



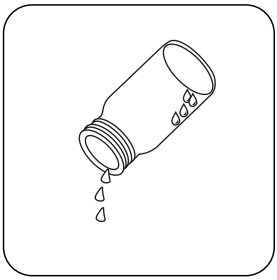
Place **sample vial** in the sample chamber. • Pay attention to the positioning.



Press the **ZERO** button.

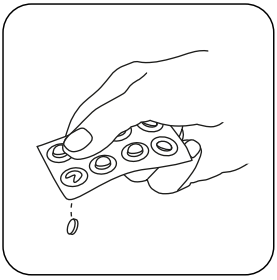


Remove the vial from the sample chamber.

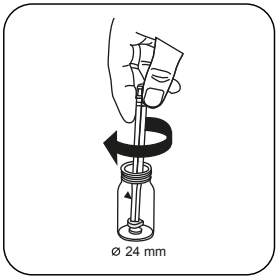


Empty vial except for a few drops.

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

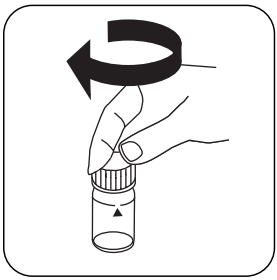


Add **DPD No. 1 tablet** .

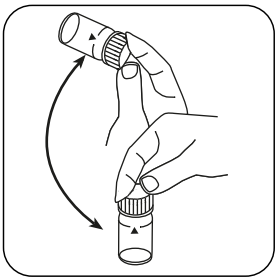


Crush tablet(s) by rotating slightly.

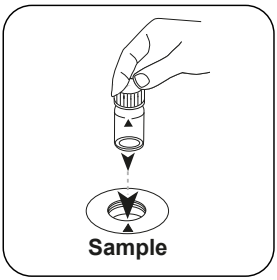
Fill up vial with **sample** to the **10 ml mark**.



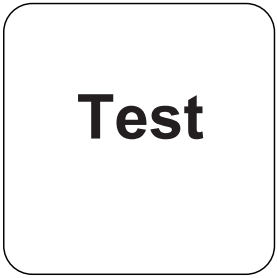
Close vial(s).



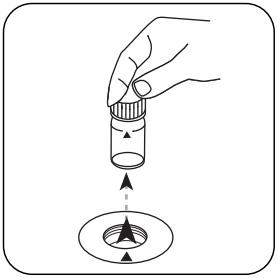
Dissolve tablet(s) by inverting.



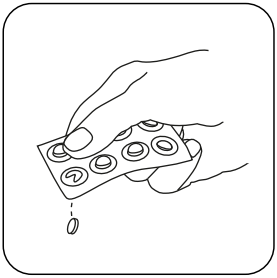
Place **sample vial** in the sample chamber. • Pay attention to the positioning.



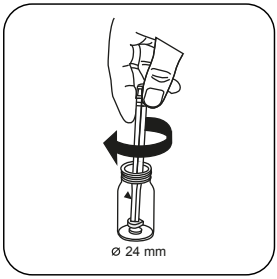
Press the **TEST** (XD: **START**)button.



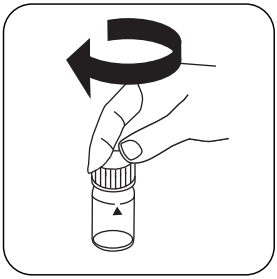
Remove the vial from the sample chamber.



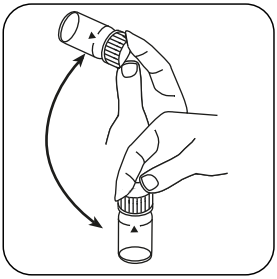
Add **DPD No. 3 tablet** .



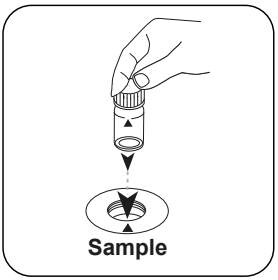
Crush tablet(s) by rotating slightly.



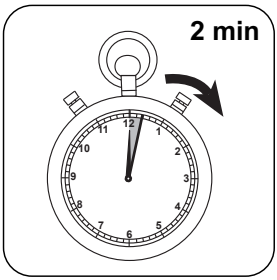
Close vial(s).



Dissolve tablet(s) by inverting.



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

Calibration function for 3rd-party photometers

Conc. = a + b•Abs + c•Abs^2 + d•Abs^3 + e•Abs^4 + f•Abs^5

	ø 24 mm	**□ 10 mm**
a	$-5.41232 \cdot 10^{-2}$	$-5.41232 \cdot 10^{-2}$
b	$1.78498 \cdot 10^{+0}$	$3.83771 \cdot 10^{+0}$
c	$-8.7417 \cdot 10^{-2}$	$-4.04085 \cdot 10^{-1}$
d	$1.08323 \cdot 10^{-1}$	$1.07655 \cdot 10^{+0}$
e		
f		

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

Nitrate T M260

0.08 - 1 mg/l N

Zinc Reduction / NED

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 600, MD 610, MD 640, XD 7000, XD 7500	ø 24 mm	530 nm	0.08 - 1 mg/l N

Material

Required material (partly optional):

Reagents	Packaging Unit	Part Number
Nitrate Test	Tablet / 100	502810
Nitrite LR	Tablet / 100	512310BT
Nitrite LR	Tablet / 250	512311BT
Nitrate Test Pulver	Powder / 15 g	465230
Nitrate test tube	1 pc.	366220

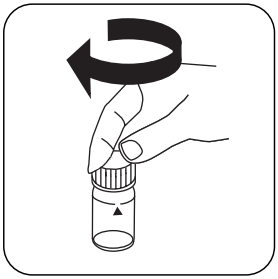
Application List

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

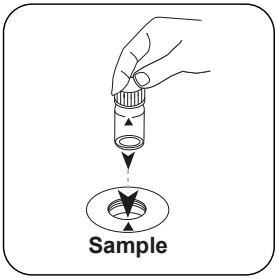
Implementation of the provision Nitrate with Tablet and Powder

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

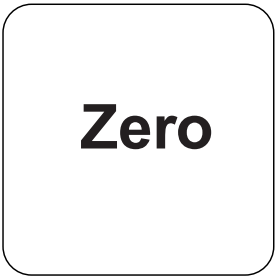
Fill 24 mm vial with **10 ml sample**.



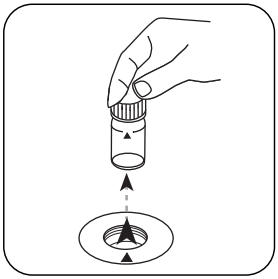
Close vial(s).



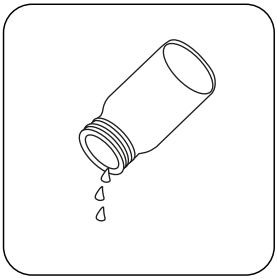
Place **sample vial** in the sample chamber. • Pay attention to the positioning.



Press the **ZERO** button.

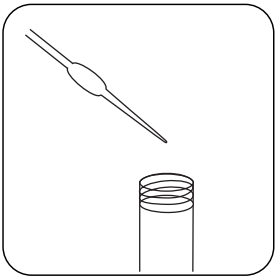


Remove the vial from the sample chamber.

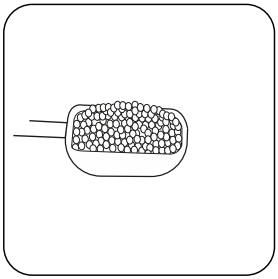


Empty vial.

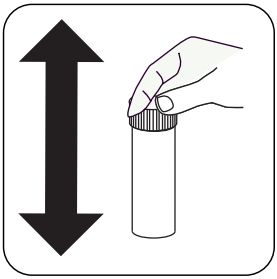
For devices that require **no ZERO measurement** , **start here**.



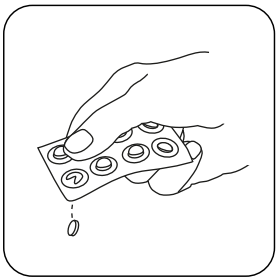
Fill a Nitratest tube with **20 ml sample**.



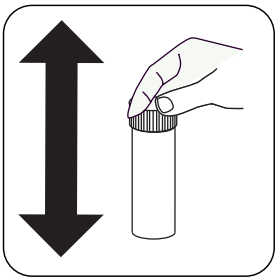
Add **one microspoon NITRATE TEST powder** .



Close the test tube with the lid and mix the contents by vigorously shaking for 1 minute.

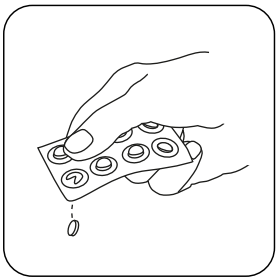


Add **NITRATE TEST tablet**.

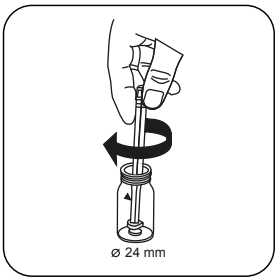


Close the test tube with the lid and mix the contents by vigorously shaking for 1 minute.

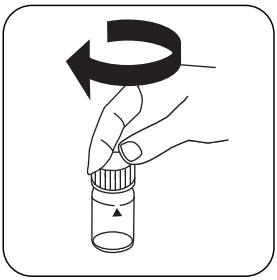
- Leave test tubes upright. Wait until the reducing agent has dropped off.
- Then turn the test tube three to four times around.
- Leave the test test tube to stand for 2 minutes.
- Open the test tube and wipe the residue of the reduction with a clean cloth.
- Decant **10 ml of this sample** into a **24 mm vial** without causing a reducing agent.



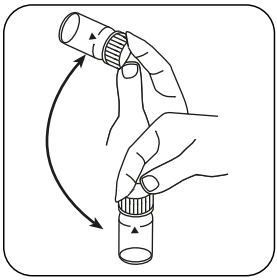
Add **NITRITE LR tablet**.



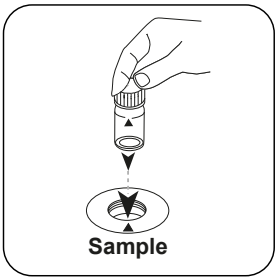
Crush tablet(s) by rotating slightly.



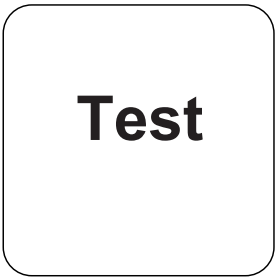
Close vial(s).



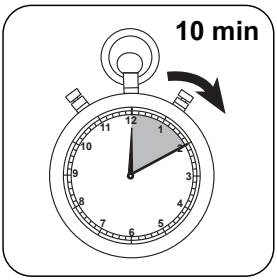
Dissolve tablet(s) by inverting.



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



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



Wait for **10 minute(s) reaction time**.
Once the reaction period is finished, the measurement takes place automatically.
The result in mg/l Nitrate appears on the display.

Analyses

The following table identifies the output values can be converted into other citation forms.

Unit	Cite form	Scale Factor
mg/l	N	1
mg/l	NO_3	4.4268

Chemical Method

Zinc Reduction / NED

Appendix

Calibration function for 3rd-party photometers

Conc. = a + b•Abs + c•Abs^2 + d•Abs^3 + e•Abs^4 + f•Abs^5

	ø 24 mm	□ **10 mm**
a	$-9.38065 \cdot 10^{-3}$	$-9.38065 \cdot 10^{-3}$
b	$3.20151 \cdot 10^{-1}$	$6.88325 \cdot 10^{-1}$
c	$2.5446 \cdot 10^{-3}$	$1.17624 \cdot 10^{-2}$
d		
e		
f		

Interferences

Persistant Interferences

1. Antimony (III), iron, lead, mercury (I), silver, Chloroplatinate, metavanadate, and bismuth create precipitation.
2. With the presence of Copper (II) there will be lower results, because it accelerates the degradation of diazonium salts.

Removeable Interferences

1. If there is nitrate in the original water sample, it will lead to high values of nitrate nitrogen. For correction, carry out a nitrite determination using method 270 in NO2-N and subtract the result from the nitrate reading for the correct result. The result displayed does not show the actual concentration of nitrate nitrogen in the water sample being analysed.
2. Concentration of nitrate nitrogen above 1 mg/l results in an erroneous measurement after the reaction time of 10 minutes (in this instance, a colour change to apricot colour instead of the reddish pink solution). The range of the test can be extended by first diluting the water sample with deionised water. The subsequent result of the test must then be multiplied by the dilution factor.

Derived from

ASTM D 3867-09
APHA 4500 NO3- E-2000
US EPA 353.3 (1983)

Nitrite T M270

0.01 - 0.5 mg/l N

N-(1-Naphthyl)-ethylendiamine

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 600, MD 610, MD 640, MultiDirect	ø 24 mm	560 nm	0.01 - 0.5 mg/l N
SpectroDirect	ø 24 mm	545 nm	0.01 - 0.5 mg/l N
XD 7000, XD 7500	ø 24 mm	540 nm	0.01 - 0.5 mg/l N

Material

Required material (partly optional):

Reagents	Packaging Unit	Part Number
Nitrite LR	Tablet / 100	512310BT
Nitrite LR	Tablet / 250	512311BT

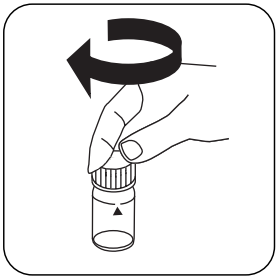
Application List

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

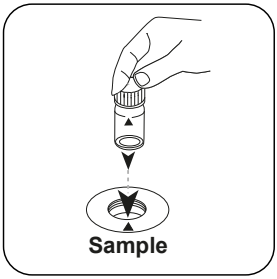
Implementation of the provision Nitrite with Tablet

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

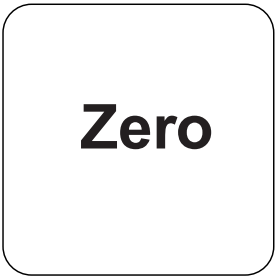
Fill 24 mm vial with **10 ml sample**.



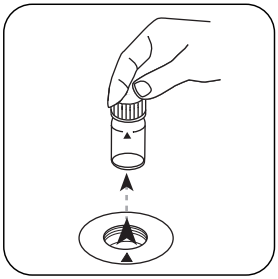
Close vial(s).



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

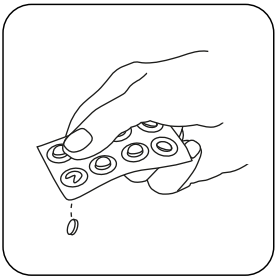


Press the **ZERO** button.

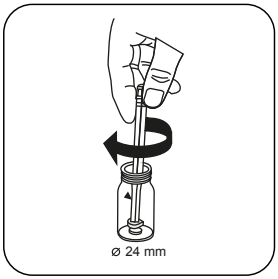


Remove the vial from the sample chamber.

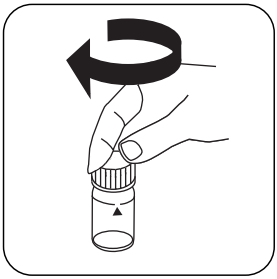
For devices that require **no ZERO measurement** , **start here**.



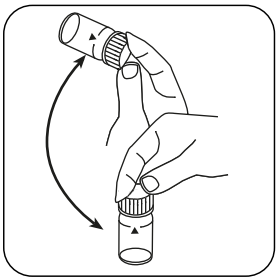
Add **NITRITE LR tablet**.



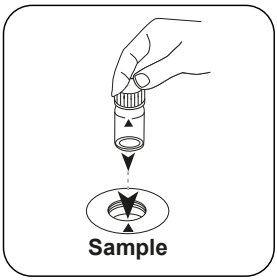
Crush tablet(s) by rotating slightly.



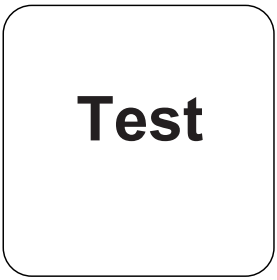
Close vial(s).



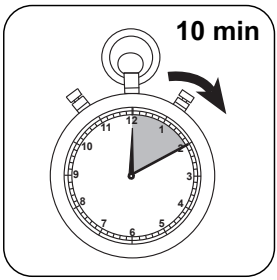
Dissolve tablet(s) by inverting.



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



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



Wait for **10 minute(s) reaction time**.

Once the reaction period is finished, the measurement takes place automatically. The result in mg/l Nitrite appears on the display.

Analyses

The following table identifies the output values can be converted into other citation forms.

Unit	Cite form	Scale Factor
mg/l	N	1
mg/l	NO_2	3.2846

Chemical Method

N-(1-Naphthyl)-ethylendiamine

Appendix

Calibration function for 3rd-party photometers

Conc. = a + b•Abs + c•Abs^2 + d•Abs^3 + e•Abs^4 + f•Abs^5

	ø 24 mm	□ 10 mm
a	$-5.14368 \cdot 10^{-3}$	$-5.14368 \cdot 10^{-3}$
b	$1.76663 \cdot 10^{-1}$	$3.79825 \cdot 10^{-1}$
c	$1.20299 \cdot 10^{-2}$	$5.56082 \cdot 10^{-2}$
d		
e		
f		

Interferences

Persistant Interferences

1. Antimony (III), iron (III), lead, mercury (I), silver, chloroplatinate, metavanadate, and bismuth can result in interference as a result of precipitation.
2. Copper(II) ions may give a low result as they accelerate the decomposition of the diazonium salt.
3. It is unlikely in practice that these interfering ions will occur in such high concentrations that they cause significant errors.

Derived from

DIN ISO 15923-1 D49

Performing turbidity measurement

On/Off

Switch the unit on using the [ON/OFF] key.

ntu

The display shows the following:
Fill a clean vial with the water sample up to the mark, screw the cap on and place the vial in the sample chamber making sure that the ⧖ marks are aligned.

Read

Press the [READ] key.

ntu

The "Method" symbol flashes for approx. 8 seconds.

RESULT

The result is shown in **NTU**.

Repeating the test:
Press the [READ] key again.

Display backlight

!

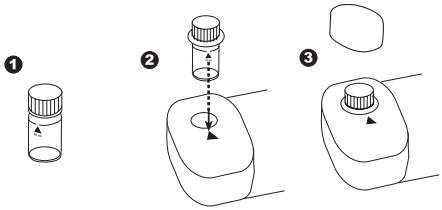
Press the [!] key to turn the display backlight on or off. The backlight is switched off automatically during the measurement.

Recall of stored data

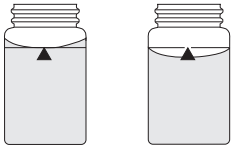
!

If the instrument is switched on, press the [!] key for more than 4 seconds to access the recall menu.

Correct positioning of the vial (Ø 24 mm):



Correct filling of the vial:



Ammonium T M60

0.02 - 1 mg/l N A

Indophenol Blau

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 100, MD 110, MD 600, MD 610, MD 640, MultiDirect, PM 620, PM 630	ø 24 mm	610 nm	0.02 - 1 mg/l N
SpectroDirect, XD 7000, XD 7500	ø 24 mm	676 nm	0.02 - 1 mg/l N

Material

Benötigtes Material (zum Teil optional):

Reagenzien	Form/Menge	Bestell-Nr.
Ammonia No. 1	Tablette / 100	512580BT
Ammonia No. 1	Tablette / 250	512581BT
Ammonia No. 2	Tablette / 100	512590BT
Ammonia No. 2	Tablette / 250	512591BT
Set Ammonia No. 1/No. 2#	je 100	517611BT
Set Ammonia No. 1/No. 2#	je 250	517612BT
Ammonium Konditionierpulver	Pulver / 15 g	460170

Anwendungsbereich

- Abwasserbehandlung
- Trinkwasseraufbereitung
- Rohwasserbehandlung

Vorbereitung

1. Seewasserproben:
   Ammonium Konditionierungspulver wird für See- oder Brackwasserproben benötigt, um Ausfällungen (Trübungen) während des Tests zu verhindern.
   Die Küvette bis zur 10-ml-Marke mit der Probe füllen und ein Löffel Ammonium Konditionierungspulver zugeben. Die Küvette mit dem Küvettendeckel verschließen und so lange schwenken, bis sich das Pulver aufgelöst hat. Danach wie beschrieben fortfahren.

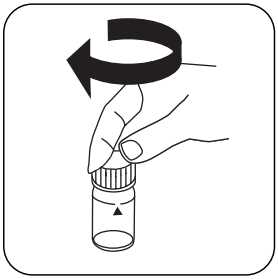
Anmerkungen

1. Die AMMONIA No. 1 Tablette löst sich erst nach der Zugabe der AMMONIA No. 2 Tablette vollständig auf.
2. Die Temperatur der Probe ist für die Farbentwicklungszeit wichtig. Bei Temperaturen unter 20 °C beträgt die Reaktionszeit 15 Minuten.

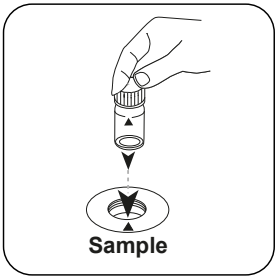
Durchführung der Bestimmung Ammonium mit Tablette

Die Methode im Gerät auswählen.
Für diese Methode muss bei folgenden Geräten keine ZERO-Messung durchgeführt werden: XD 7000, XD 7500

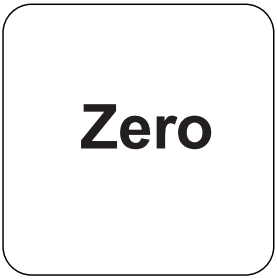
24-mm-Küvette mit **10 ml Probe** füllen.



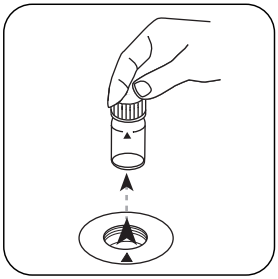
Küvette(n) verschließen.



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

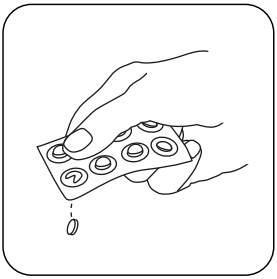


Taste **ZERO** drücken.

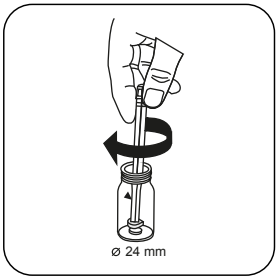


Küvette aus dem Messschacht nehmen.

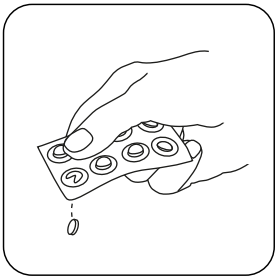
Bei Geräten, die **keine ZERO-Messung** erfordern, **hier beginnen**.



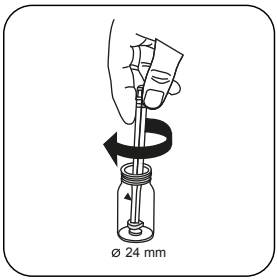
Eine AMMONIA No. 1 Tablette zugeben.



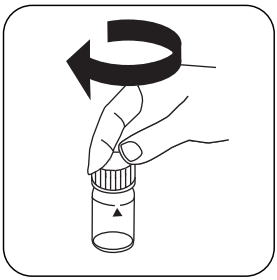
Tablette(n) unter leichter Drehung zerdrücken.



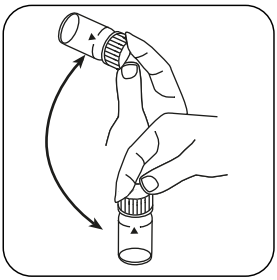
Eine AMMONIA No. 2 Tablette zugeben.



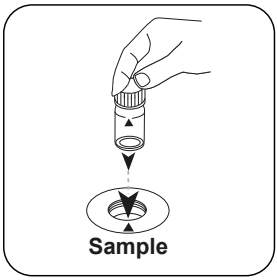
Tablette(n) unter leichter Drehung zerdrücken.



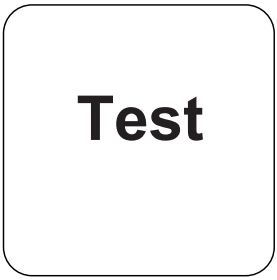
Küvette(n) verschließen.



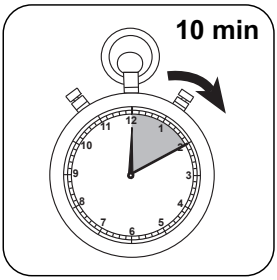
Tablette(n) durch Umschwenken lösen.



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



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



10 Minute(n) Reaktionszeit abwarten.

Nach Ablauf der Reaktionszeit erfolgt automatisch die Messung.
In der Anzeige erscheint das Ergebnis in mg/l Ammonium.

Auswertung

Die folgende Tabelle gibt an wie die ausgegebenen Werte in andere Zitierformen umgewandelt werden können.

Einheit	Zitierform	Umrechnungsfaktor
mg/l	N	1
mg/l	NH_4	1.2878
mg/l	NH_3	1.2158

Chemische Methode

Indophenol Blau

Appendix

Calibration function for 3rd-party photometers

Conc. = a + b•Abs + c•Abs^2 + d•Abs^3 + e•Abs^4 + f•Abs^5

	ø 24 mm	□ 10 mm
a	$-3.54512 \cdot 10^{-2}$	$-3.54512 \cdot 10^{-2}$
b	$6.22226 \cdot 10^{-1}$	$1.33779 \cdot 10^{+0}$
c		
d		
e		
f		

Störungen

Permanente Störungen

- Sulfide, Cyanide, Rhodanide, Aliphatische Amine und Anilin stören in höheren Konzentrationen.

Literaturverweise

Photometrische Analyseverfahren, Schwendt, Wissenschaftliche Verlagsgesellschaft mbH, Stuttgart 1989

Gemäß

APHA Method 4500-NH3 F

inklusive Rührstab

Chlor T **M100**

0.01 - 6.0 mg/l Cl_2 [a] **CL6**

DPD

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 100, MD 110, MD 200, MD 600, MD 610, MD 640, MultiDirect, PM 600, PM 620, PM 630, Scuba II	ø 24 mm	530 nm	0.01 - 6.0 mg/l Cl_2 [a]
XD 7000, XD 7500	ø 24 mm	510 nm	0.01 - 6.0 mg/l Cl_2 [a]
SpectroDirect	ø 24 mm	510 nm	0.02 - 6.0 mg/l Cl_2 [a]

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
Nachfüllpack Suba II	1 St.	525600

Verfügbare Standards

Title	Verpackungseinheit	Bestell-Nr.
ValidCheck Chlor 1,5 mg/l	98.5 + 1.5 ml	48105510

Anwendungsbereich

- Abwasserbehandlung
- Desinfektionsmittelkontrolle
- Kesselwasser
- Kühlwasser
- Rohwasserbehandlung
- Beckenwasserkontrolle
- Schwimmbadwasseraufbereitung
- Trinkwasseraufbereitung

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.

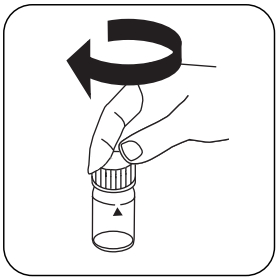
Vorbereitung

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).

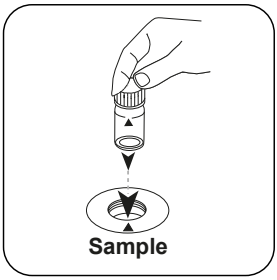
Durchführung der Bestimmung freies Chlor mit Tablette

Die Methode im Gerät auswählen.
Wählen Sie zudem die Bestimmung: frei
Für diese Methode muss bei folgenden Geräten keine ZERO-Messung durchgeführt werden: XD 7000, XD 7500

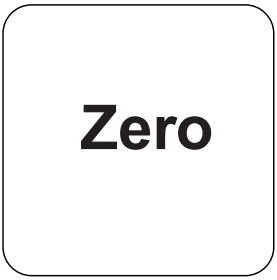
24-mm-Küvette mit **10 ml Probe** füllen.



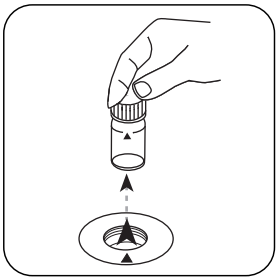
Küvette(n) verschließen.



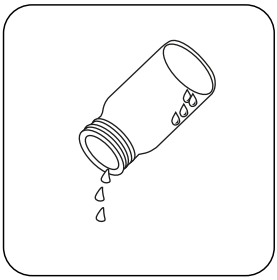
Die **Probenküvette** in den Messschacht stellen. Positionierung beachten.



Taste **ZERO** drücken.

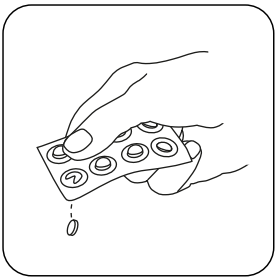


Küvette aus dem Messschacht nehmen.

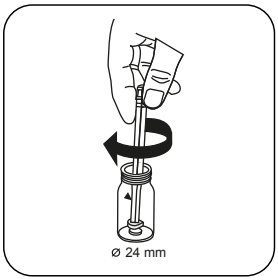


Die Küvette bis auf einige Tropfen entleeren.

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

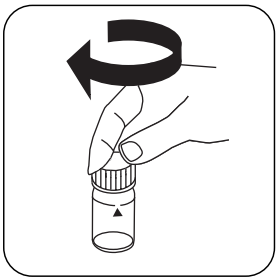


Eine DPD No. 1 Tablette zugeben.

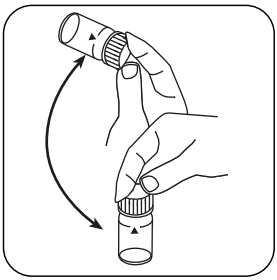


Tablette(n) unter leichter Drehung zerdrücken.

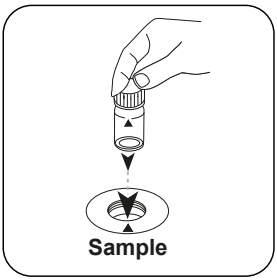
Küvette bis zur **10-ml-Marke** mit der **Probe** auffüllen.



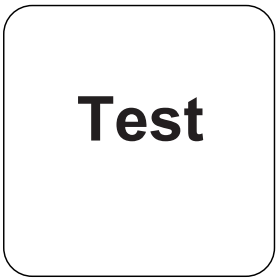
Küvette(n) verschließen.



Tablette(n) durch Umschwenken lösen.



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

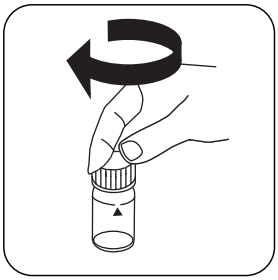


Taste **TEST** (XD: **START**) drücken.
In der Anzeige erscheint das Ergebnis in mg/l freies Chlor.

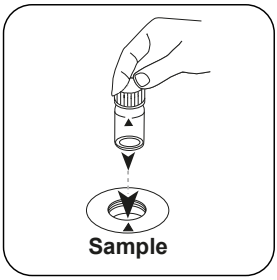
Durchführung der Bestimmung gesamt Chlor mit Tablette

Die Methode im Gerät auswählen.
Wählen Sie zudem die Bestimmung: gesamt
Für diese Methode muss bei folgenden Geräten keine ZERO-Messung durchgeführt werden: XD 7000, XD 7500

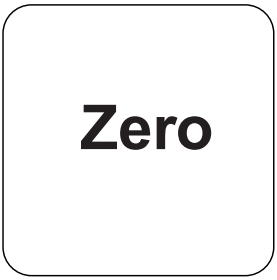
24-mm-Küvette mit **10 ml Probe** füllen.



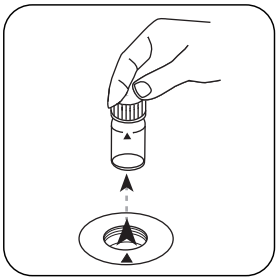
Küvette(n) verschließen.



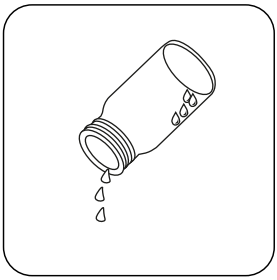
Die **Probenküvette** in den Messschacht stellen. Positionierung beachten.



Taste **ZERO** drücken.

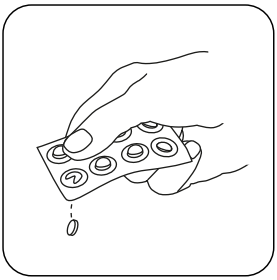


Küvette aus dem Messschacht nehmen.

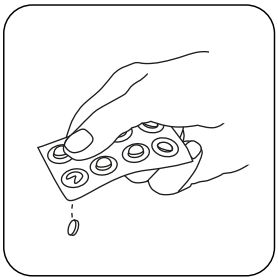


Die Küvette bis auf einige Tropfen entleeren.

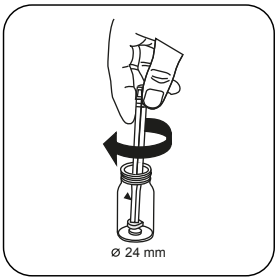
Bei Geräten, die **keine ZERO-Messung** erfordern, **hier beginnen**.



Eine DPD No. 1 Tablette zugeben.

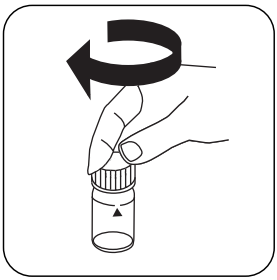


Eine DPD No. 3 Tablette zugeben.

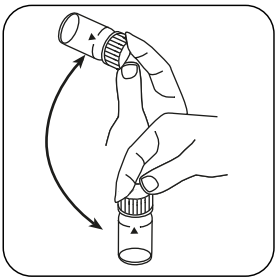


Tablette(n) unter leichter Drehung zerdrücken.

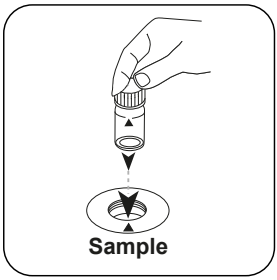
Küvette bis zur **10-ml-Marke** mit der **Probe** auffüllen.



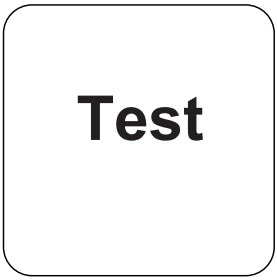
Küvette(n) verschließen.



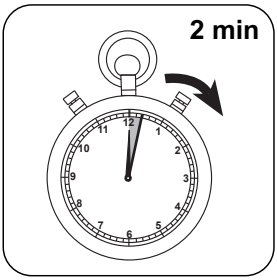
Tablette(n) durch Umschwenken lösen.



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



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



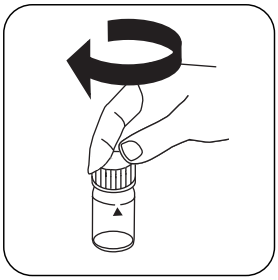
2 Minute(n) Reaktionszeit abwarten.

Nach Ablauf der Reaktionszeit erfolgt automatisch die Messung.
In der Anzeige erscheint das Ergebnis in mg/l Gesamtchlor.

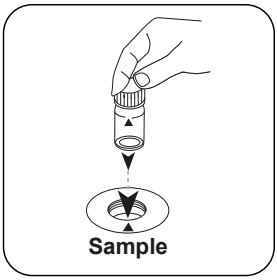
Durchführung der Bestimmung differenziertes Chlor mit Tablette

Die Methode im Gerät auswählen.
Wählen Sie zudem die Bestimmung: differenziert
Für diese Methode muss bei folgenden Geräten keine ZERO-Messung durchgeführt werden: XD 7000, XD 7500

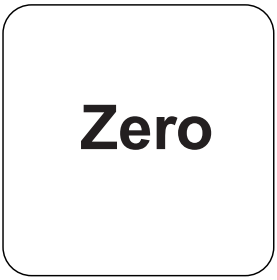
24-mm-Küvette mit **10 ml Probe** füllen.



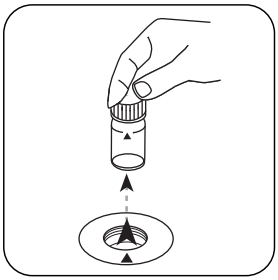
Küvette(n) verschließen.



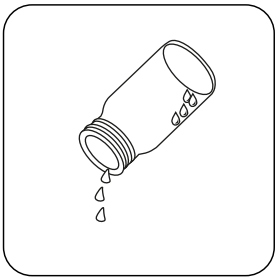
Die **Probenküvette** in den Messschacht stellen. Positionierung beachten.



Taste **ZERO** drücken.

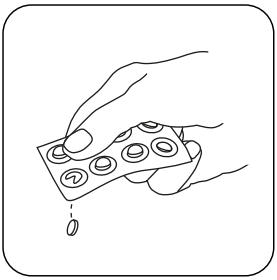


Küvette aus dem Messschacht nehmen.

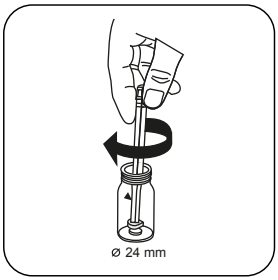


Die Küvette bis auf einige Tropfen entleeren.

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

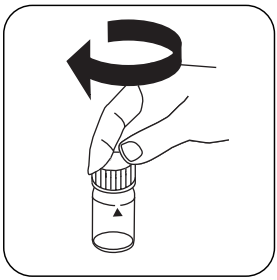


Eine DPD No. 1 Tablette zugeben.

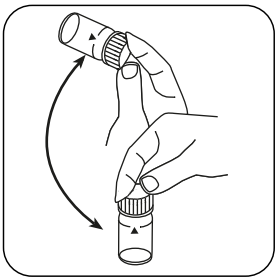


Tablette(n) unter leichter Drehung zerdrücken.

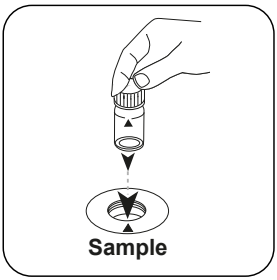
Küvette bis zur **10-ml-Marke** mit der **Probe** auffüllen.



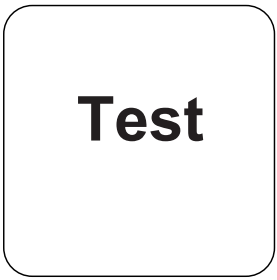
Küvette(n) verschließen.



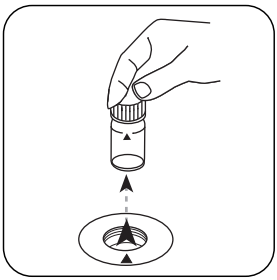
Tablette(n) durch Umschwenken lösen.



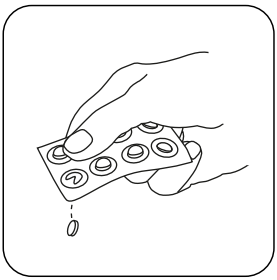
Die **Probenküvette** in den Messschacht stellen. Positionierung beachten.



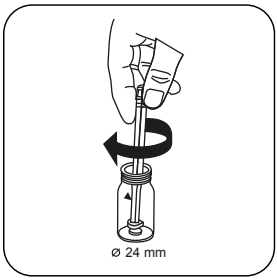
Taste **TEST** (XD: **START**) drücken.



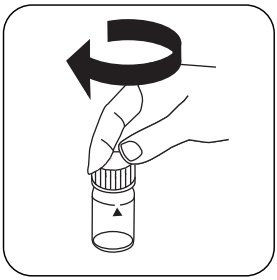
Küvette aus dem Messschacht nehmen.



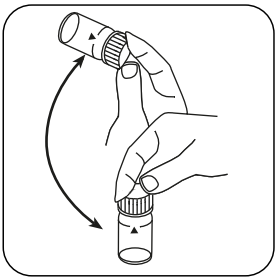
Eine DPD No. 3 Tablette zugeben.



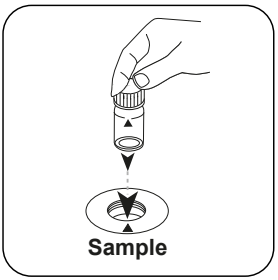
Tablette(n) unter leichter Drehung zerdrücken.

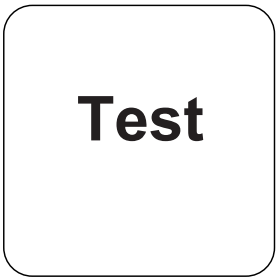


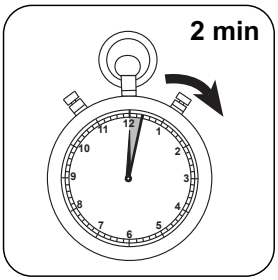
Küvette(n) verschließen.



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

Calibration function for 3rd-party photometers

Conc. = a + b•Abs + c•Abs^2 + d•Abs^3 + e•Abs^4 + f•Abs^5

	ø 24 mm	**□ 10 mm**
a	-5.41232 • 10^{-2}	-5.41232 • 10^{-2}
b	1.78498 • 10^{+0}	3.83771 • 10^{+0}
c	-8.7417 • 10^{-2}	-4.04085 • 10^{-1}
d	1.08323 • 10^{-1}	1.07655 • 10^{+0}
e		
f		

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

Nitrat T M260

0.08 - 1 mg/l N

Zinkreduktion / NED

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 600, MD 610, MD 640, XD 7000, XD 7500	ø 24 mm	530 nm	0.08 - 1 mg/l N

Material

Benötigtes Material (zum Teil optional):

Reagenzien	Form/Menge	Bestell-Nr.
Nitrate Test	Tablette / 100	502810
Nitrite LR	Tablette / 100	512310BT
Nitrite LR	Tablette / 250	512311BT
Nitrate Test Pulver	Pulver / 15 g	465230
NITRATE-Teströhrchen	1 St.	366220

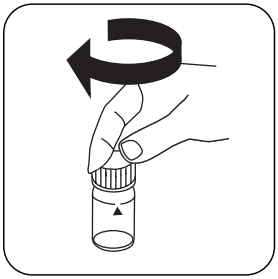
Anwendungsbereich

- Abwasserbehandlung
- Trinkwasseraufbereitung
- Rohwasserbehandlung

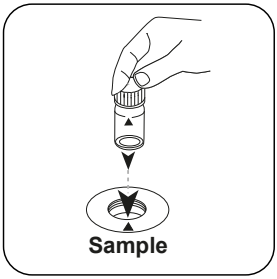
Durchführung der Bestimmung Nitrat mit Tablette und Pulver

Die Methode im Gerät auswählen.
Für diese Methode muss bei folgenden Geräten keine ZERO-Messung durchgeführt werden: XD 7000, XD 7500

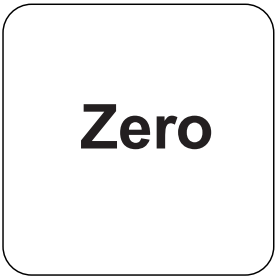
24-mm-Küvette mit **10 ml Probe** füllen.



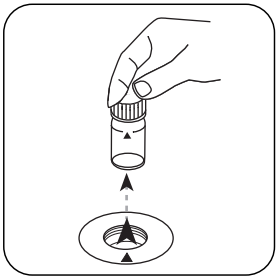
Küvette(n) verschließen.



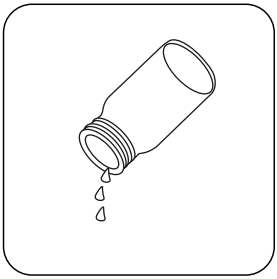
Die **Probenküvette** in den Messschacht stellen. Positionierung beachten.



Taste **ZERO** drücken.

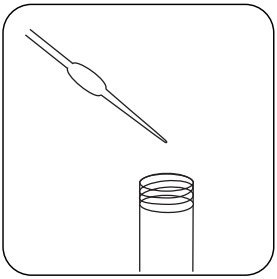


Küvette aus dem Messschacht nehmen.

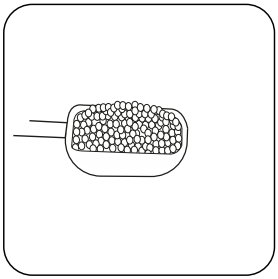


Küvette entleeren.

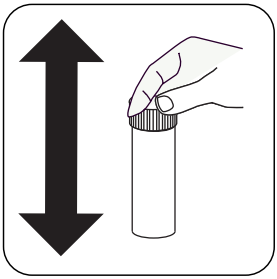
Bei Geräten, die **keine ZERO-Messung** erfordern, **hier beginnen**.



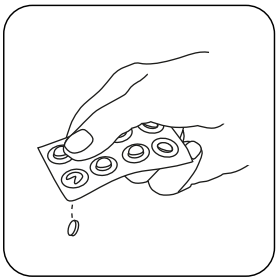
Ein Nitratest-Röhrchen mit **20 ml Probe** füllen.



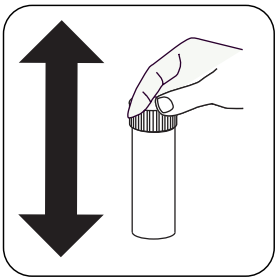
Einen Mikrolöffel NITRATE TEST Pulver zugeben.



Das Teströhrchen mit dem Deckel verschließen und den Inhalt durch kräftiges Schütteln für 1 Minute mischen.

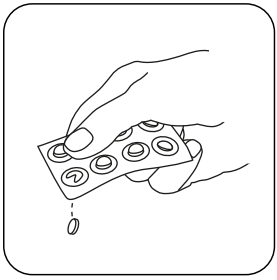


Eine NITRATE TEST Tablette zugeben.

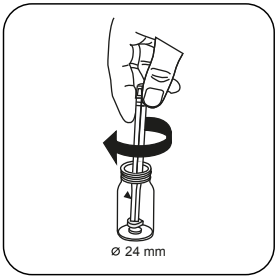


Das Teströhrchen mit dem Deckel verschließen und den Inhalt durch kräftiges Schüteln für 1 Minute mischen.

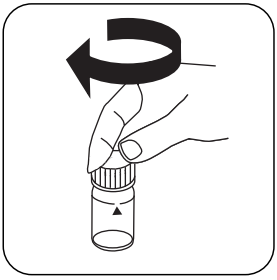
- Das Teströrchen aufrecht hinstellen. Warten, bis sich das Reduktionsmittel abgesetzt hat.
- Anschließend das Teströhrchen drei- bis viermal umschwenken.
- Das Teströhrchen 2 Minuten stehen lassen.
- Das Teströhrchen öffnen und Rückstände des Reduktionsmittels mit einem sauberen Tuch abwischen.
- **10 ml dieser Probe** in eine **24-mm-Küvette** dekantieren, ohne Reduktionsmittel zu überführen.



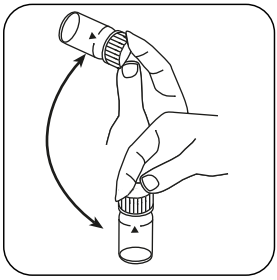
Eine NITRITE LR Tablette zugeben.



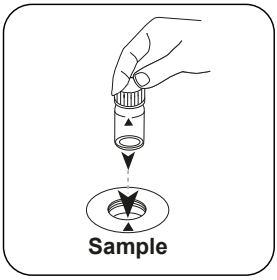
Tablette(n) unter leichter Drehung zerdrücken.



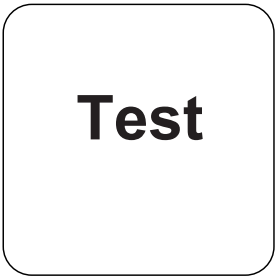
Küvette(n) verschließen.



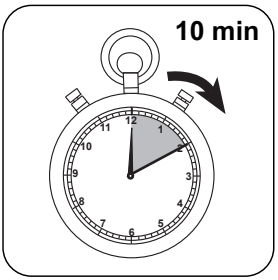
Tablette(n) durch Umschwenken lösen.



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



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



10 Minute(n) Reaktions-
zeit abwarten.
Nach Ablauf der Reaktionszeit erfolgt automatisch die Messung.
In der Anzeige erscheint das Ergebnis in mg/l Nitrat.

Auswertung

Die folgende Tabelle gibt an wie die ausgegebenen Werte in andere Zitierformen umgewandelt werden können.

Einheit	Zitierform	Umrechnungsfaktor
mg/l	N	1
mg/l	NO_3	4.4268

Chemische Methode

Zinkreduktion / NED

Appendix

Calibration function for 3rd-party photometers

Conc. = a + b•Abs + c•Abs^2 + d•Abs^3 + e•Abs^4 + f•Abs^5

	ø 24 mm	□ 10 mm
a	$-9.38065 \cdot 10^{-3}$	$-9.38065 \cdot 10^{-3}$
b	$3.20151 \cdot 10^{-1}$	$6.88325 \cdot 10^{-1}$
c	$2.5446 \cdot 10^{-3}$	$1.17624 \cdot 10^{-2}$
d		
e		
f		

Störungen

Permanente Störungen

1. Antimon(III), Eisen(III), Blei, Quecksilber(I), Silber, Chlorplatinat, Metavanadat, Bismut sorgen für Ausfällungen.
2. Bei Anwesenheit von Kupfer(II) werden kleinere Messewerte erhalten, da es den Abbau von Diazoniumsalzen beschleunigt.

Ausschließbare Störungen

1. Falls die Original-Wasserprobe Nitrit enthält, werden zu hohe Nitratstickstoffwerte erhalten. Zur Korrektur wird der Gehalt an Nitratstickstoff mittels Methode 270 ermittelt und von dem Ergebnis der Nitratstickstoffbestimmung abgezogen. Der rechnerisch erhaltene Wert gibt den tatsächlichen Gehalt an Nitratstickstoff in der zu untersuchenden Wasserprobe an.
2. Bei Nitratstickstoffkonzentrationen über 1 mg/l kommt es nach der Reaktionszeit von 10 Minuten zu einer Fehlmessung (in diesem Fall gibt es einen Farbumschlag nach Aprikotfarben, nicht wie sonst nach Pinkrot). Durch Verdünnung der Wasserprobe kann der Messbereich erweitert werden. Das Analyseergebnis muss dann mit dem Verdünnungsfaktor multipliziert werden.

Abgeleitet von

ASTM D 3867-09
APHA 4500 NO3- E-2000
US EPA 353.3 (1983)

Nitrit T M270

0.01 - 0.5 mg/l N

N-(1-Naphthyl)-ethylendiamin

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 600, MD 610, MD 640, MultiDirect	ø 24 mm	560 nm	0.01 - 0.5 mg/l N
SpectroDirect	ø 24 mm	545 nm	0.01 - 0.5 mg/l N
XD 7000, XD 7500	ø 24 mm	540 nm	0.01 - 0.5 mg/l N

Material

Benötigtes Material (zum Teil optional):

Reagenzien	Form/Menge	Bestell-Nr.
Nitrite LR	Tablette / 100	512310BT
Nitrite LR	Tablette / 250	512311BT

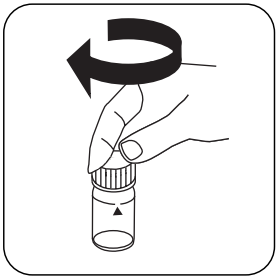
Anwendungsbereich

- Galvanisierung
- Abwasserbehandlung
- Trinkwasseraufbereitung
- Rohwasserbehandlung

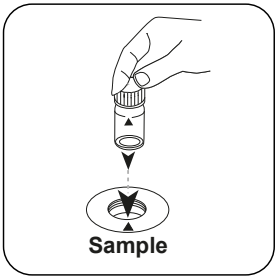
Durchführung der Bestimmung Nitrit mit Tablette

Die Methode im Gerät auswählen.
Für diese Methode muss bei folgenden Geräten keine ZERO-Messung durchgeführt werden: XD 7000, XD 7500

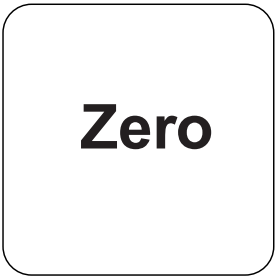
24-mm-Küvette mit **10 ml Probe** füllen.



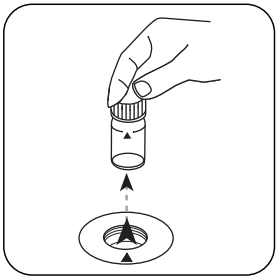
Küvette(n) verschließen.



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

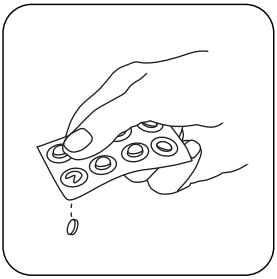


Taste **ZERO** drücken.

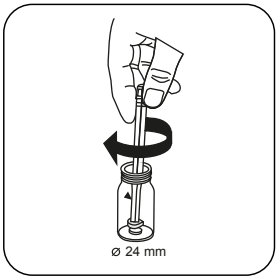


Küvette aus dem Messschacht nehmen.

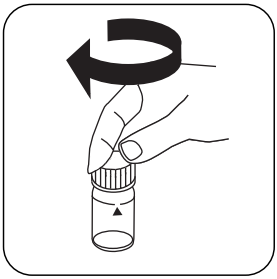
Bei Geräten, die **keine ZERO-Messung** erfordern, **hier beginnen**.



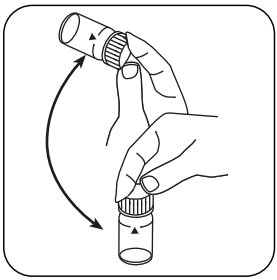
Eine NITRITE LR Tablette zugeben.



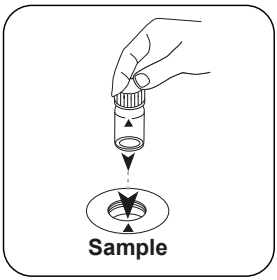
Tablette(n) unter leichter Drehung zerdrücken.



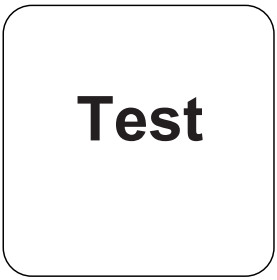
Küvette(n) verschließen.



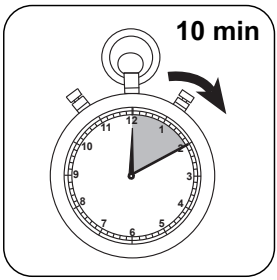
Tablette(n) durch Umschwenken lösen.



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



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



10 Minute(n) Reaktionszeit abwarten.
Nach Ablauf der Reaktionszeit erfolgt automatisch die Messung.
In der Anzeige erscheint das Ergebnis in mg/l Nitrit.

Auswertung

Die folgende Tabelle gibt an wie die ausgegebenen Werte in andere Zitierformen umgewandelt werden können.

Einheit	Zitierform	Umrechnungsfaktor
mg/l	N	1
mg/l	NO_2	3.2846

Chemische Methode

N-(1-Naphthyl)-ethylendiamin

Appendix

Calibration function for 3rd-party photometers

Conc. = a + b•Abs + c•Abs^2 + d•Abs^3 + e•Abs^4 + f•Abs^5

	ø 24 mm	□ 10 mm
a	$-5.14368 \cdot 10^{-3}$	$-5.14368 \cdot 10^{-3}$
b	$1.76663 \cdot 10^{-1}$	$3.79825 \cdot 10^{-1}$
c	$1.20299 \cdot 10^{-2}$	$5.56082 \cdot 10^{-2}$
d		
e		
f		

Störungen

Permanente Störungen

1. Antimon(III), Eisen(III), Blei, Quecksilber(I), Silber, Chlorplatinat, Metavanadat und Bismut können durch Ausfällung Störungen verursachen.
2. Kupfer(II)-Ionen beschleunigen den Abbau von Diazoniumsalzen und ergeben niedrigere Messwerte.
3. In der Praxis ist es unwahrscheinlich, dass die oben aufgeführten Ionen in Konzentrationen auftreten, die erhebliche Messfehler verursachen würden.

Abgeleitet von

DIN ISO 15923-1 D49

Durchführung einer Messung

On/Off — Gerät mit der Taste [ON/OFF] einschalten.

ntu — In der Anzeige erscheint:
Saubere Küvette bis zur Marke mit der Wasserprobe füllen, mit dem Küvettendeckel verschließen und im Messschacht ⧖ positionieren. Messschachtdeckel aufsetzen.

Read — Die Taste [READ] drücken.

ntu (blinkend) — Das Methodensymbol blinkt ca. 8 Sekunden.

ERGEBNIS — In der Anzeige erscheint das Ergebnis in NTU.

Wiederholung der Analyse:
Die Taste [READ] drücken.

Hintergrundbeleuchtung der Anzeige

!

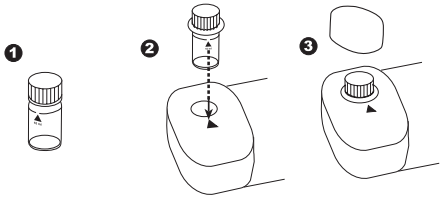
Die Taste [!] drücken, um die Hintergrundbeleuchtung der Anzeige ein- oder auszuschalten. Während des Messvorgangs schaltet sich die Hintergrundbeleuchtung automatisch aus.

Auslesen von gespeicherten Daten

!

Die Taste [!] länger als 4 Sekunden gedrückt halten, um direkt in das Speichermenü zu gelangen.

Positionierung der Küvetten (Ø 24 mm):



Richtiges Befüllen der Küvette:

richtig **falsch**

Ammonium T M60

0.02 - 1 mg/l N A

Indophénol Bleu

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 100, MD 110, MD 600, MD 610, MD 640, MultiDirect, PM 620, PM 630	ø 24 mm	610 nm	0.02 - 1 mg/l N
SpectroDirect, XD 7000, XD 7500	ø 24 mm	676 nm	0.02 - 1 mg/l N

Matériel

Matériel requis (partiellement optionnel):

Réactifs	Pack contenant	Code
Ammoniac N° 1	Pastilles / 100	512580BT
Ammoniac N° 1	Pastilles / 250	512581BT
Ammoniac N° 2	Pastilles / 100	512590BT
Ammoniac N° 2	Pastilles / 250	512591BT
Kit ammoniac N° 1/N° 2#	100 chacun	517611BT
Kit ammoniac N° 1/N° 2#	250 chacun	517612BT
Poudre de conditionnement ammonium	Poudre / 15 g	460170

Liste d'applications

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

Préparation

1. Échantillons d'eau de mer :
   Une poudre réactive de traitement de l'ammonium est nécessaire aux échantillons d'eau de mer et d'eau saumâtre pour empêcher les précipités (turbidités) pendant le test.
   Remplissez la cuvette jusqu'au repère de 10 ml en y versant l'échantillon et une cuillerée de poudre réactive de traitement de l'ammonium. Refermez la cuvette à l'aide du couvercle et agitez-la jusqu'à ce que la poudre soit entièrement dissoute. Ensuite, continuez comme indiquez ci-après.

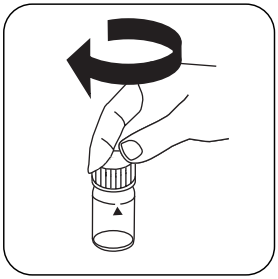
Indication

1. La pastille AMMONIA No. 1 ne se dissout entièrement qu'après avoir ajouté la pastille AMMONIA No. 2.
2. La température de l'échantillon a une influence décisive sur la durée nécessaire à la formation de la coloration. À des températures inférieures à 20 °C, le temps de réaction est de 15 minutes.

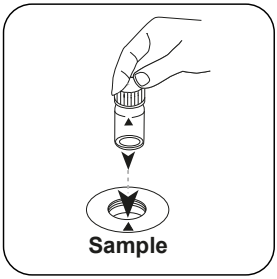
Réalisation de la quantification Ammonium avec pastille

Sélectionnez la méthode sur l'appareil.
Cette méthode ne nécessite aucune mesure du zéro sur les appareils suivants : XD 7000, XD 7500

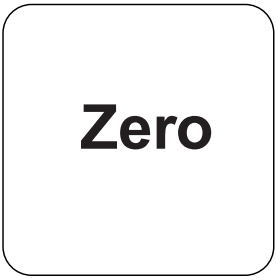
Remplissez une cuvette de 24 mm de **10 ml d'échantillon**.



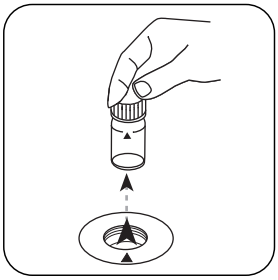
Fermez la(les) cuvette(s).



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

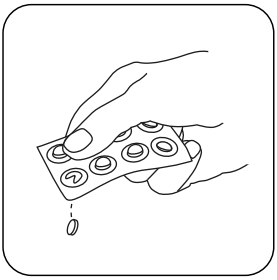


Appuyez sur la touche **ZERO**.

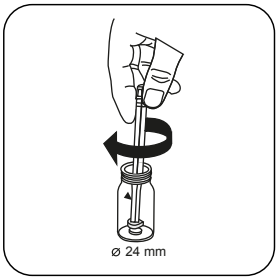


Retirez la cuvette de la chambre de mesure.

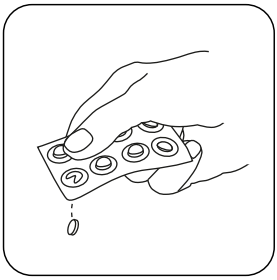
Sur les appareils ne nécessitant **aucune mesure ZÉRO** , **commencez ici**.



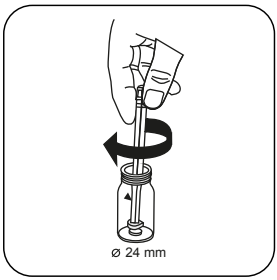
Ajoutez une **pastille de AMMONIA No. 1**.



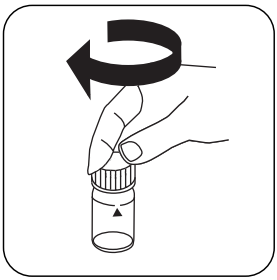
Écrasez la(les) pastille(s) en la(les) tournant un peu.



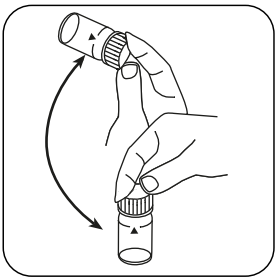
Ajoutez une **pastille de AMMONIA No. 2**.



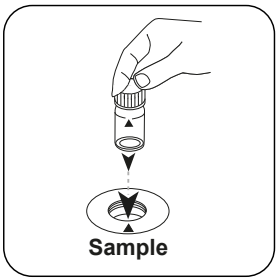
Écrasez la(les) pastille(s) en la(les) tournant un peu.



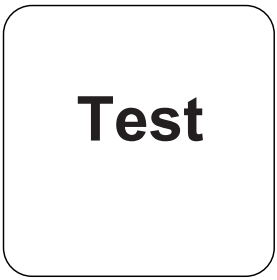
Fermez la(les) cuvette(s).



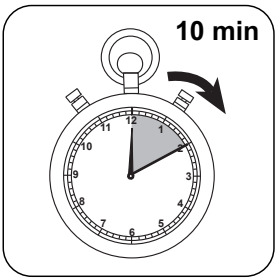
Dissolvez la(les) pastille(s) en mettant le tube plusieurs fois à l'envers.



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 10 minute(s)** .

À l'issue du temps de réaction, la mesure est effectuée automatiquement.
Le résultat s'affiche à l'écran en mg/l ammonium.

Analyses

Le tableau suivant identifie les valeurs de sortie qui peuvent être converties en d'autres formes de citation.

Unité	Formes de citation	Facteur de conversion
mg/l	N	1
mg/l	NH_4	1.2878
mg/l	NH_3	1.2158

Méthode chimique

Indophénol Bleu

Appendice

Calibration function for 3rd-party photometers

Conc. = a + b•Abs + c•Abs^2 + d•Abs^3 + e•Abs^4 + f•Abs^5

	ø 24 mm	□ 10 mm
a	$-3.54512 \cdot 10^{-2}$	$-3.54512 \cdot 10^{-2}$
b	$6.22226 \cdot 10^{-1}$	$1.33779 \cdot 10^{+0}$
c		
d		
e		
f		

Interférences

Interférences persistantes

- Les hautes concentrations de sulfures, cyanures, thiocyanates, les amines aliphatiques et l'aniline perturbent les résultats.

Bibliographie

Photometrische Analyseverfahren, Schwendt, Wissenschaftliche Verlagsgesellschaft mbH, Stuttgart 1989

Selon

Méthode APHA 4500-NH3 F

[1)#] agitateur inclus

Chlore T M100

0.01 - 6.0 mg/l Cl_2 [a] CL6

DPD

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 100, MD 110, MD 200, MD 600, MD 610, MD 640, MultiDirect, PM 600, PM 620, PM 630, Scuba II	ø 24 mm	530 nm	0.01 - 6.0 mg/l Cl_2 [a]
XD 7000, XD 7500	ø 24 mm	510 nm	0.01 - 6.0 mg/l Cl_2 [a]
SpectroDirect	ø 24 mm	510 nm	0.02 - 6.0 mg/l Cl_2 [a]

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
Recharge Scuba II	1 Pièces	525600

Standards disponibles

Title	Pack contenant	Code
ValidCheck Chlore 1,5 mg/l	98.5 + 1.5 ml	48105510

Liste d'applications

- Traitement des eaux usées
- Contrôle de la désinfection
- Eau de chaudière
- Eau de refroidissement
- Traitement de l’eau brute
- Contrôle de l’eau de la piscine
- Traitement de l’eau de la piscine
- Traitement de l’eau potable

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.

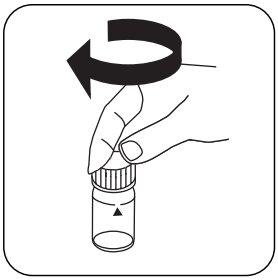
Préparation

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).

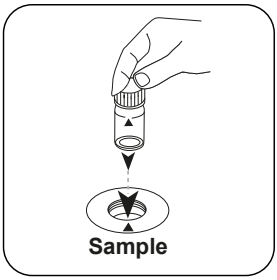
Réalisation de la quantification Chlore libre avec pastilles

Sélectionnez la méthode sur l'appareil.
Sélectionnez également la quantification : libre
Cette méthode ne nécessite aucune mesure du zéro sur les appareils suivants : XD 7000, XD 7500

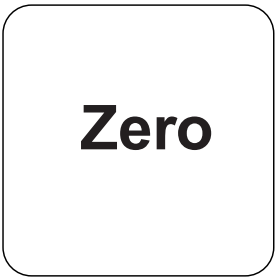
Remplissez une cuvette de 24 mm de **10 ml d'échantillon**.



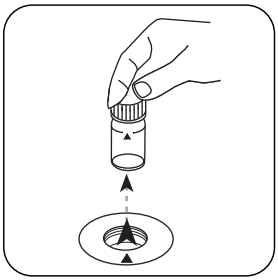
Fermez la(les) cuvette(s).



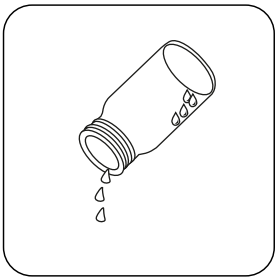
Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.



Appuyez sur la touche **ZERO**.

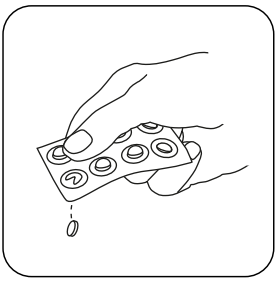


Retirez la cuvette de la chambre de mesure.

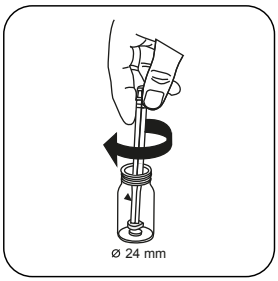


Videz pratiquement la cuvette en y laissant quelques gouttes.

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

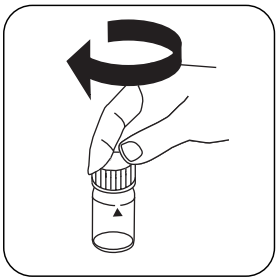


Ajoutez une **pastille de DPD No. 1**.

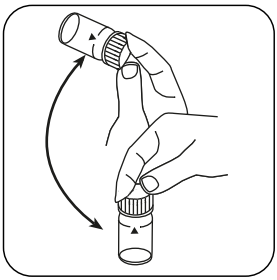


Écrasez la(les) pastille(s) en la(les) tournant un peu.

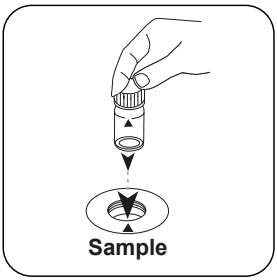
Remplissez la cuvette jusqu'au **repère de 10 ml** en y versant l'**échantillon**.



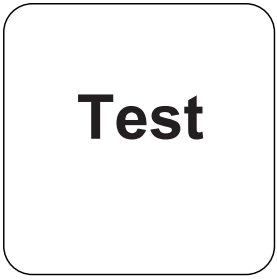
Fermez la(les) cuvette(s).



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



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

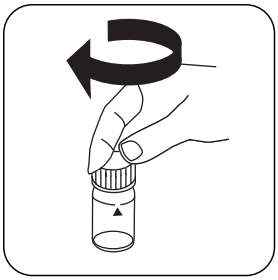


Appuyez sur la touche
TEST (XD: **START**).
Le résultat s'affiche à l'écran en mg/l chlore libre.

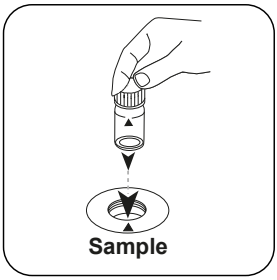
Réalisation de la quantification Chlore total avec pastilles

Sélectionnez la méthode sur l'appareil.
Sélectionnez également la quantification : total
Cette méthode ne nécessite aucune mesure du zéro sur les appareils suivants : XD 7000, XD 7500

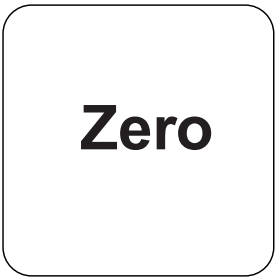
Remplissez une cuvette de 24 mm de **10 ml d'échantillon**.



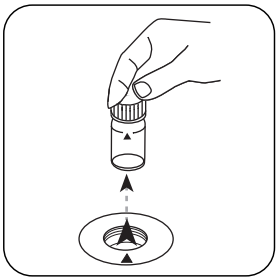
Fermez la(les) cuvette(s).



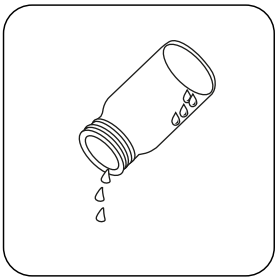
Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.



Appuyez sur la touche **ZERO**.

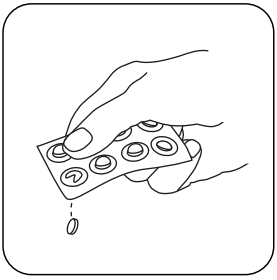


Retirez la cuvette de la chambre de mesure.

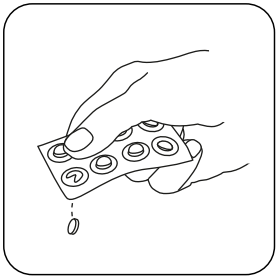


Videz pratiquement la cuvette en y laissant quelques gouttes.

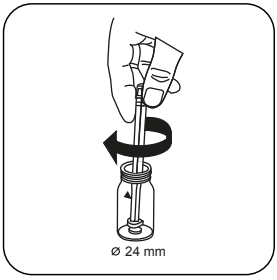
Sur les appareils ne nécessitant **aucune mesure ZÉRO** , **commencez ici**.



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

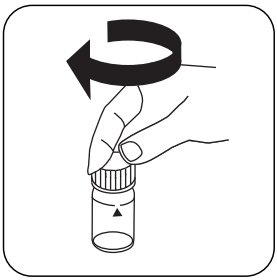


Ajoutez une **pastille de DPD No. 3**.

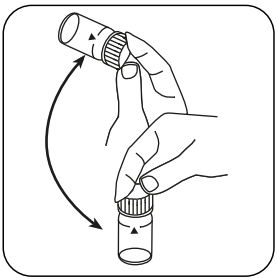


Écrasez la(les) pastille(s) en la(les) tournant un peu.

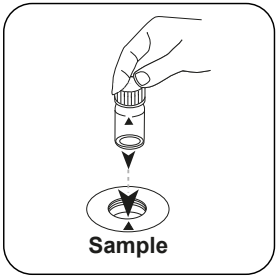
Remplissez la cuvette jusqu'au **repère de 10 ml** en y versant l'**échantillon**.



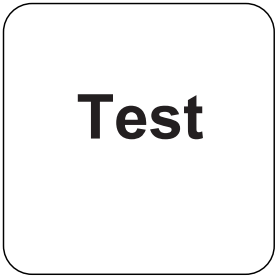
Fermez la(les) cuvette(s).



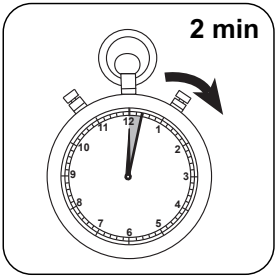
Dissolvez la(les) pastille(s) en mettant le tube plusieurs fois à l'envers.



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



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



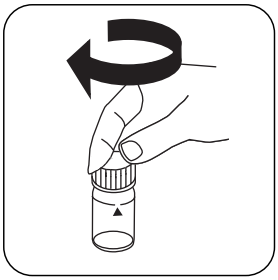
Attendez la fin du **temps de réaction de 2 minute(s)** .

À l'issue du temps de réaction, la mesure est effectuée automatiquement.
Le résultat s'affiche à l'écran en mg/l chlore total.

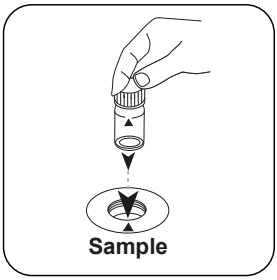
Réalisation de la quantification Chlore détermination différenciée avec pastilles

Sélectionnez la méthode sur l'appareil.
Sélectionnez également la quantification : différenciée
Cette méthode ne nécessite aucune mesure du zéro sur les appareils suivants : XD 7000, XD 7500

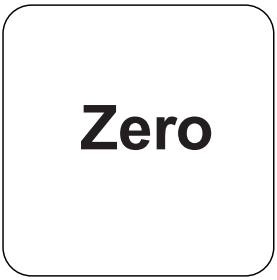
Remplissez une cuvette de 24 mm de **10 ml d'échantillon**.



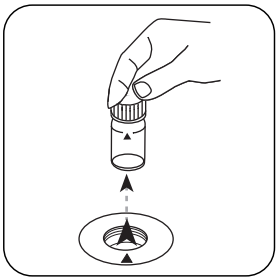
Fermez la(les) cuvette(s).



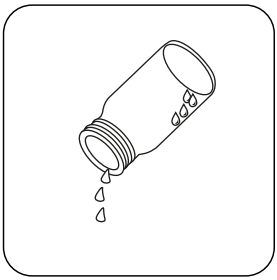
Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.



Appuyez sur la touche **ZERO**.

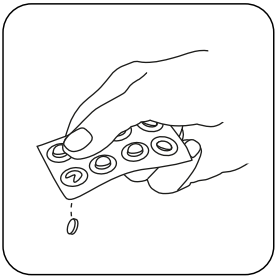


Retirez la cuvette de la chambre de mesure.

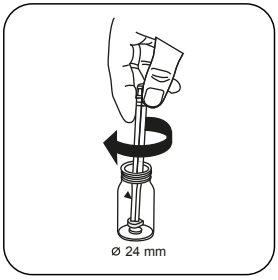


Videz pratiquement la cuvette en y laissant quelques gouttes.

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

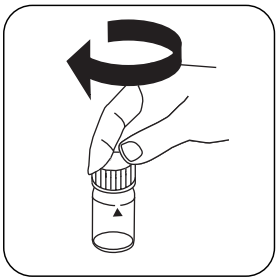


Ajoutez une **pastille de DPD No. 1**.

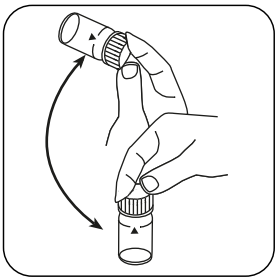


Écrasez la(les) pastille(s) en la(les) tournant un peu.

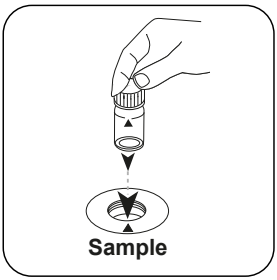
Remplissez la cuvette jusqu'au **repère de 10 ml** en y versant l'**échantillon**.



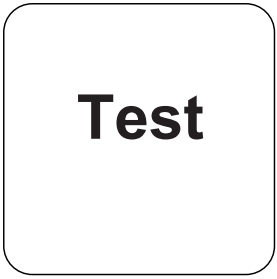
Fermez la(les) cuvette(s).



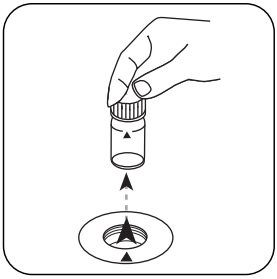
Dissolvez la(les) pastille(s) en mettant le tube plusieurs fois à l'envers.



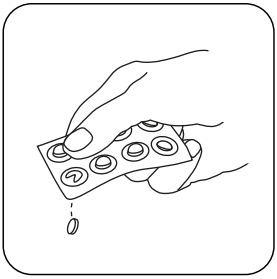
Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.



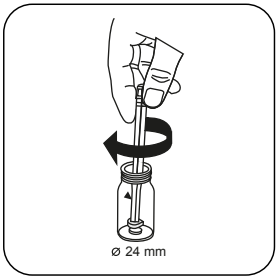
Appuyez sur la touche **TEST** (XD: **START**).



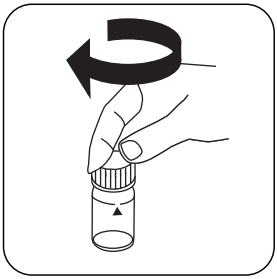
Retirez la cuvette de la chambre de mesure.



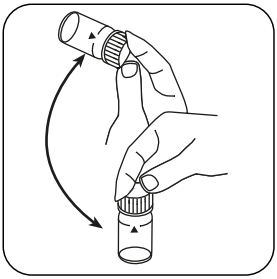
Ajoutez une **pastille de DPD No. 3**.



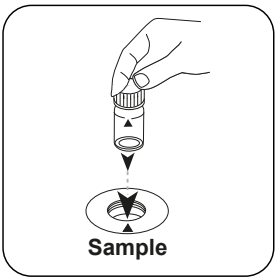
Écrasez la(les) pastille(s) en la(les) tournant un peu.

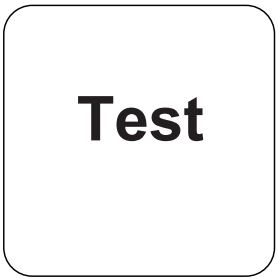


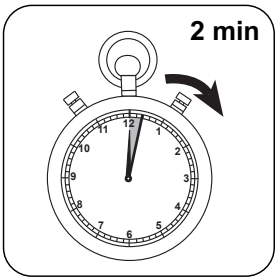
Fermez la(les) cuvette(s).



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







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

Calibration function for 3rd-party photometers

Conc. = a + b•Abs + c•Abs^2 + d•Abs^3 + e•Abs^4 + f•Abs^5

	ø 24 mm	**□ 10 mm**
a	$-5.41232 \cdot 10^{-2}$	$-5.41232 \cdot 10^{-2}$
b	$1.78498 \cdot 10^{+0}$	$3.83771 \cdot 10^{+0}$
c	$-8.7417 \cdot 10^{-2}$	$-4.04085 \cdot 10^{-1}$
d	$1.08323 \cdot 10^{-1}$	$1.07655 \cdot 10^{+0}$
e		
f		

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

Nitrate T M260

0.08 - 1 mg/l N

Réduction de zinc/NED

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 600, MD 610, MD 640, XD 7000, XD 7500	ø 24 mm	530 nm	0.08 - 1 mg/l N

Matériel

Matériel requis (partiellement optionnel):

Réactifs	Pack contenant	Code
Test nitrate	Pastilles / 100	502810
Nitrite LR	Pastilles / 100	512310BT
Nitrite LR	Pastilles / 250	512311BT
Poudre de réactif nitrate	Poudre / 15 g	465230
Tube test NITRATE	1 Pièces	366220

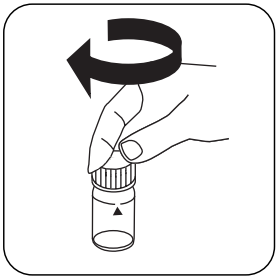
Liste d'applications

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

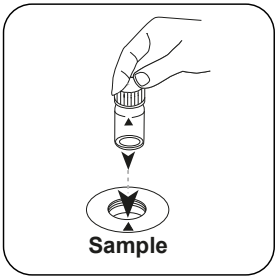
Réalisation de la quantification Nitrate avec pastille et poudre

Sélectionnez la méthode sur l'appareil.
Cette méthode ne nécessite aucune mesure du zéro sur les appareils suivants : XD 7000, XD 7500

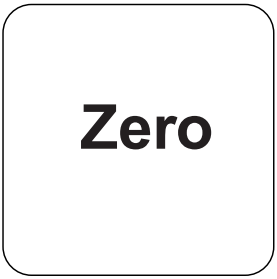
Remplissez une cuvette de 24 mm de **10 ml d'échantillon**.



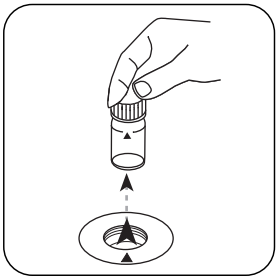
Fermez la(les) cuvette(s).



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



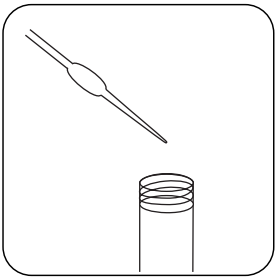
Appuyez sur la touche **ZERO**.



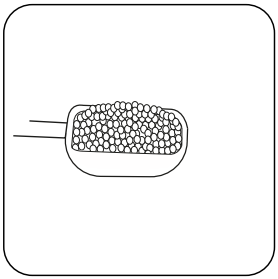
Retirez la cuvette de la chambre de mesure.

Videz la cuvette.

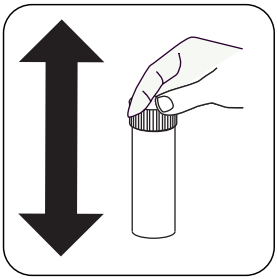
Sur les appareils ne nécessitant **aucune mesure ZÉRO** , **commencez ici**.



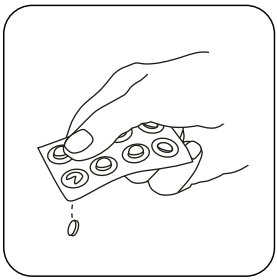
Versez **20 ml d'échantillon** dans un tube de test des nitrates.



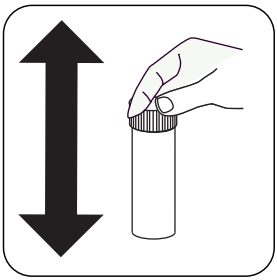
Ajoutez **une micro-cuiller de poudre NITRATE TEST**.



Fermez le tube à essai à l'aide du couvercle et mélangez le contenu en agitant fortement pendant 1 minute.

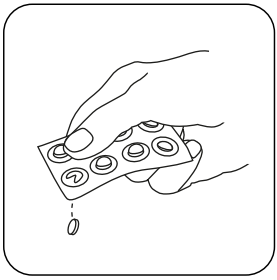


Ajoutez une **pastille de NITRATE TEST**.

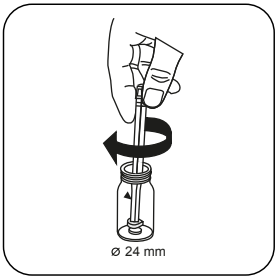


Fermez le tube à essai à l'aide du couvercle et mélangez le contenu en agitant fortement pendant 1 minute.

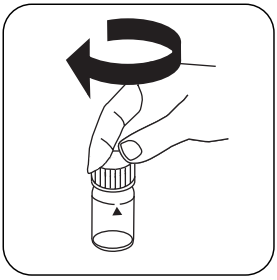
- Posez le tube à la verticale. Patientez jusqu'à ce que l'agent réducteur se dépose.
- Ensuite, mettez le tube à essai trois à quatre fois à l'envers.
- Laissez reposer le tube à essai pendant 2 minutes.
- Ouvrez le tube à essai et éliminez les résidus d'agent réducteur avec un chiffon propre.
- Décantez **10 ml de cet échantillon** dans une **cuvette de 24 mm** , sans ajouter d'agent réducteur.



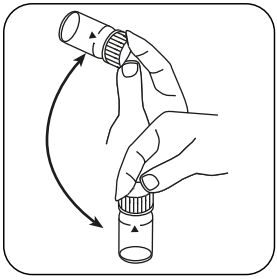
Ajoutez une **pastille de NITRITE LR**.



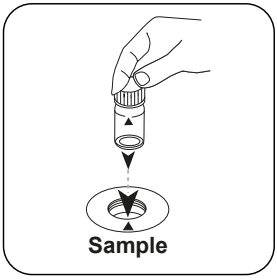
Écrasez la(les) pastille(s) en la(les) tournant un peu.



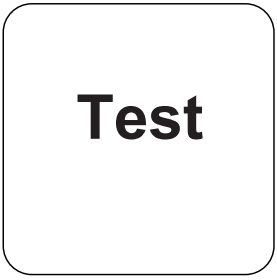
Fermez la(les) cuvette(s).



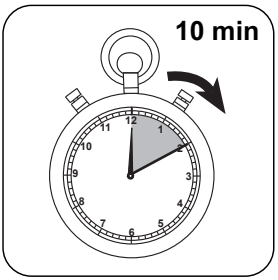
Dissolvez la(les) pastille(s) en mettant le tube plusieurs fois à l'envers.



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 10 minute(s)** .
À l'issue du temps de réaction, la mesure est effectuée automatiquement.
Le résultat s'affiche à l'écran en mg/l Nitrate.

Analyses

Le tableau suivant identifie les valeurs de sortie qui peuvent être converties en d'autres formes de citation.

Unité	Formes de citation	Facteur de conversion
mg/l	N	1
mg/l	NO_3	4.4268

Méthode chimique

Réduction de zinc/NED

Appendice

Calibration function for 3rd-party photometers

Conc. = a + b•Abs + c•Abs^2 + d•Abs^3 + e•Abs^4 + f•Abs^5

	ø 24 mm	□ **10 mm**
a	$-9.38065 \cdot 10^{-3}$	$-9.38065 \cdot 10^{-3}$
b	$3.20151 \cdot 10^{-1}$	$6.88325 \cdot 10^{-1}$
c	$2.5446 \cdot 10^{-3}$	$1.17624 \cdot 10^{-2}$
d		
e		
f		

Interférences

Interférences persistantes

1. L'antimoine (III), le fer (III), le plomb, le mercure (I), l'argent, le chloroplatinate, le méthavanadate et le bismuth causent des précipités.
2. En présence de cuivre (II), les valeurs mesurées seront inférieures car il accélère la destruction des sels de diazonium.

Interférences exclues

1. Si l'échantillon d'eau original contient du nitrite, les valeurs de nitrite-azote seront trop élevées. Pour les corriger, la concentration en nitrite-azote est déterminée à l'aide de la méthode 270 et déduite du résultat de quantification du nitrite-azote. La valeur obtenue par calcul indique la concentration réelle en azote-nitrite de l'échantillon d'eau à analyser.
2. À des concentrations de nitrite-azote supérieures à 1mg/l, on aura une mesure erronée après un temps de réaction de 10 minutes (dans ce cas, la coloration prendra une teinte abricot et non rouge-rosé). Après dilution de l'échantillon d'eau, la plage de mesure peut être élargie. Le résultat de l'analyse sera alors multiplié par le facteur de dilution.

Dérivé de

ASTM D 3867-09
APHA 4500 NO3- E-2000
US EPA 353.3 (1983)

Nitrite T M270

0.01 - 0.5 mg/l N

Ethylènediamine N-(1 naphtyl)

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 600, MD 610, MD 640, MultiDirect	ø 24 mm	560 nm	0.01 - 0.5 mg/l N
SpectroDirect	ø 24 mm	545 nm	0.01 - 0.5 mg/l N
XD 7000, XD 7500	ø 24 mm	540 nm	0.01 - 0.5 mg/l N

Matériel

Matériel requis (partiellement optionnel):

Réactifs	Pack contenant	Code
Nitrite LR	Pastilles / 100	512310BT
Nitrite LR	Pastilles / 250	512311BT

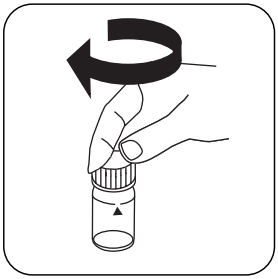
Liste d'applications

- Galvanisation
- Traitement des eaux usées
- Traitement de l’eau potable
- Traitement de l’eau brute

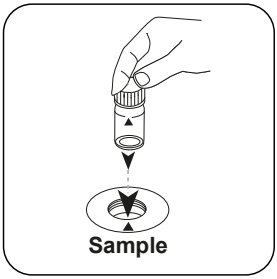
Réalisation de la quantification Nitrite avec pastille

Sélectionnez la méthode sur l'appareil.
Cette méthode ne nécessite aucune mesure du zéro sur les appareils suivants : XD 7000, XD 7500

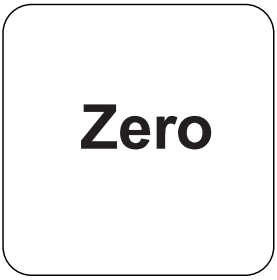
Remplissez une cuvette de 24 mm de **10 ml d'échantillon**.



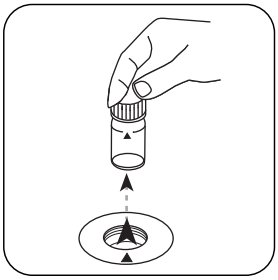
Fermez la(les) cuvette(s).



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

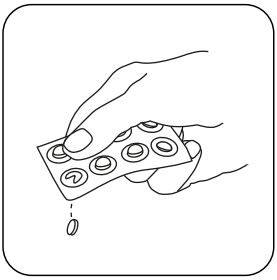


Appuyez sur la touche **ZERO**.

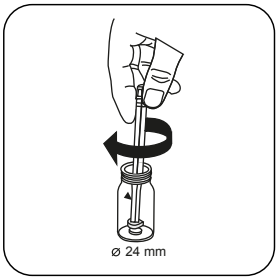


Retirez la cuvette de la chambre de mesure.

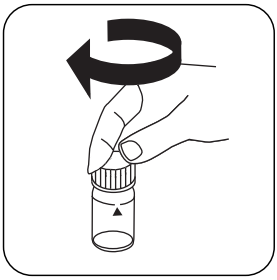
Sur les appareils ne nécessitant **aucune mesure ZÉRO** , **commencez ici**.



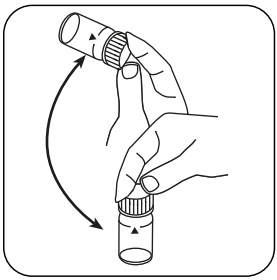
Ajoutez une **pastille de NITRITE LR**.



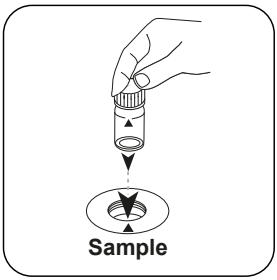
Écrasez la(les) pastille(s) en la(les) tournant un peu.



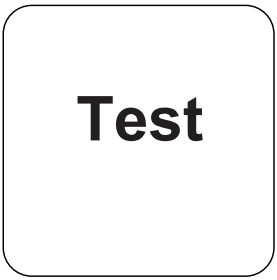
Fermez la(les) cuvette(s).



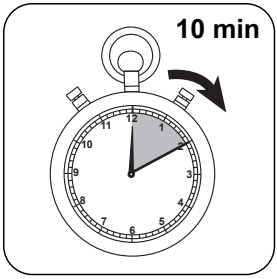
Dissolvez la(les) pastille(s) en mettant le tube plusieurs fois à l'envers.



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 10 minute(s)** .
À l'issue du temps de réaction, la mesure est effectuée automatiquement.
Le résultat s'affiche à l'écran en mg/l Nitrite.

Analyses

Le tableau suivant identifie les valeurs de sortie qui peuvent être converties en d'autres formes de citation.

Unité	Formes de citation	Facteur de conversion
mg/l	N	1
mg/l	NO_2	3.2846

Méthode chimique

Ethylènediamine N-(1 naphtyl)

Appendice

Calibration function for 3rd-party photometers

Conc. = a + b•Abs + c•Abs^2 + d•Abs^3 + e•Abs^4 + f•Abs^5

	ø 24 mm	□ 10 mm
a	$-5.14368 \cdot 10^{-3}$	$-5.14368 \cdot 10^{-3}$
b	$1.76663 \cdot 10^{-1}$	$3.79825 \cdot 10^{-1}$
c	$1.20299 \cdot 10^{-2}$	$5.56082 \cdot 10^{-2}$
d		
e		
f		

Interférences

Interférences persistantes

1. L'antimoine (III), le fer (III), le plomb, le mercure (I), l'argent, le chloroplatinate, le méthavanadate et le bismuth peuvent causer des perturbations en raison de la formation de précipités.
2. Les ions cuivre (II) accélèrent la destruction des sels de diazonium et rabaissent les résultats.
3. En pratique, il est peu probable que les ions présentés ci-dessus apparaissent dans des concentrations susceptibles de causer de graves erreurs de mesure.

Dérivé de

DIN ISO 15923-1 D49

Exécution de la mesure

On/Off

Mettre en marche l'appareil en actionnant la touche [ON/OFF].

ntu

Le message suivant apparaît sur l'affichage:
Verser d'échantillon dans une cuvette propre jusqu'au repère, fermer le couvercle de la cuvette et mettre la cuvette dans la chambre de mesure. Positionnement ⧖.

Read

Appuyer sur la touche [READ].

ntu

Le symbole de plage de mesure clignote pendant 8 secondes env.

RÉSULTAT

Le résultat s'affiche à l'écran d'affichage en NTU.

Répétition de l'analyse:
Appuyer une nouvelle fois sur la touche [READ].

Affichage rétro-éclairé

!

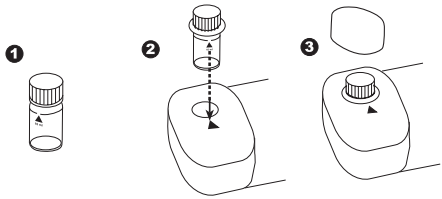
Appuyer sur la touche [!] pour activer ou désactiver le rétro-éclairage de l'affichage. Pendant l'opération de mesure, le rétro-éclairage se désactive automatiquement.

Lecture de données mémorisées

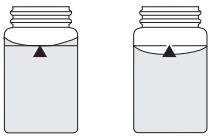
!

L'appareil allumé, appuyer sur la touche [!] pendant plus de 4 secondes pour accéder directement au menu de la mémoire.

Positionnement (Ø 24 mm):



Remplissage correct de la cuvette:



correct **incorrect**

Ammonio T M60

0.02 - 1 mg/l N A

Blu di indofenolo

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 100, MD 110, MD 600, MD 610, MD 640, MultiDirect, PM 620, PM 630	ø 24 mm	610 nm	0.02 - 1 mg/l N
SpectroDirect, XD 7000, XD 7500	ø 24 mm	676 nm	0.02 - 1 mg/l N

Materiale

Materiale richiesto (in parte facoltativo):

Reagenti	Unità di imballaggio	N. ordine
Ammonio No. 1	Pastiglia / 100	512580BT
Ammonio No. 1	Pastiglia / 250	512581BT
Ammonio No. 2	Pastiglia / 100	512590BT
Ammonio No. 2	Pastiglia / 250	512591BT
Set Ammonia No. 1/no. 2#	ciascuna 100	517611BT
Set Ammonia No. 1/no. 2#	ciascuna 250	517612BT
Polvere condizionante di ammonio	Polvere / 15 g	460170

Campo di applicazione

- Trattamento acqua di scarico
- Trattamento acqua potabile
- Trattamento acqua non depurata

Preparazione

1. Campioni di acqua di mare:
   per i campioni di acqua di mare o acqua salmastra la polvere condizionante di ammonio ha la funzione di evitare fenomeni di sedimentazione (torbidità) durante il test. Riempire la cuvetta di campione fino alla marcatura dei 10 ml e aggiungere un cucchiaio di polvere condizionante di ammonio. Chiudere la cuvetta con il coperchio e farla oscillare finché la polvere non si sarà disciolta. Procedere quindi come descritto.

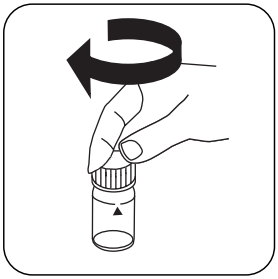
Note

1. La pastiglia AMMONIA No. 1 si scioglie completamente soltanto dopo aver aggiunto la pastiglia AMMONIA No. 2.
2. La temperatura del campione è importante per il tempo di sviluppo della colorazione. A temperature inferiori ai 20 °C il tempo di reazione è di 15 minuti.

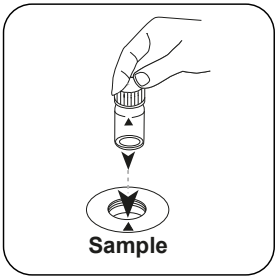
Esecuzione della rilevazione Ammonio con pastiglia

Selezionare il metodo nel dispositivo.
Con i seguenti dispositivi, per questo metodo non è necessario eseguire una misurazione ZERO: XD 7000, XD 7500

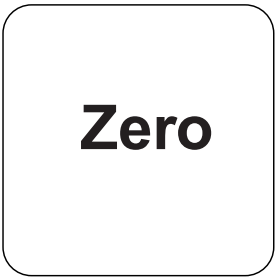
Riempire una cuvetta da 24 mm con **10 ml di campione**.



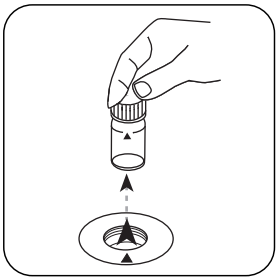
Chiudere la/e cuvetta/e.



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

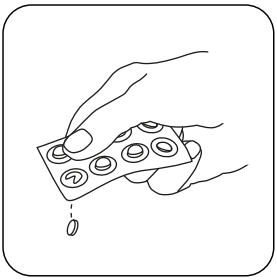


Premere il tasto **ZERO**.

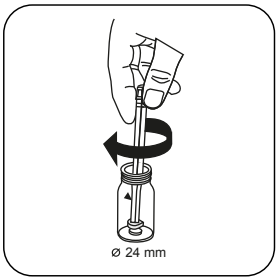


Prelevare la cuvetta dal vano di misurazione.

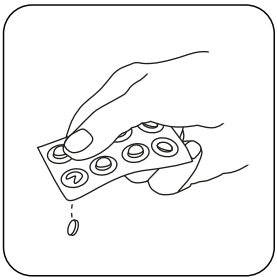
In caso di dispositivi che **non richiedono una misurazione ZERO**, **iniziare da qui**.



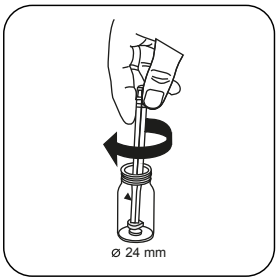
Aggiungere **una pastiglia AMMONIA No. 1**.



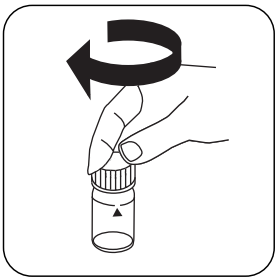
Frantumare la/e pastiglia/e con una leggera rotazione.



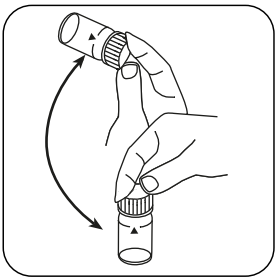
Aggiungere **una pastiglia AMMONIA No. 2**.



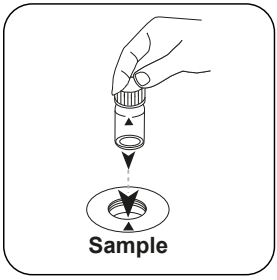
Frantumare la/e pastiglia/e con una leggera rotazione.



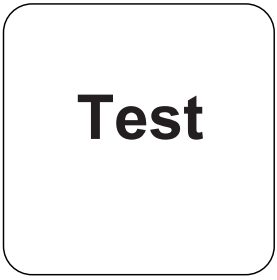
Chiudere la/e cuvetta/e.



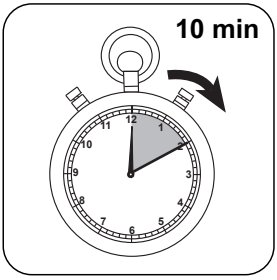
Far sciogliere la/e pastiglia/e agitando.



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 10 minuto/i** .

Allo scadere del tempo di reazione viene effettuata automaticamente la misurazione.
Sul display compare il risultato in mg/l di Ammonio.

Valutazione

La seguente tabella identifica i valori di output che possono essere convertiti in altre forme di citazione.

Unità di misura	Forma di citazione	Fattore di conversione
mg/l	N	1
mg/l	NH_4	1.2878
mg/l	NH_3	1.2158

Metodo chimico

Blu di indofenolo

Appendice

Calibration function for 3rd-party photometers

Conc. = a + b•Abs + c•Abs^2 + d•Abs^3 + e•Abs^4 + f•Abs^5

	ø 24 mm	□ 10 mm
a	$-3.54512 \cdot 10^{-2}$	$-3.54512 \cdot 10^{-2}$
b	$6.22226 \cdot 10^{-1}$	$1.33779 \cdot 10^{+0}$
c		
d		
e		
f		

Interferenze

Interferenze permanenti

- Solfuri, cianuri, tiocianati, ammine alifatiche e anilina provocano interferenze a concentrazioni particolarmente elevate.

Riferimenti bibliografici

Photometrische Analyseverfahren, Schwendt, Wissenschaftliche Verlagsgesellschaft mbH, Stoccarda 1989

Secondo

APHA Method 4500-NH3 F

[1] #Bacchetta compresa

Cloro T M100

0.01 - 6.0 mg/l Cl_2 [a] CL6

DPD

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 100, MD 110, MD 200, MD 600, MD 610, MD 640, MultiDirect, PM 600, PM 620, PM 630, Scuba II	ø 24 mm	530 nm	0.01 - 6.0 mg/l Cl_2 [a]
XD 7000, XD 7500	ø 24 mm	510 nm	0.01 - 6.0 mg/l Cl_2 [a]
SpectroDirect	ø 24 mm	510 nm	0.02 - 6.0 mg/l Cl_2 [a]

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
Confezione di ricarica Suba II	1 pz.	525600

Standards disponibles

Title	Unità di imballaggio	N. ordine
ValidCheck Cloro 1,5 mg/l	98.5 + 1.5 ml	48105510

Campo di applicazione

- Trattamento acqua di scarico
- Controllo disinfettante
- Acqua di caldaia
- Acqua di raffreddamento
- Trattamento acqua non depurata
- Controllo acqua in vasca
- Trattamento acqua di piscina
- Trattamento acqua potabile

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.

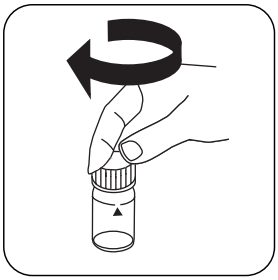
Preparazione

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).

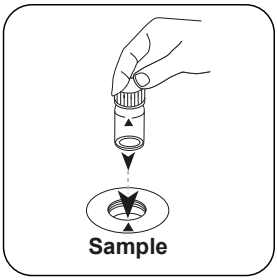
Esecuzione della rilevazione Cloro, libero con compressa

Selezionare il metodo nel dispositivo.
Selezionare inoltre la determinazione: libero
Con i seguenti dispositivi, per questo metodo non è necessario eseguire una misurazione ZERO: XD 7000, XD 7500

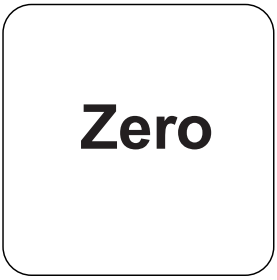
Riempire una cuvetta da 24 mm con **10 ml di campione**.



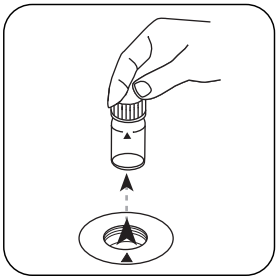
Chiudere la/e cuvetta/e.



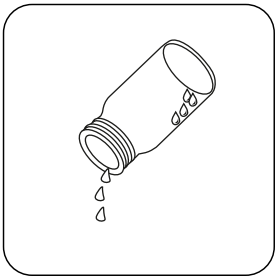
Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



Premere il tasto **ZERO**.

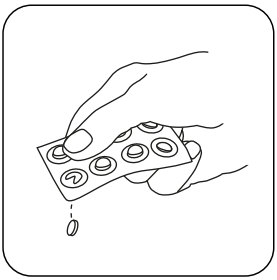


Prelevare la cuvetta dal vano di misurazione.

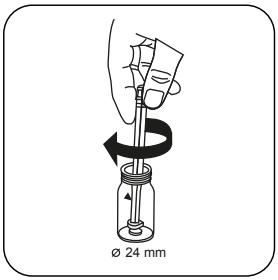


Svuotare la cuvetta finché non rimangono alcune gocce.

In caso di dispositivi che **non richiedono una misurazione ZERO**, **iniziare da qui**.

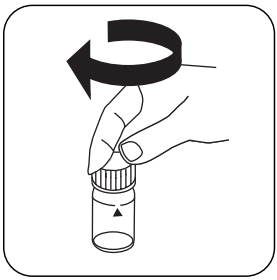


Aggiungere **una pastiglia DPD No. 1**.

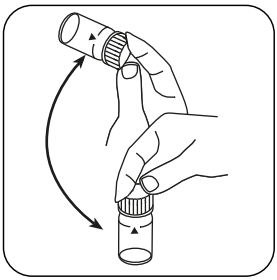


Frantumare la/e pastiglia/e con una leggera rotazione.

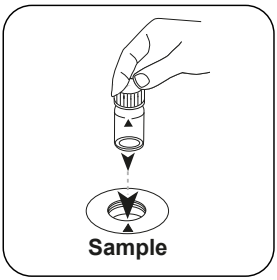
Immettere il **campione** nella cuvetta fino a raggiungere **la tacca dei 10 ml** .



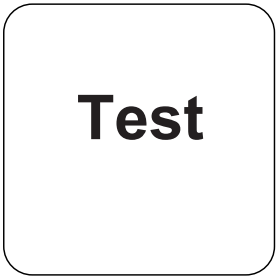
Chiudere la/e cuvetta/e.



Far sciogliere la/e pastiglia/e agitando.



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

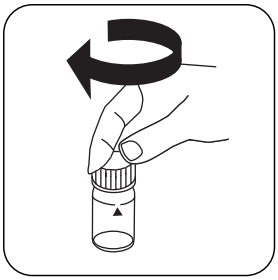


Premere il tasto **TEST** (XD: **START**).
Sul display compare il risultato in mg/l di Cloro libero.

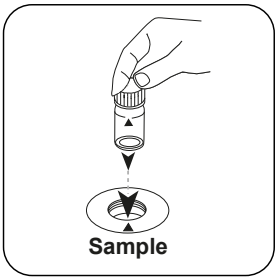
Esecuzione della rilevazione Cloro, totale con compressa

Selezionare il metodo nel dispositivo.
Selezionare inoltre la determinazione: totale
Con i seguenti dispositivi, per questo metodo non è necessario eseguire una misurazione ZERO: XD 7000, XD 7500

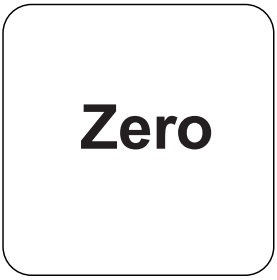
Riempire una cuvetta da 24 mm con **10 ml di campione**.



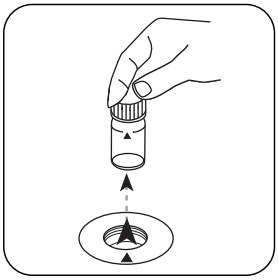
Chiudere la/e cuvetta/e.



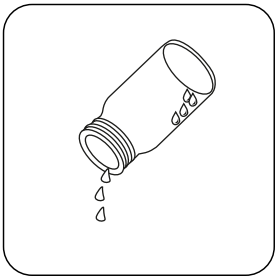
Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



Premere il tasto **ZERO**.

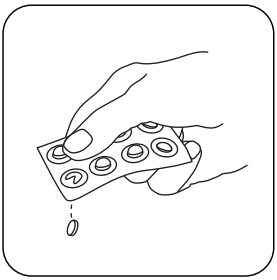


Prelevare la cuvetta dal vano di misurazione.

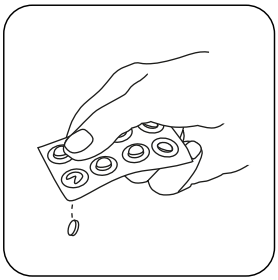


Svuotare la cuvetta finché non rimangono alcune gocce.

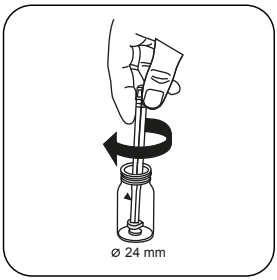
In caso di dispositivi che **non richiedono una misurazione ZERO**, **iniziare da qui**.



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

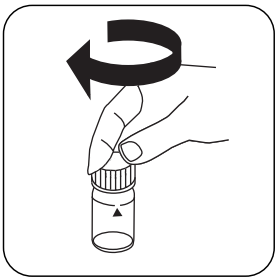


Aggiungere **una pastiglia DPD No. 3**.

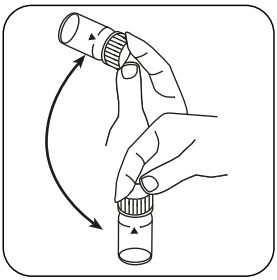


Frantumare la/e pastiglia/e con una leggera rotazione.

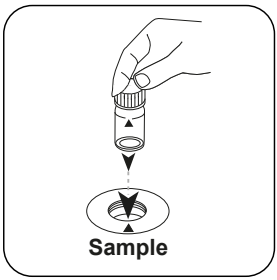
Immettere il **campione** nella cuvetta fino a raggiungere **la tacca dei 10 ml** .



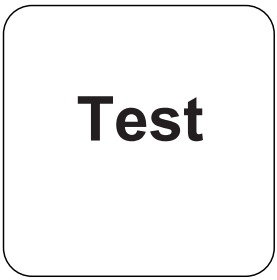
Chiudere la/e cuvetta/e.



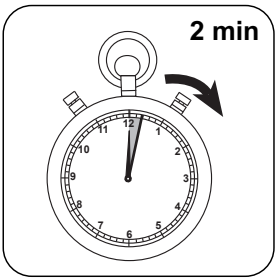
Far sciogliere la/e pastiglia/e agitando.



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



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



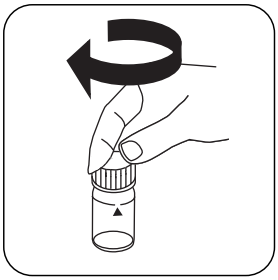
Attendere un **tempo di reazione di 2 minuto/i** .

Allo scadere del tempo di reazione viene effettuata automaticamente la misurazione.
Sul display compare il risultato in mg/l di Cloro totale.

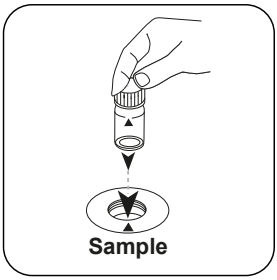
Esecuzione della rilevazione Cloro, determinazione differenziata con compressa

Selezionare il metodo nel dispositivo.
Selezionare inoltre la determinazione: differenziato
Con i seguenti dispositivi, per questo metodo non è necessario eseguire una misurazione ZERO: XD 7000, XD 7500

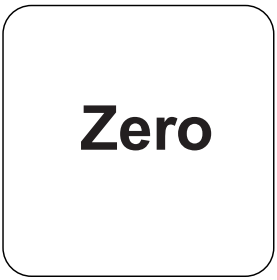
Riempire una cuvetta da 24 mm con **10 ml di campione**.



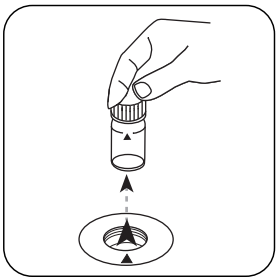
Chiudere la/e cuvetta/e.



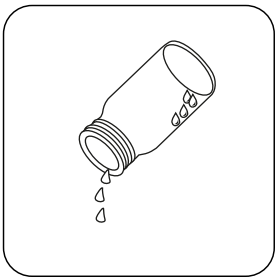
Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



Premere il tasto **ZERO**.

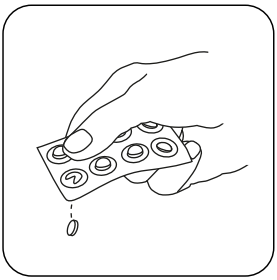


Prelevare la cuvetta dal vano di misurazione.

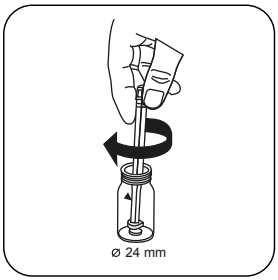


Svuotare la cuvetta finché non rimangono alcune gocce.

In caso di dispositivi che **non richiedono una misurazione ZERO**, **iniziare da qui**.

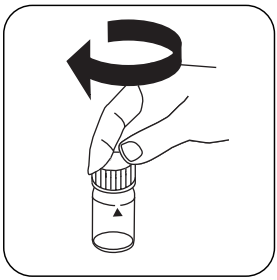


Aggiungere **una pastiglia DPD No. 1**.

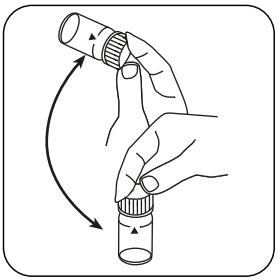


Frantumare la/e pastiglia/e con una leggera rotazione.

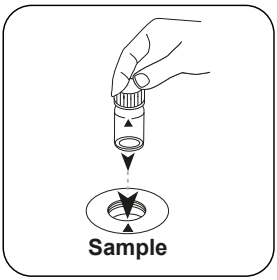
Immettere il **campione** nella cuvetta fino a raggiungere **la tacca dei 10 ml** .



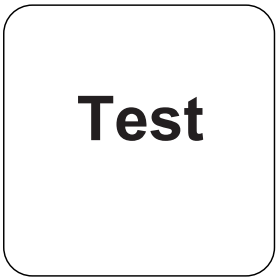
Chiudere la/e cuvetta/e.



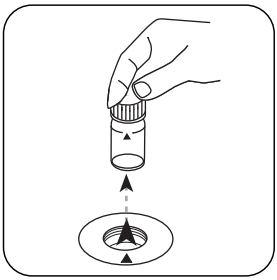
Far sciogliere la/e pastiglia/e agitando.



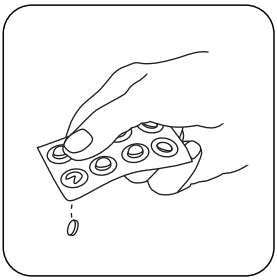
Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



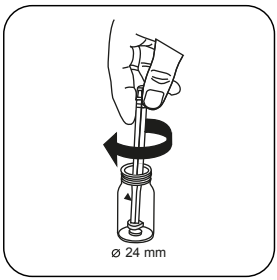
Premere il tasto **TEST** (XD: **START**).



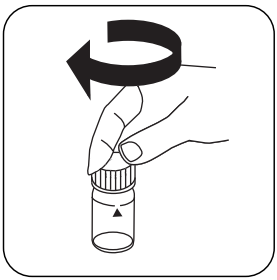
Prelevare la cuvetta dal vano di misurazione.



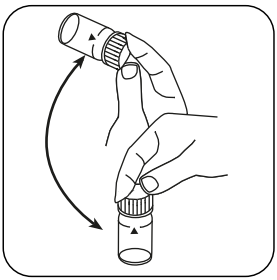
Aggiungere **una pastiglia DPD No. 3**.



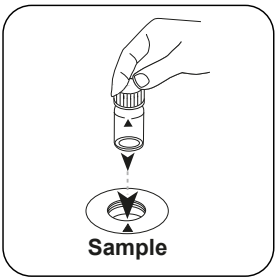
Frantumare la/e pastiglia/e con una leggera rotazione.



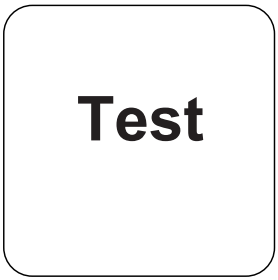
Chiudere la/e cuvetta/e.



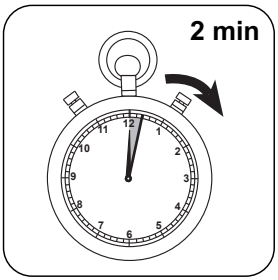
Far sciogliere la/e pastiglia/e agitando.



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

Calibration function for 3rd-party photometers

Conc. = a + b•Abs + c•Abs^2 + d•Abs^3 + e•Abs^4 + f•Abs^5

	ø 24 mm	**□ 10 mm**
a	$-5.41232 \cdot 10^{-2}$	$-5.41232 \cdot 10^{-2}$
b	$1.78498 \cdot 10^{+0}$	$3.83771 \cdot 10^{+0}$
c	$-8.7417 \cdot 10^{-2}$	$-4.04085 \cdot 10^{-1}$
d	$1.08323 \cdot 10^{-1}$	$1.07655 \cdot 10^{+0}$
e		
f		

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

Nitrato T M260

0.08 - 1 mg/l N

Riduzione di zinco / NED

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 600, MD 610, MD 640, XD 7000, XD 7500	ø 24 mm	530 nm	0.08 - 1 mg/l N

Materiale

Materiale richiesto (in parte facoltativo):

Reagenti	Unità di imballaggio	N. ordine
Test dei nitrati	Pastiglia / 100	502810
Nitriti LR	Pastiglia / 100	512310BT
Nitriti LR	Pastiglia / 250	512311BT
Test nitrati in polvere	Polvere / 15 g	465230
Provette NITRATE	1 pz.	366220

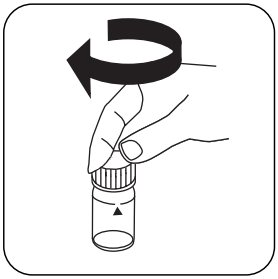
Campo di applicazione

- Trattamento acqua di scarico
- Trattamento acqua potabile
- Trattamento acqua non depurata

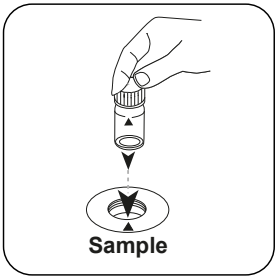
Esecuzione della rilevazione Nitrato con pastiglia e polvere

Selezionare il metodo nel dispositivo.
Con i seguenti dispositivi, per questo metodo non è necessario eseguire una misurazione ZERO: XD 7000, XD 7500

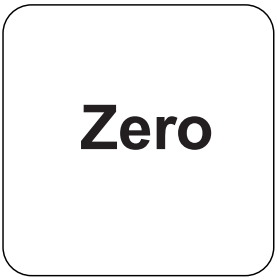
Riempire una cuvetta da 24 mm con **10 ml di campione**.



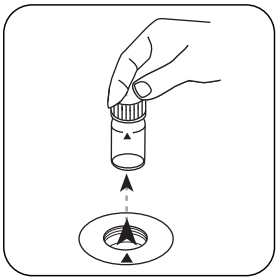
Chiudere la/e cuvetta/e.



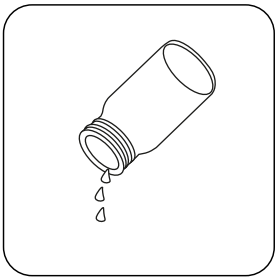
Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



Premere il tasto **ZERO**.

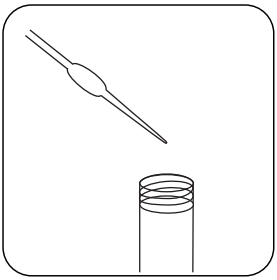


Prelevare la cuvetta dal vano di misurazione.

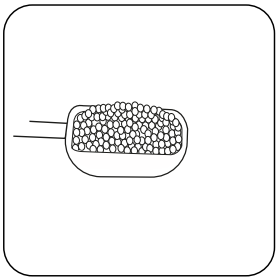


Svuotare la cuvetta.

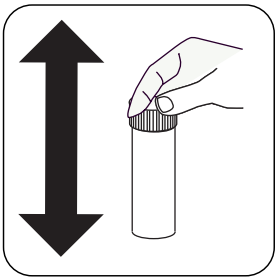
In caso di dispositivi che **non richiedono una misurazione ZERO**, **iniziare da qui**.



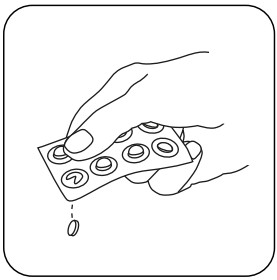
Riempire un tubo Nitratest con **20 ml di campione**.



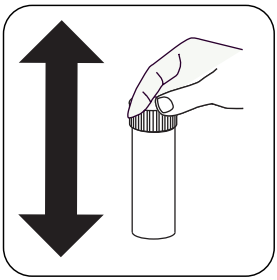
Aggiungere **un micro cucchiaio di polvere NITRATE TEST**.



Chiudere il tubo di reazione con il coperchio e miscelarne il contenuto agitando vigorosamente per 1 minuto.

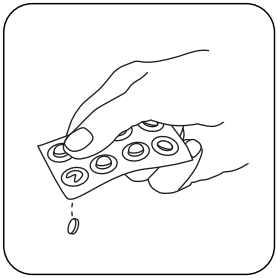


Aggiungere **una pastiglia NITRATE TEST**.

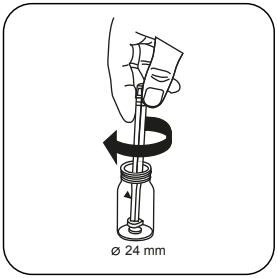


Chiudere il tubo di reazione con il coperchio e miscelarne il contenuto agitando vigorosamente per 1 minuto.

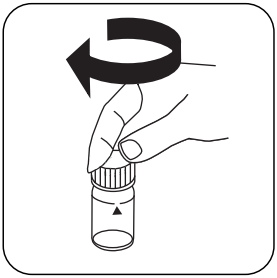
- Inserire il tubicino di reazione in posizione verticale. Attendere che il riducente si stabilizzi.
- Successivamente capovolgere il tubo di reazione da tre a quattro volte.
- Lasciar riposare il tubo di reazione per 2 minuti.
- Aprire il tubo di reazione e rimuovere i residui di riducente con un panno pulito.
- Decantare **10 ml di questo campione** in una **cuvetta da 24 mm** senza trasferire il riducente.



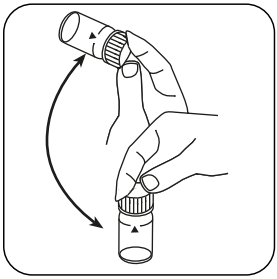
Aggiungere **una pastiglia NITRITE LR**.



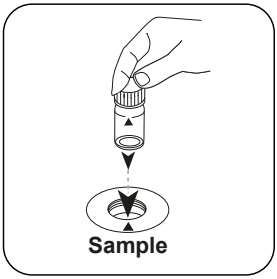
Frantumare la/e pastiglia/e con una leggera rotazione.



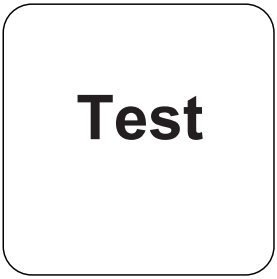
Chiudere la/e cuvetta/e.



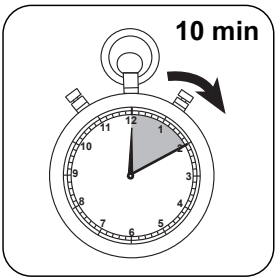
Far sciogliere la/e pastiglia/e agitando.



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 10 minuto/i** .
Allo scadere del tempo di reazione viene effettuata automaticamente la misurazione.
Sul display compare il risultato in mg/l di Nitrato.

Valutazione

La seguente tabella identifica i valori di output che possono essere convertiti in altre forme di citazione.

Unità di misura	Forma di citazione	Fattore di conversione
mg/l	N	1
mg/l	NO_3	4.4268

Metodo chimico

Riduzione di zinco / NED

Appendice

Calibration function for 3rd-party photometers

Conc. = a + b•Abs + c•Abs^2 + d•Abs^3 + e•Abs^4 + f•Abs^5

	ø 24 mm	□ **10 mm**
a	$-9.38065 \cdot 10^{-3}$	$-9.38065 \cdot 10^{-3}$
b	$3.20151 \cdot 10^{-1}$	$6.88325 \cdot 10^{-1}$
c	$2.5446 \cdot 10^{-3}$	$1.17624 \cdot 10^{-2}$
d		
e		
f		

Interferenze

Interferenze permanenti

1. Antimonio(III), ferro(III), piombo, mercurio(I), argento, cloroplatinato, metavanadato e bismuto provocano precipitazioni.
2. In presenza di rame(II) si ottengono valori di misura più piccoli, in quanto il rame accelera la decomposizione dei sali di diazonio.

Interferenze escludibili

1. Se il campione di acqua originale contiene nitrito si ottengono valori di azoto nitrico troppo elevati. Per correggere tali valori si rileva il tenore di azoto nitrico con il metodo 270 e lo si sottrae dal risultato della misurazione dell'azoto nitrico. Il valore così calcolato rappresenta il tenore effettivo di azoto nitrico nel campione di acqua da esaminare.
2. Con concentrazioni di azoto nitrico maggiori di 1 mg/l, dopo un tempo di reazione di 10 minuti si ottiene una misurazione errata (in questo caso la colorazione va verso i toni dell'albicocca e non verso il rosa-rosso come altrimenti accadrebbe). Diluendo il campione di acqua è possibile estendere il range di misura. Il risultato dell'analisi dovrà quindi essere moltiplicato per il fattore di diluizione.

Derivato di

ASTM D 3867-09
APHA 4500 NO3- E-2000
US EPA 353.3 (1983)

Nitrito T M270

0.01 - 0.5 mg/l N

N-(1-naftil)-etilendiammina

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 600, MD 610, MD 640, MultiDirect	ø 24 mm	560 nm	0.01 - 0.5 mg/l N
SpectroDirect	ø 24 mm	545 nm	0.01 - 0.5 mg/l N
XD 7000, XD 7500	ø 24 mm	540 nm	0.01 - 0.5 mg/l N

Materiale

Materiale richiesto (in parte facoltativo):

Reagenti	Unità di imballaggio	N. ordine
Nitriti LR	Pastiglia / 100	512310BT
Nitriti LR	Pastiglia / 250	512311BT

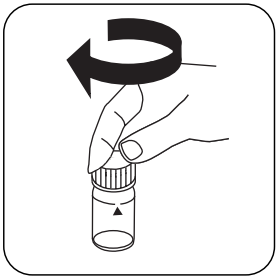
Campo di applicazione

- Galvanizzazione
- Trattamento acqua di scarico
- Trattamento acqua potabile
- Trattamento acqua non depurata

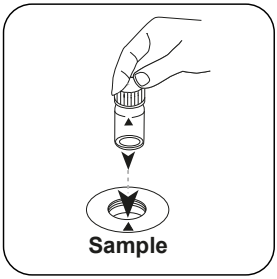
Esecuzione della rilevazione Nitrito con pastiglia

Selezionare il metodo nel dispositivo.
Con i seguenti dispositivi, per questo metodo non è necessario eseguire una misurazione ZERO: XD 7000, XD 7500

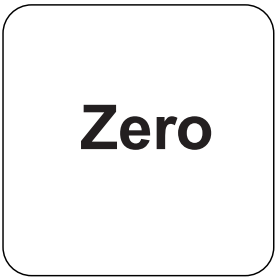
Riempire una cuvetta da 24 mm con **10 ml di campione**.



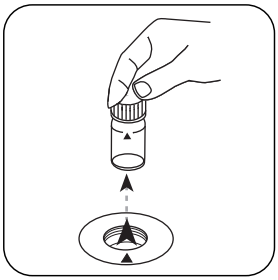
Chiudere la/e cuvetta/e.



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

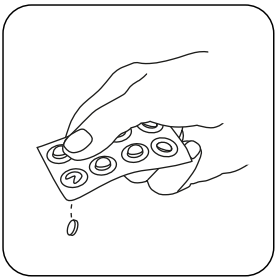


Premere il tasto **ZERO**.

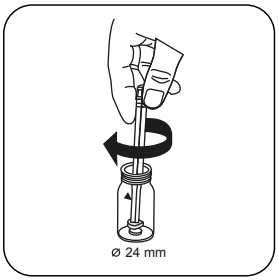


Prelevare la cuvetta dal vano di misurazione.

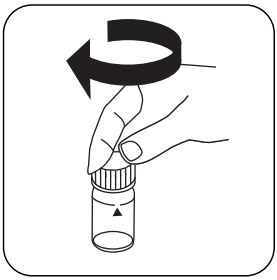
In caso di dispositivi che **non richiedono una misurazione ZERO**, **iniziare da qui**.



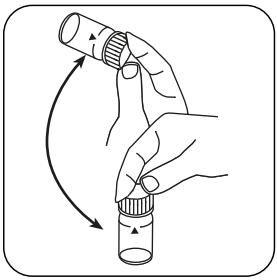
Aggiungere **una pastiglia NITRITE LR**.



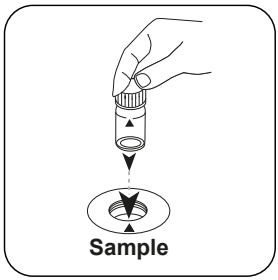
Frantumare la/e pastiglia/e con una leggera rotazione.



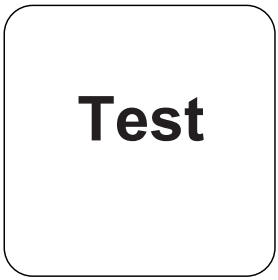
Chiudere la/e cuvetta/e.



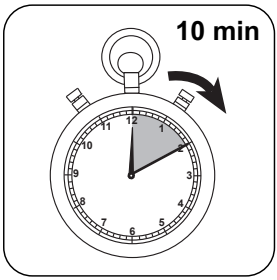
Far sciogliere la/e pastiglia/e agitando.



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 10 minuto/i** .
Allo scadere del tempo di reazione viene effettuata automaticamente la misurazione.
Sul display compare il risultato in mg/l di Nitrito.

Valutazione

La seguente tabella identifica i valori di output che possono essere convertiti in altre forme di citazione.

Unità di misura	Forma di citazione	Fattore di conversione
mg/l	N	1
mg/l	NO_2	3.2846

Metodo chimico

N-(1-naftil)-etilendiammina

Appendice

Calibration function for 3rd-party photometers

Conc. = a + b•Abs + c•Abs^2 + d•Abs^3 + e•Abs^4 + f•Abs^5

	ø 24 mm	□ 10 mm
a	$-5.14368 \cdot 10^{-3}$	$-5.14368 \cdot 10^{-3}$
b	$1.76663 \cdot 10^{-1}$	$3.79825 \cdot 10^{-1}$
c	$1.20299 \cdot 10^{-2}$	$5.56082 \cdot 10^{-2}$
d		
e		
f		

Interferenze

Interferenze permanenti

1. Antimonio(III), ferro(III), piombo, mercurio(I), argento, cloroplatinato, metavanadato e bismuto possono provocare interferenze in seguito a precipitazione.
2. Gli ioni di rame(II) accelerano la decomposizione dei sali di diazonio e danno valori di misura più bassi.
3. Nella pratica è improbabile che gli ioni sopra menzionati compaiano a concentrazioni che possono provocare errori di misurazione significativi.

Derivato di

DIN ISO 15923-1 D49

Esecuzione della misurazione della torbidità

On/Off

Accendere lo strumento con il tasto [ON/OFF].

ntu

Nel display appare:

Riempire la bacinella pulita fino al livello con il campione, chiudere con il coperchio della cuvetta porre nel pozzetto di misurazione. Posizione ⧖.

Read

Premere il tasto [READ].

ntu

Il simbolo dell'intervallo di misurazione lampeggia per ca. 8 secondi.

RISULTATO

Nel display appare il risultato in NTU.

Ripetizione dell'analisi:
Premere nuovamente il tasto [READ].

Retroilluminazione del display

!

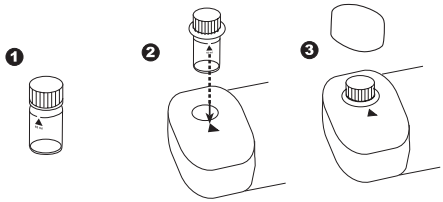
Premere il tasto [!], per attivare o disattivare la retroilluminazione del display. Durante la misurazione la retroilluminazione si disattiva automaticamente.

Lettura dei dati memorizzati

!

Tenere premuto il tasto [!] per almeno 4 secondi (srumento acceso) per passare direttamente al menù di memorizzazione.

Posizionamento (Ø 24 mm):



Corretto riempimento della cuvetta:

corretto **falso**

Amonio T M60

0.02 - 1 mg/l N A

Indophenol azul

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 100, MD 110, MD 600, MD 610, MD 640, MultiDirect, PM 620, PM 630	ø 24 mm	610 nm	0.02 - 1 mg/l N
SpectroDirect, XD 7000, XD 7500	ø 24 mm	676 nm	0.02 - 1 mg/l N

Material

Material requerido (parcialmente opcional):

Reactivos	Unidad de embalaje	No. de referencia
Amonio nº 1	Tabletas / 100	512580BT
Amonio nº 1	Tabletas / 250	512581BT
Amonio nº 2	Tabletas / 100	512590BT
Amonio nº 2	Tabletas / 250	512591BT
Juego amonio nº 1/nº 2#	100 cada	517611BT
Juego amonio nº 1/nº 2#	250 cada	517612BT
Polvo de acondicionamiento de amonio	Polvos / 15 g	460170

Lista de aplicaciones

- Tratamiento de aguas residuales
- Tratamiento de aguas potables
- Tratamiento de aguas de aporte

Preparación

1. Muestras de aguas marinas:
   Para evitar precipitaciones de sales durante el análisis de muestras acuosas marinas o salobres son necesarios los polvos de acondicionamiento de amonio.
   Llenar la cubeta hasta la marca de 10 ml con la muestra acuosa y añadir una cucharada de polvos de acondicionamiento de amonio. Cerrar la cubeta con su tapa y agitar a continuación hasta la disolución total del polvo. Continuar como se ha descrito anteriormente.

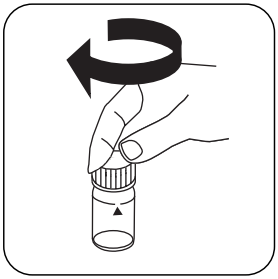
Notas

1. La tableta AMMONIA nº 1 se disolverá completamente una vez añadida la tableta AMMONIA nº 2.
2. La temperatura de la muestra es esencial para la reacción colorea. Con temperaturas por debajo de 20 °C, la reacción colorea será de 15 minutos.

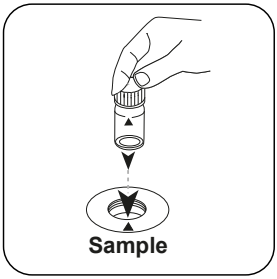
Ejecución de la determinación Amonio con tableta

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

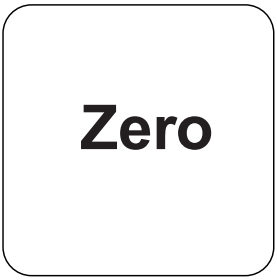
Llenar la cubeta de 24 mm con **10 ml de muestra** .



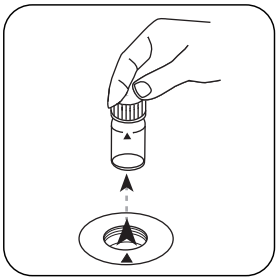
Cerrar la(s) cubeta(s).



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

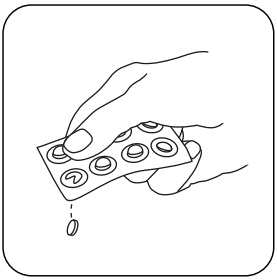


Pulsar la tecla **ZERO**.

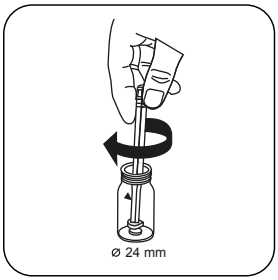


Extraer la cubeta del compartimiento de medición.

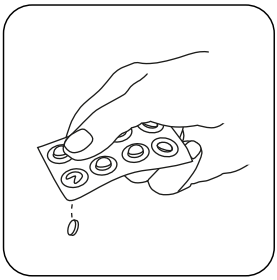
Para los aparatos que **no requieran medición CERO** , **empezar aquí**.



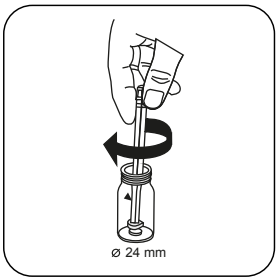
Añadir **tableta AMMONIA No. 1**.



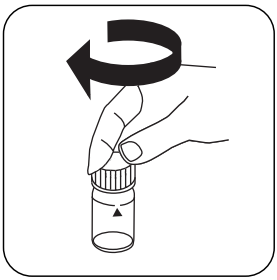
Triturar la(s) tableta(s) girando ligeramente.



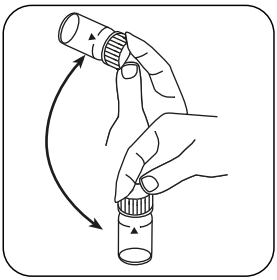
Añadir **tableta AMMONIA No. 2**.



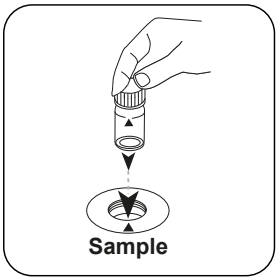
Triturar la(s) tableta(s) girando ligeramente.



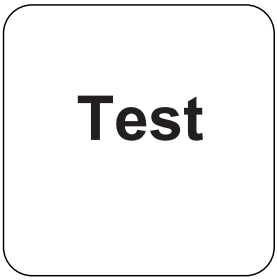
Cerrar la(s) cubeta(s).



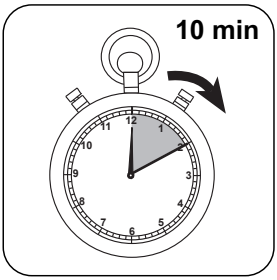
Disolver la(s) tableta(s) girando.



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



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



Esperar **10 minutos como periodo de reacción**.

Finalizado el periodo de reacción se realizará la determinación automáticamente.
A continuación se visualizará el resultado en mg/l Amonio.

Evaluación

La siguiente tabla muestra cómo los valores de salida se pueden convertir a otros formularios de citas.

Unidad	Conversión	Factor de conversión
mg/l	N	1
mg/l	NH_4	1.2878
mg/l	NH_3	1.2158

Método químico

Indophenol azul

Apéndice

Calibration function for 3rd-party photometers

Conc. = a + b•Abs + c•Abs^2 + d•Abs^3 + e•Abs^4 + f•Abs^5

	ø 24 mm	□ 10 mm
a	$-3.54512 \cdot 10^{-2}$	$-3.54512 \cdot 10^{-2}$
b	$6.22226 \cdot 10^{-1}$	$1.33779 \cdot 10^{+0}$
c		
d		
e		
f		

Interferencia

Interferencias persistentes

- El sulfuro, el cianuro, la rodanida, la amina alifática y la anilina perturban en concentraciones superiores.

Bibliografía

Photometrische Analyseverfahren, Schwendt, Wissenschaftliche Verlagsgesellschaft mbH, Stuttgart 1989

De acuerdo a

Método APHA 4500-NH3 F

Cloro T **M100**

0.01 - 6.0 mg/l Cl_2 [a] **CL6**

DPD

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 100, MD 110, MD 200, MD 600, MD 610, MD 640, MultiDirect, PM 600, PM 620, PM 630, Scuba II	ø 24 mm	530 nm	0.01 - 6.0 mg/l Cl_2 [a]
XD 7000, XD 7500	ø 24 mm	510 nm	0.01 - 6.0 mg/l Cl_2 [a]
SpectroDirect	ø 24 mm	510 nm	0.02 - 6.0 mg/l Cl_2 [a]

Material

Material requerido (parcialmente opcional):

Reactivos	Unidad de embalaje	No. de referencia
DPD nº 1	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
Recambio Scuba II	1 Cantidad	525600

Standards disponibles

Title	Unidad de embalaje	No. de referencia
ValidCheck cloro 1,5 mg/l	98.5 + 1.5 ml	48105510

Lista de aplicaciones

- Tratamiento de aguas residuales
- Control de desinfección
- Agua de caldera
- Agua de refrigeración
- Tratamiento de aguas de aporte
- Control de aguas de piscina
- Tratamiento de aguas de piscina
- Tratamiento de aguas potables

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.

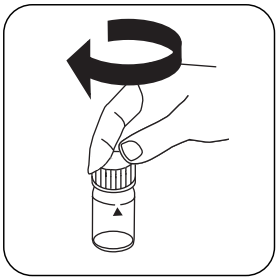
Preparación

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).

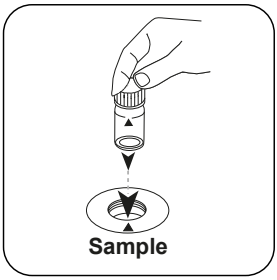
Ejecución de la determinación Cloro libre con tableta

Seleccionar el método en el aparato.
Seleccione además la determinación: libre
Para este método no es necesario realizar medición CERO en los aparatos siguientes: XD 7000, XD 7500

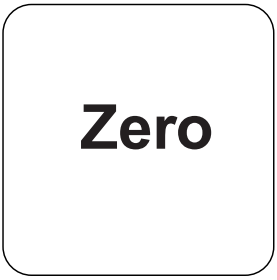
Llenar la cubeta de 24 mm con **10 ml de muestra** .



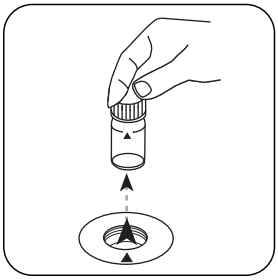
Cerrar la(s) cubeta(s).



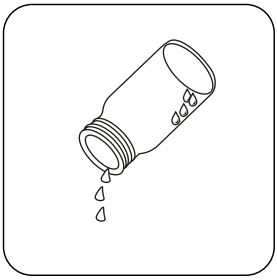
Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!



Pulsar la tecla **ZERO**.

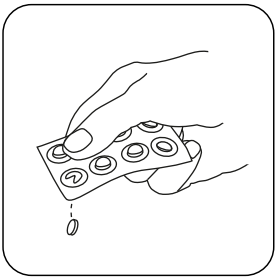


Extraer la cubeta del compartimiento de medición.

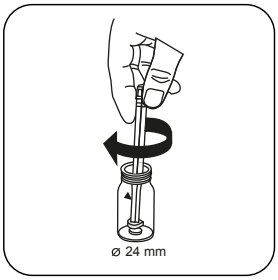


Vaciar la cubeta excepto algunas gotas.

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

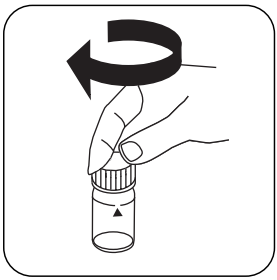


Añadir **tableta DPD No. 1**.

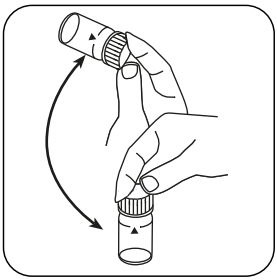


Triturar la(s) tableta(s) girando ligeramente.

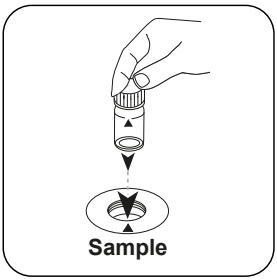
Llenar la cubeta con la **muestra** hasta la **marca de 10 ml** .



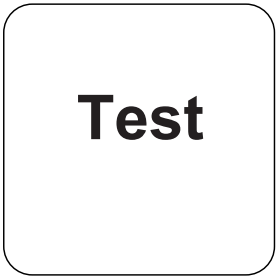
Cerrar la(s) cubeta(s).



Disolver la(s) tableta(s) girando.



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

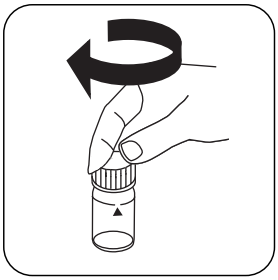


Pulsar la tecla **TEST** (XD: **START**).
A continuación se visualizará el resultado en mg/l Cloro libre.

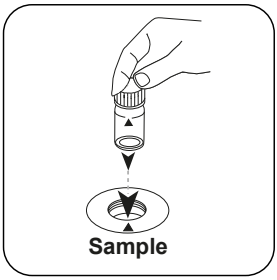
Ejecución de la determinación Cloro total con tableta

Seleccionar el método en el aparato.
Seleccione además la determinación: total
Para este método no es necesario realizar medición CERO en los aparatos siguientes: XD 7000, XD 7500

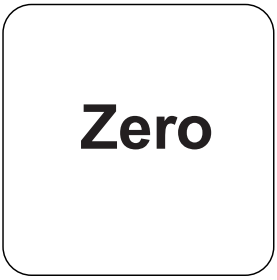
Llenar la cubeta de 24 mm con **10 ml de muestra** .



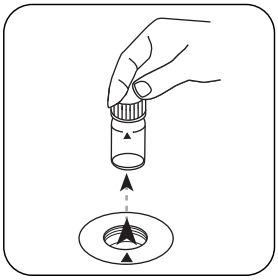
Cerrar la(s) cubeta(s).



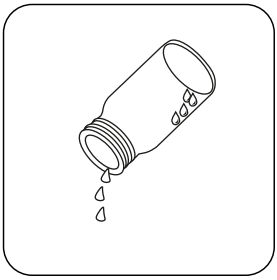
Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!



Pulsar la tecla **ZERO**.

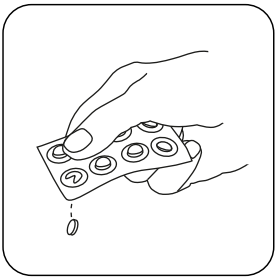


Extraer la cubeta del compartimiento de medición.

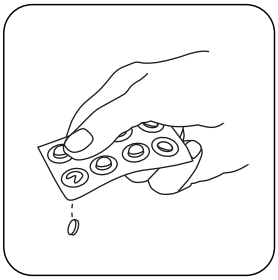


Vaciar la cubeta excepto algunas gotas.

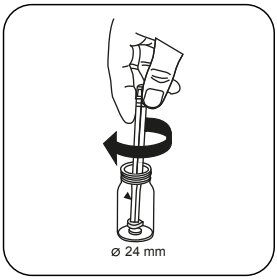
Para los aparatos que **no requieran medición CERO** , **empezar aquí**.



Añadir **tableta DPD No. 1**.

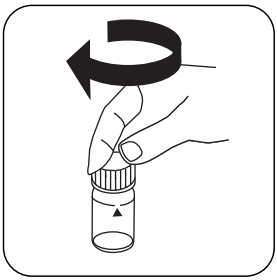


Añadir **tableta DPD No. 3**.

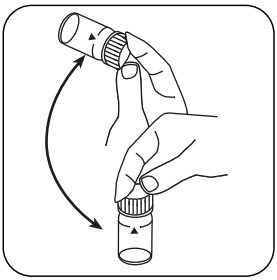


Triturar la(s) tableta(s) girando ligeramente.

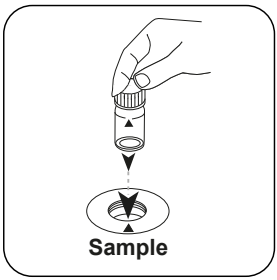
Llenar la cubeta con la **muestra** hasta la **marca de 10 ml** .



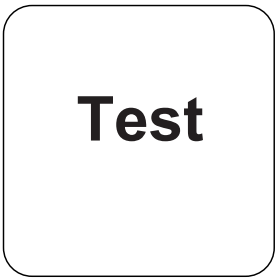
Cerrar la(s) cubeta(s).



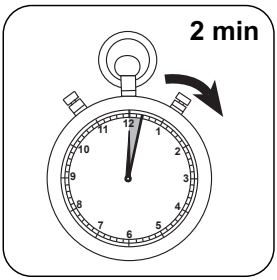
Disolver la(s) tableta(s) girando.



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



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



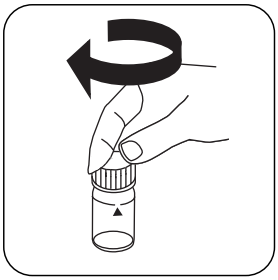
Esperar **2 minutos como periodo de reacción**.

Finalizado el periodo de reacción se realizará la determinación automáticamente.
A continuación se visualizará el resultado en mg/l Cloro total.

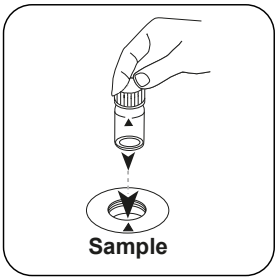
Ejecución de la determinación Cloro, determinación diferenciada con tableta

Seleccionar el método en el aparato.
Seleccione además la determinación: diferenciada
Para este método no es necesario realizar medición CERO en los aparatos siguientes: XD 7000, XD 7500

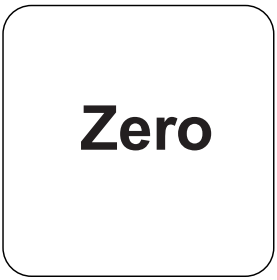
Llenar la cubeta de 24 mm con **10 ml de muestra** .



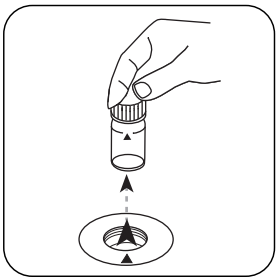
Cerrar la(s) cubeta(s).



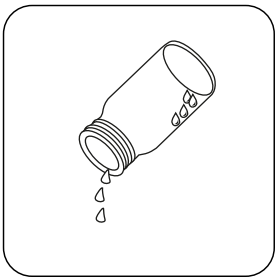
Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!



Pulsar la tecla **ZERO**.

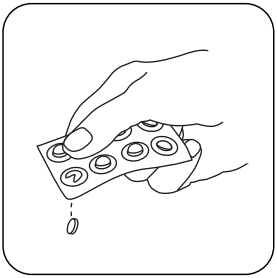


Extraer la cubeta del compartimiento de medición.

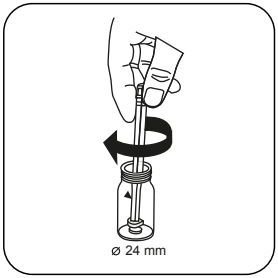


Vaciar la cubeta excepto algunas gotas.

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

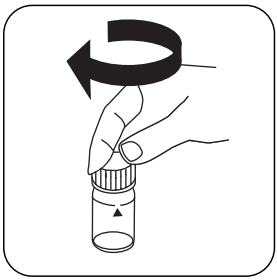


Añadir **tableta DPD No. 1**.

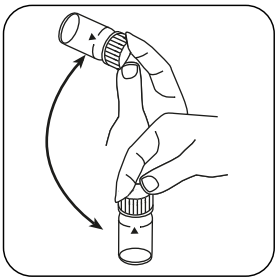


Triturar la(s) tableta(s) girando ligeramente.

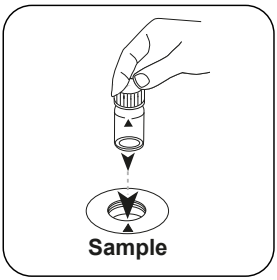
Llenar la cubeta con la **muestra** hasta la **marca de 10 ml** .



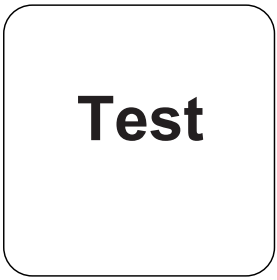
Cerrar la(s) cubeta(s).



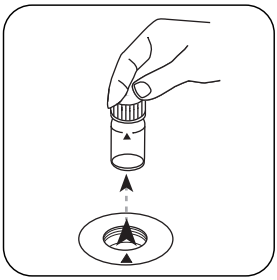
Disolver la(s) tableta(s) girando.



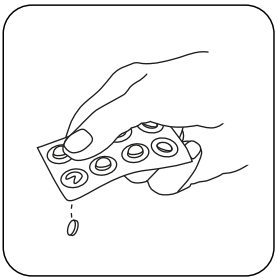
Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!



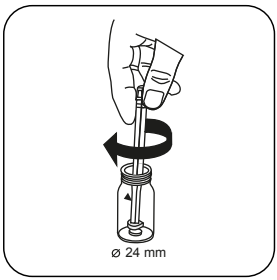
Pulsar la tecla **TEST** (XD: **START**).



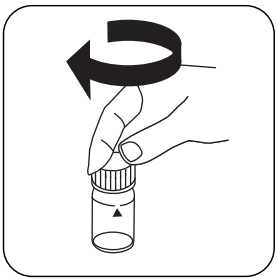
Extraer la cubeta del compartimiento de medición.



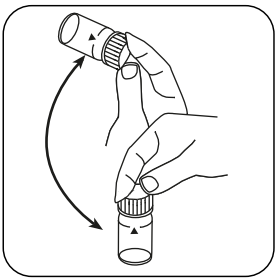
Añadir **tableta DPD No. 3**.



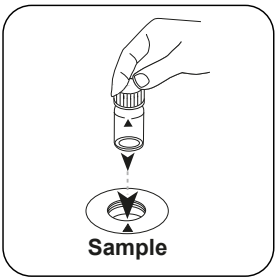
Triturar la(s) tableta(s) girando ligeramente.

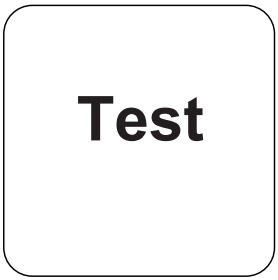


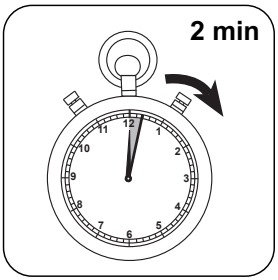
Cerrar la(s) cubeta(s).



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

Calibration function for 3rd-party photometers

Conc. = a + b•Abs + c•Abs^2 + d•Abs^3 + e•Abs^4 + f•Abs^5

	ø 24 mm	**□ 10 mm**
a	$-5.41232 \cdot 10^{-2}$	$-5.41232 \cdot 10^{-2}$
b	$1.78498 \cdot 10^{+0}$	$3.83771 \cdot 10^{+0}$
c	$-8.7417 \cdot 10^{-2}$	$-4.04085 \cdot 10^{-1}$
d	$1.08323 \cdot 10^{-1}$	$1.07655 \cdot 10^{+0}$
e		
f		

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

Nitrato T M260

0.08 - 1 mg/l N

Reducción de zinc / NED

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 600, MD 610, MD 640, XD 7000, XD 7500	ø 24 mm	530 nm	0.08 - 1 mg/l N

Material

Material requerido (parcialmente opcional):

Reactivos	Unidad de embalaje	No. de referencia
Análisis de nitrato	Tabletas / 100	502810
Nitrito LR	Tabletas / 100	512310BT
Nitrito LR	Tabletas / 250	512311BT
Análisis de nitrato con polvo	Polvos / 15 g	465230
Tubito de test de NITRATO	1 Cantidad	366220

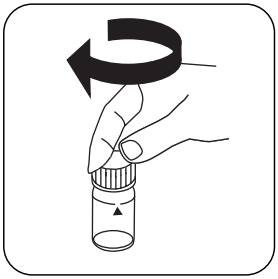
Lista de aplicaciones

- Tratamiento de aguas residuales
- Tratamiento de aguas potables
- Tratamiento de aguas de aporte

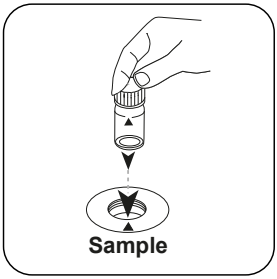
Ejecución de la determinación Nitrato con tableta y polvo

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

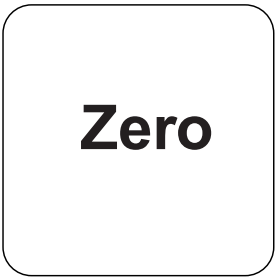
Llenar la cubeta de 24 mm con **10 ml de muestra** .



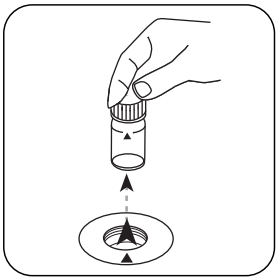
Cerrar la(s) cubeta(s).



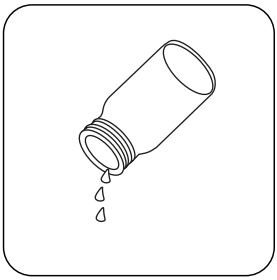
Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!



Pulsar la tecla **ZERO**.

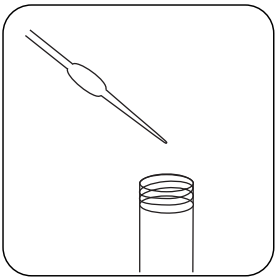


Extraer la cubeta del compartimiento de medición.

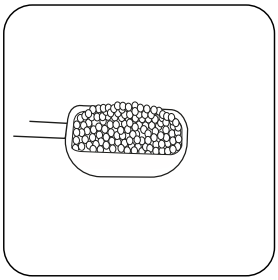


Vaciar la cubeta.

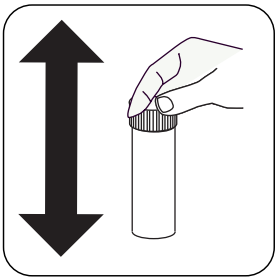
Para los aparatos que **no requieran medición CERO** , **empezar aquí**.



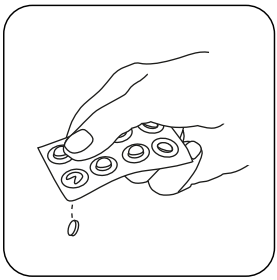
Llenar un tubito de test de nitrato con **20 ml de muestra** .



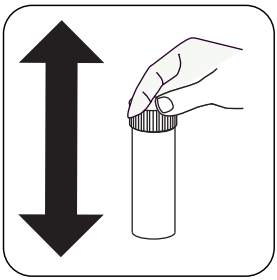
Añadir **una micro-cuchara de polvos NITRATE TEST**.



Cerrar el tubito de test con la tapa y mezclar el contenido agitando enérgicamente durante 1 minuto.

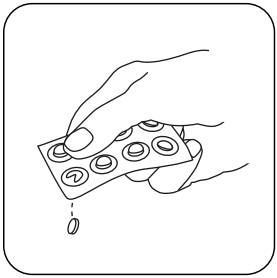


Añadir **tableta NITRATE TEST**.

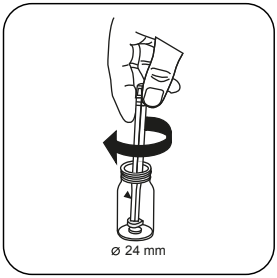


Cerrar el tubito de test con la tapa y mezclar el contenido agitando enérgicamente durante 1 minuto.

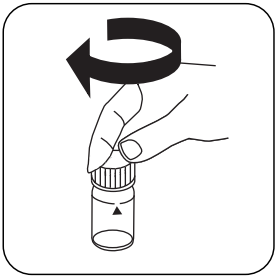
- Colocar vertical el tubito de test. Esperar hasta que se haya sedimentado la sustancia reductora.
- A continuación, girar tres o cuatro veces el tubito de test.
- Dejar reposar el tubito de test 2 minutos.
- Abrir el tubito de test y limpiar la sustancia reductora con un paño limpio.
- Decantar **10 ml de esta muestra** en una **cubeta de 24 mm** , sin transferir sustancia reductora.



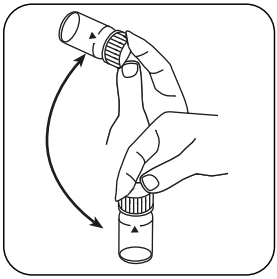
Añadir **tableta NITRITE LR**.



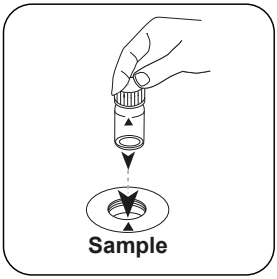
Triturar la(s) tableta(s) girando ligeramente.



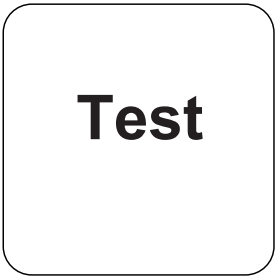
Cerrar la(s) cubeta(s).



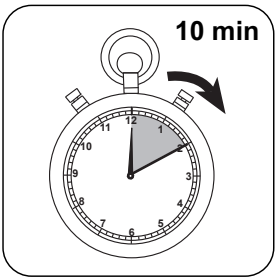
Disolver la(s) tableta(s) girando.



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



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



Esperar **10 minutos como periodo de reacción**.
Finalizado el periodo de reacción se realizará la determinación automáticamente.
A continuación se visualizará el resultado en mg/l Nitrato.

Evaluación

La siguiente tabla muestra cómo los valores de salida se pueden convertir a otros formularios de citas.

Unidad	Conversión	Factor de conversión
mg/l	N	1
mg/l	NO_3	4.4268

Método químico

Reducción de zinc / NED

Apéndice

Calibration function for 3rd-party photometers

Conc. = a + b•Abs + c•Abs^2 + d•Abs^3 + e•Abs^4 + f•Abs^5

	ø 24 mm	□ 10 mm
a	$-9.38065 \cdot 10^{-3}$	$-9.38065 \cdot 10^{-3}$
b	$3.20151 \cdot 10^{-1}$	$6.88325 \cdot 10^{-1}$
c	$2.5446 \cdot 10^{-3}$	$1.17624 \cdot 10^{-2}$
d		
e		
f		

Interferencia

Interferencias persistentes

1. El antimonio (III), hierro (III), plomo, mercurio (I), plata, cloroplatinado, metavanadato y bismuto producen precipitaciones.
2. Si hay presencia de cobre (II) se obtienen valores de medición menores, ya que acelera la descomposición de las sales de diazonio.

Interferencias extraibles

1. Si la muestra de agua original contiene nitrito, se obtienen valores demasiado altos de nitrógeno nítrico. Para la corrección se calcula la concentración de nitrógeno nítrico usando el método 270 y se resta del resultado de la determinación de nitrógeno nítrico. El valor obtenido calculatoriamente proporciona la concentración real de nitrógeno nítrico en la muestra de agua investigada.
2. Con concentraciones de nitrógeno nítrico superiores a 1 mg/l, después del tiempo de reacción de 10 minutos, se obtiene una medición incorrecta (en este caso, hay un cambio de coloración hacia colores albaricoque, no hacia el rojo rosáceo). Diluyendo la muestra de agua puede ampliarse el rango de medición. Entonces, el resultado del análisis debe multiplicarse por el factor de dilución.

Derivado de

ASTM D 3867-09
APHA 4500 NO3- E-2000
US EPA 353.3 (1983)

Nitrito T M270

0.01 - 0.5 mg/l N

N-(1-Naftil)-etilendiamina

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 600, MD 610, MD 640, MultiDirect	ø 24 mm	560 nm	0.01 - 0.5 mg/l N
SpectroDirect	ø 24 mm	545 nm	0.01 - 0.5 mg/l N
XD 7000, XD 7500	ø 24 mm	540 nm	0.01 - 0.5 mg/l N

Material

Material requerido (parcialmente opcional):

Reactivos	Unidad de embalaje	No. de referencia
Nitrito LR	Tabletas / 100	512310BT
Nitrito LR	Tabletas / 250	512311BT

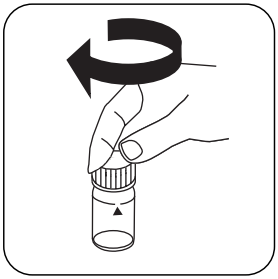
Lista de aplicaciones

- Galvanizado
- Tratamiento de aguas residuales
- Tratamiento de aguas potables
- Tratamiento de aguas de aporte

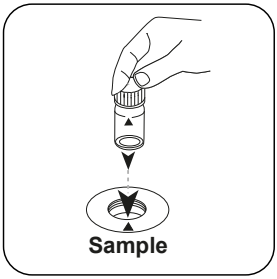
Ejecución de la determinación Nitrito con tableta

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

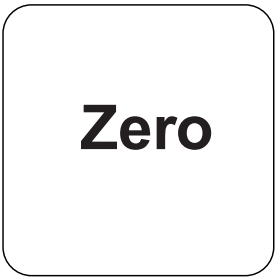
Llenar la cubeta de 24 mm con **10 ml de muestra** .



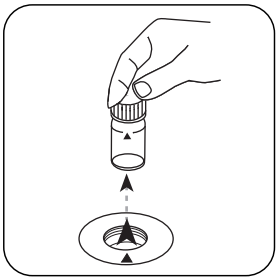
Cerrar la(s) cubeta(s).



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

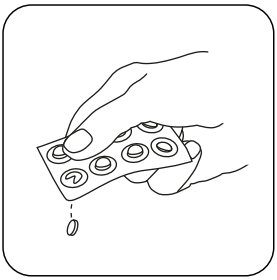


Pulsar la tecla **ZERO**.

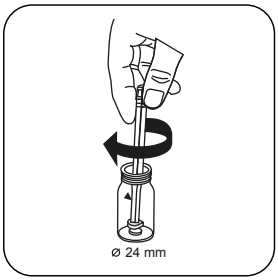


Extraer la cubeta del compartimiento de medición.

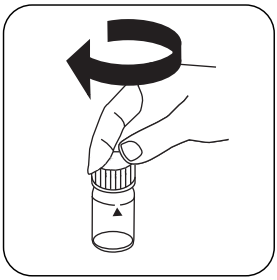
Para los aparatos que **no requieran medición CERO** , **empezar aquí**.



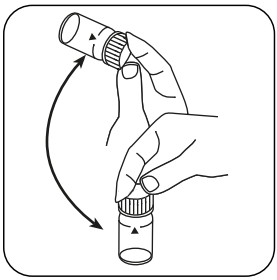
Añadir **tableta NITRITE LR**.



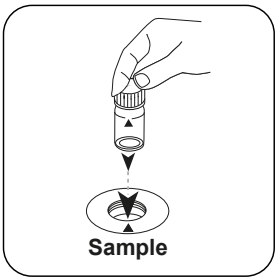
Triturar la(s) tableta(s) girando ligeramente.



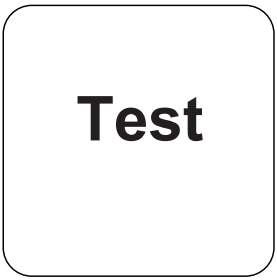
Cerrar la(s) cubeta(s).



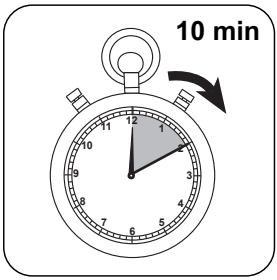
Disolver la(s) tableta(s) girando.



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



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



Esperar **10 minutos como periodo de reacción**.
Finalizado el periodo de reacción se realizará la determinación automáticamente.
A continuación se visualizará el resultado en mg/l Nitrito.

Evaluación

La siguiente tabla muestra cómo los valores de salida se pueden convertir a otros formularios de citas.

Unidad	Conversión	Factor de conversión
mg/l	N	1
mg/l	NO_2	3.2846

Método químico

N-(1-Naftil)-etilendiamina

Apéndice

Calibration function for 3rd-party photometers

Conc. = a + b•Abs + c•Abs^2 + d•Abs^3 + e•Abs^4 + f•Abs^5

	ø 24 mm	□ 10 mm
a	$-5.14368 \cdot 10^{-3}$	$-5.14368 \cdot 10^{-3}$
b	$1.76663 \cdot 10^{-1}$	$3.79825 \cdot 10^{-1}$
c	$1.20299 \cdot 10^{-2}$	$5.56082 \cdot 10^{-2}$
d		
e		
f		

Interferencia

Interferencias persistentes

1. El antimonio (III), hierro (III), plomo, mercurio (I), plata, cloroplatinado, metavanadato y bismuto pueden causar perturbaciones debido a precipitación.
2. Los iones de cobre (II) aceleran la descomposición de las sales de diazonio y proporcionan valores de medición menores.
3. En la práctica, es improbable que los iones indicados anteriormente se presenten en concentraciones que puedan causar errores de medición importantes.

Derivado de

DIN ISO 15923-1 D49

Realización del análisis de enturbiamiento

On/Off

Encender el aparato con la tecla [ON/OFF].

ntu

En la pantalla aparece:
Llenar una cubeta limpia con la prueba acuosa hasta la marca, cerrándola a continuación con su tapa. Colocar la cubeta en el compartimento de medición, según posición ⧖.

Read

Presionar la tecla [READ].

ntu

El símbolo del intervalo de medida parpadea durante unos 8 segundos.

RESULTADO

En el display se visualizará el resultado en NTU.

Repetición del análisis:
Presionar de nuevo la tecla

Iluminación de fondo de la indicación

!

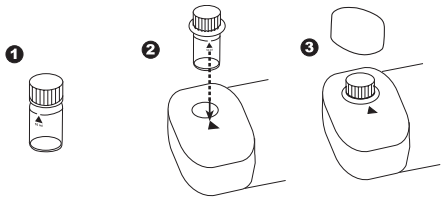
Presionar la tecla [!] para encender o apagar la iluminación de fondo de la indicación. Durante el proceso de medición la iluminación de fondo se apaga automáticamente.

Lectura de datos memorizados

!

Mantener la tecla [!] apretada durante más de 4 segundos (fotometro encendido), para llegar directamente al menú de memoria.

Posición (Ø 24 mm):



Llenado correcto de la cubeta:

correcto **falso**

Tintometer GmbH
Lovibond® Water Testing
Schleefstraße 8-12
44287 Dortmund
Tel.: +49 (0)231/94510-0
Fax: +49 (0)231/94510-30
sales@lovibond.com
www.lovibond.com
Germany

The Tintometer Limited
Lovibond House
Sun Rise Way
Amesbury, SP4 7GR
Tel.: +44 (0)1980 664800
Fax: +44 (0)1980 625412
water.sales@lovibond.uk
www.lovibond.com
UK

Tintometer AG
Hauptstraße 2
5212 Hausen AG
Tel.: +41 (0)56/4422829
Fax: +41 (0)56/4424121
info@tintometer.ch
www.tintometer.ch

Switzerland

Tintometer Inc.
6456 Parkland Drive
Sarasota, FL 34243
Tel: 941.756.6410
Fax: 941.727.9654
sales@lovibond.us
www.lovibond.us

USA

Tintometer China
Room 1001, China Life Tower
16 Chaoyangmenwai Avenue,
Beijing, 100020
Tel.: +86 10 85251111 App. 330
Fax: +86 10 85251001
chinaoffice@tintometer.com
www.lovibond.com/zh

China

Tintometer South East Asia
Unit B-3-12, BBT One Boulevard,
Lebuh Nilam 2, Bandar Bukit Tinggi,
Klang, 41200, Selangor D.E
Tel.: +60 (0)3 3325 2285/6
Fax: +60 (0)3 3325 2287
lovibond.asia@lovibond.com
www.lovibond.com

Malaysia

Tintometer Brazil
Caixa Postal: 271
CEP: 13201-970
Jundiaí – SP
Tel.: +55 (11) 3230-6410
sales@lovibond.us
www.lovibond.com.br

Brazil

Tintometer Indien Pvt. Ltd.
Door No: 7-2-C-14, 2nd, 3rd & 4th Floor
Sanathnagar Industrial Estate,
Hyderabad: 500018, Telangana
Tel: +91 (0) 40 23883300
Toll Free: 1 800 599 3891/ 3892
indiaoffice@lovibond.in
www.lovibondwater.in

India

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