Lovibond® Water Testing

Tintometer® Group

Manual of Methods

MD 100 • MD 110 • MD 200

Urea

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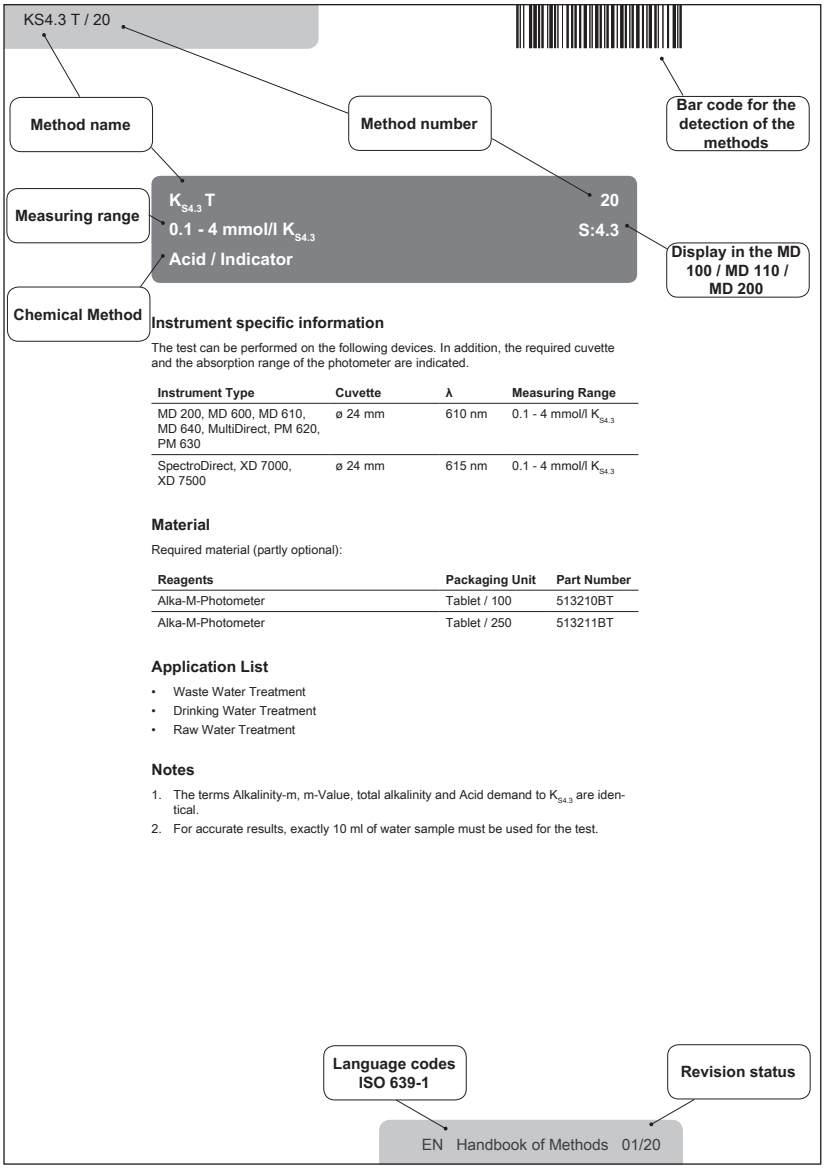


Instrument specific information

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

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

Material

Required material (partly optional):

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

Application List

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

Notes

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

Performing test procedure

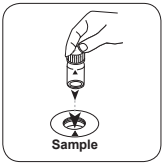
Implementation of the provision Acid capacity $K_{S4.3}$ with Tablet

Select the method on the device

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

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

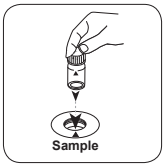
Close vial(s).



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

• • •

Dissolve tablet(s) by inverting.



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

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

The result in Acid Capacity $K_{S4.3}$ appears on the display.

Urea T M390

0.1 - 2.5 mg/L Urea Ur1

Indophenol / Urease

EN

Material

Required material (partly optional):

Reagents	Packaging Unit	Part Number
UREA Reagent 1	15 mL	459300
UREA Reagent 2	10 mL	459400
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 / 26 g	460170
Urea Pretreat (compensates for the interference of free Chlorine up to 2 mg/l)	Tablet / 100	516110BT
UREA Reagent Set	1 Set	517800BT

Preparation

1. The temperature of the sample should be between 20 °C and 30 °C.
2. The analysis must take place within one hour after taking the sample at the latest.
3. With the analysis of sea water samples, before the addition of Ammonia No. 1 Tablet, two scoops of ammonium conditioning powder must be added to the sample and dissolved by swirling.

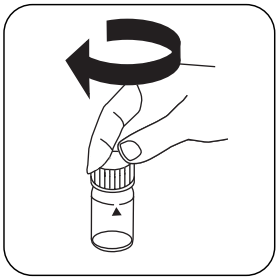
Notes

1. The AMMONIA No. 1 tablet will only dissolve completely after the AMMONIA No. 2 Tablet has been added.
2. Ammonium and chloramines are accounted for in the urea determination.

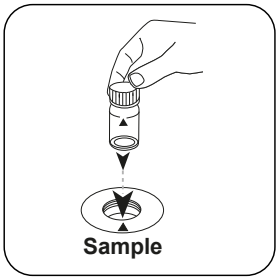
Determination of Urea with Tablet and Liquid Reagent

Select the method on the device.

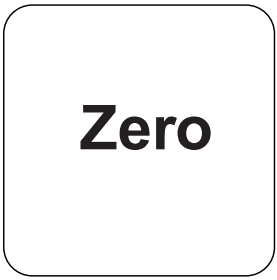
Fill 24 mm vial with **10 mL sample**.



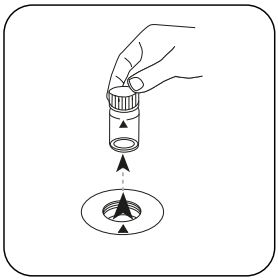
Close vial(s).



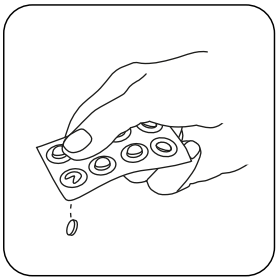
Place **sample vial** in the sample chamber. Pay attention to the positioning.



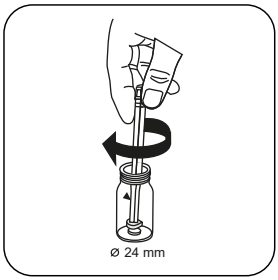
Press the **ZERO** button.



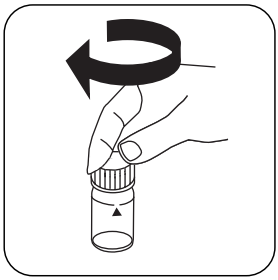
Remove the vial from the sample chamber.



If free chlorine (HOCl) is present, add **a UREA PRETREAT tablet**.



Crush tablet(s) by rotating slightly.



Close vial(s).

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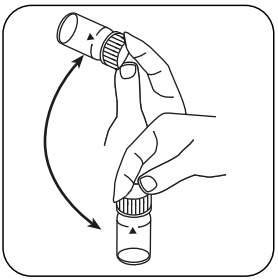
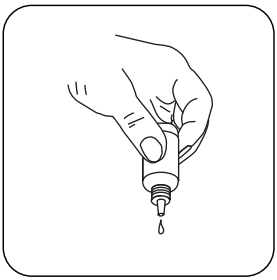
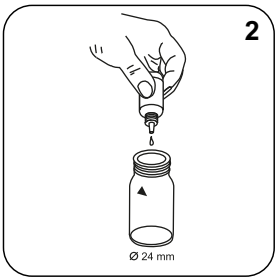


Dissolve tablet(s) by inverting.

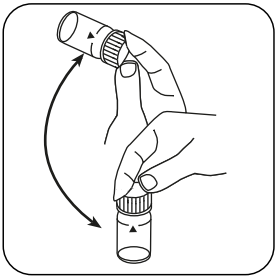


Hold cuvettes vertically and add equal drops by pressing slowly.

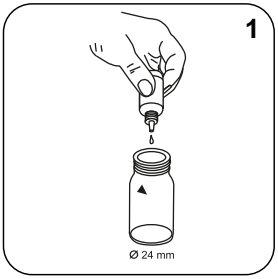


Add **2 drops Urea Reagenz 1**.

Close vial(s).

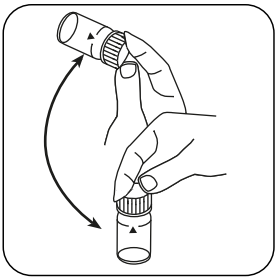


Invert several times to mix the contents.

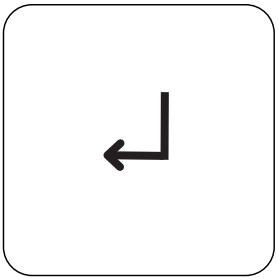


Add **1 drops Urea Reagenz 2**.

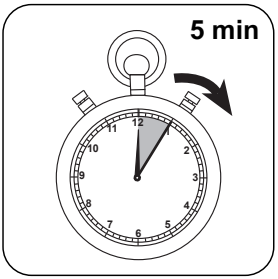
Close vial(s).



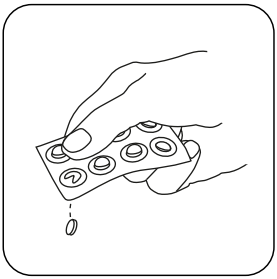
Invert several times to mix the contents.



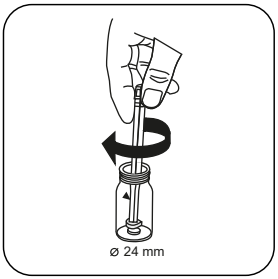
Press the **ENTER** button.



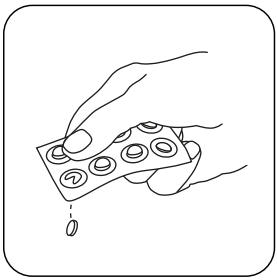
Wait for **5 minute(s) reaction time**.



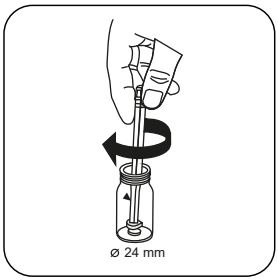
Add **AMMONIA No.1 tablet** .



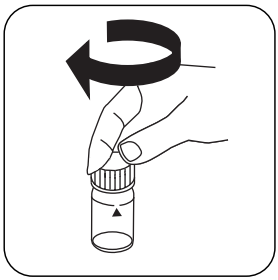
Crush tablet(s) by rotating slightly.



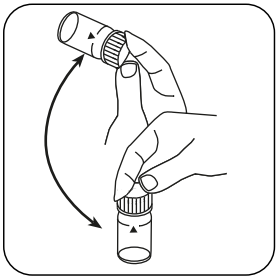
Add **AMMONIA No.2 tablet** .



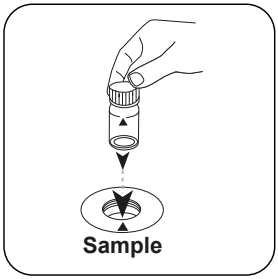
Crush tablet(s) by rotating slightly.



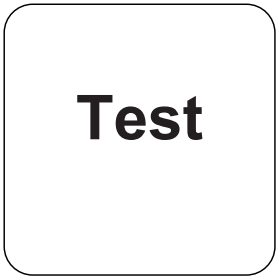
Close vial(s).



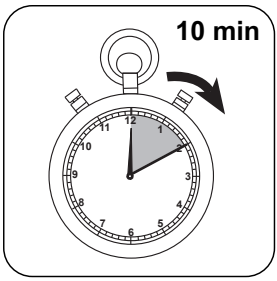
Dissolve tablet(s) by inverting.



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 Urea appears on the display.

Chemical Method

Indophenol / Urease

Appendix

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Interferences

Persistant Interferences

- Concentrations above 2 mg/L urea can lead to results within the measuring range. In this case, the water sample must be diluted with water that is free from urea and the measurement must be repeated (plausibility test).

Removeable Interferences

- A UREA PRETREAT Tablet eliminates the interference of free chlorine up to 2 mg/L (two tablets up to 4 mg/L, 3 tablets up to 6 mg/L).

Interference	from / [mg/L]
Cl_2	2

Bibliography

R.J. Creno, R.E. Wenk, P. Bohling, Automated Micromeasurement of Urea Using Urease and the Berthelot Reaction, American Journal of Clinical Pathology (1970), 54 (6), p. 828-832

including stirring rod, 10 cm

Urea T M391

0.2 - 5 mg/L Urea[i] Ur2

Indophenol / Urease

EN

Material

Required material (partly optional):

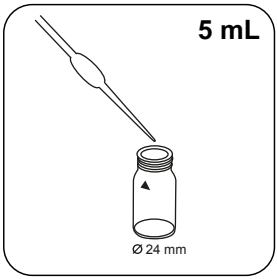
Reagents	Packaging Unit	Part Number
UREA Reagent 1	15 mL	459300
UREA Reagent 2	10 mL	459400
Ammonia No. 1	Tablet / 100	512580BT
Ammonia No. 1	Tablet / 250	512581BT
Ammonia No. 2	Tablet / 100	512590BT
Ammonia No. 2	Tablet / 250	512591BT
Set Ammonia No. 1/No. 2 100 Pc.[#]	100 each	517611BT
Set Ammonia No. 1/No. 2 250 Pc.[#]	250 each	517612BT
Ammonia Conditioning Powder	Powder / 26 g	460170
Urea Pretreat (compensates for the interference of free Chlorine up to 2 mg/l)	Tablet / 100	516110BT
UREA Reagent Set	1 Set	517800BT

Preparation

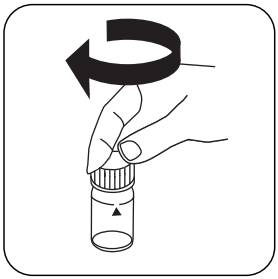
1. With the analysis of sea water samples, before the addition of Ammonia No. 1 Tablet, two scoops of ammonium conditioning powder must be added to the sample and dissolved by swirling.

Determination of Urea with Tablet and Liquid Reagent

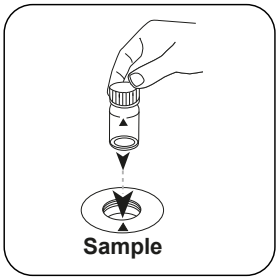
Select the method on the device.



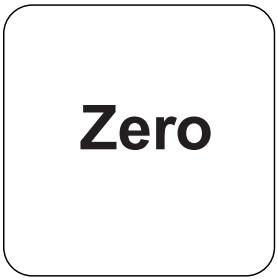
Put **5 mL sample** and **5 mL of deionised water** in the sample vessel.



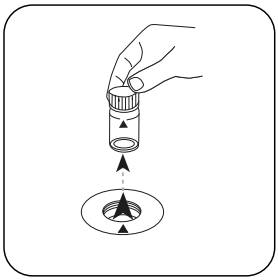
Close vial(s).



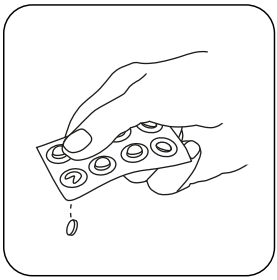
Place **sample vial** in the sample chamber. Pay attention to the positioning.



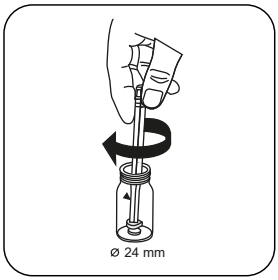
Press the **ZERO** button.



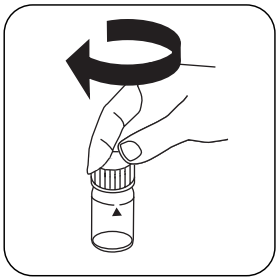
Remove the vial from the sample chamber.



If free chlorine (HOCl) is present, add **a UREA PRETREAT tablet**.



Crush tablet(s) by rotating slightly.



Close vial(s).

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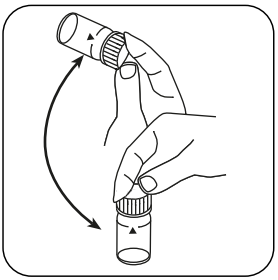
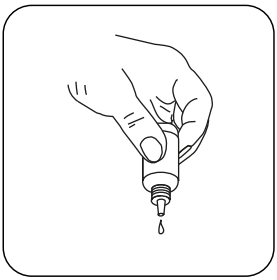
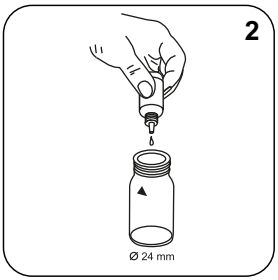


Dissolve tablet(s) by inverting.

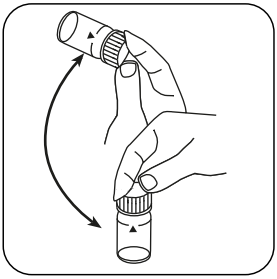


Hold cuvettes vertically and add equal drops by pressing slowly.

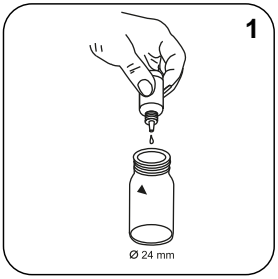


Add **2 drops UREA Reagenz 1**.

Close vial(s).

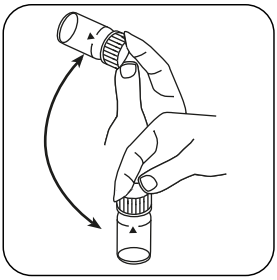


Invert several times to mix the contents.

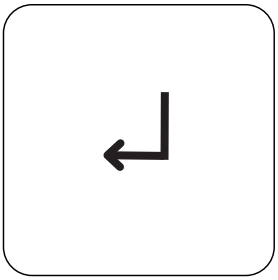


Add **1 drops UREA Reagenz 2**.

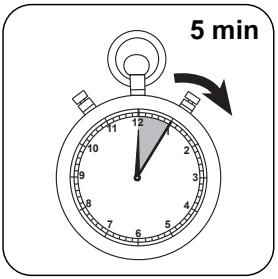
Close vial(s).



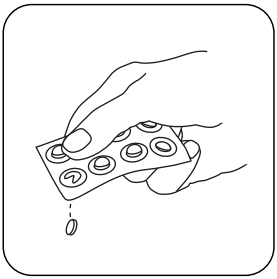
Invert several times to mix the contents.



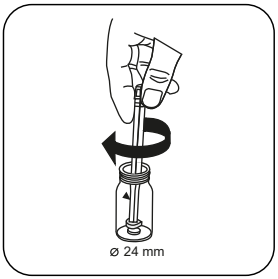
Press the **ENTER** button.



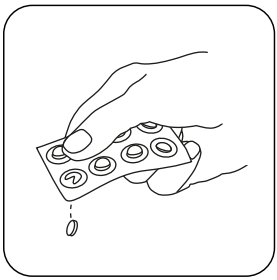
Wait for **5 minute(s) reaction time**.



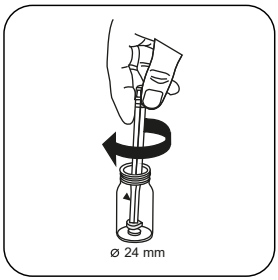
Add **AMMONIA No. 1 tablet** .



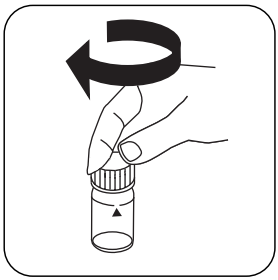
Crush tablet(s) by rotating slightly.



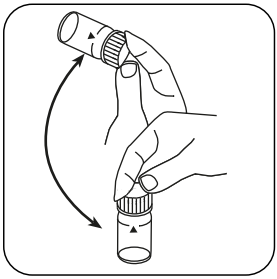
Add **AMMONIA No. 2 tablet** .



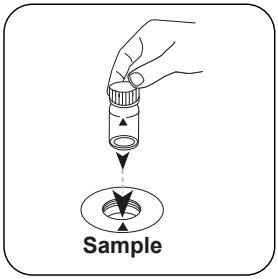
Crush tablet(s) by rotating slightly.



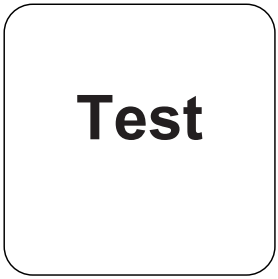
Close vial(s).



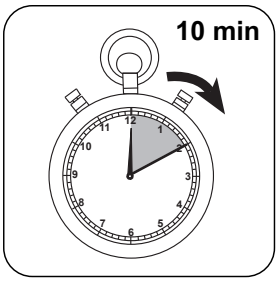
Dissolve tablet(s) by inverting.



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.

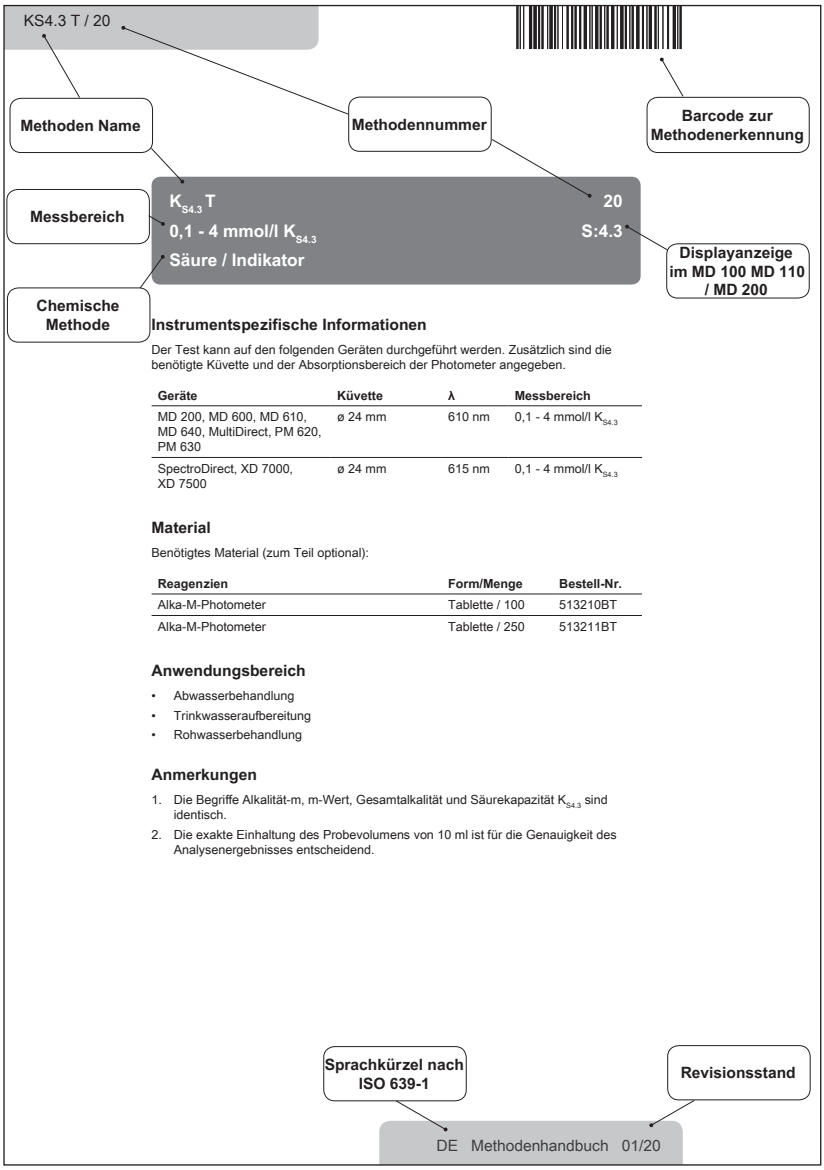
The result in mg/L Urea appears on the display.

Chemical Method

Indophenol / Urease

[1] high range by dilution | [#] including stirring rod, 10 cm

DE


KS4.3 T / 20
Methoden Name
Methodennummer
Barcode zur Methodenerkennung
Messbereich
$K_{S4.3}$ T
20
0,1 - 4 mmol/l $K_{S4.3}$
S:4.3
Säure / Indikator
Displayanzeige im MD 100 MD 110 / MD 200
Chemische Methode
Instrumentspezifische Informationen
Der Test kann auf den folgenden Geräten durchgeführt werden. Zusätzlich sind die benötigte Küvette und der Absorptionsbereich der Photometer angegeben.
Geräte | Küvette | λ | Messbereich
MD 200, MD 600, MD 610, MD 640, MultiDirect, PM 620, PM 630 | ø 24 mm | 610 nm | 0,1 - 4 mmol/l $K_{S4.3}$
SpectroDirect, XD 7000, XD 7500 | ø 24 mm | 615 nm | 0,1 - 4 mmol/l $K_{S4.3}$
Material
Benötigtes Material (zum Teil optional):
Reagenzien | Form/Menge | Bestell-Nr.
Alka-M-Photometer | Tablette / 100 | 513210BT
Alka-M-Photometer | Tablette / 250 | 513211BT
Anwendungsbereich
• Abwasserbehandlung
• Trinkwasseraufbereitung
• Rohwasserbehandlung
Anmerkungen
1. Die Begriffe Alkalität-m, m-Wert, Gesamtalkalität und Säurekapazität $K_{S4.3}$ sind identisch.
2. Die exakte Einhaltung des Probevolumens von 10 ml ist für die Genauigkeit des Analysenergebnisses entscheidend.
Sprachkürzel nach ISO 639-1
Revisionsstand
DE Methodenhandbuch 01/20

Durchführung der Messung

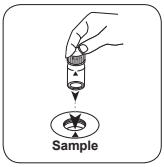
Durchführung der Bestimmung Säurekapazität $K_{S4.3}$ mit Tablette

Die Methode im Gerät auswählen.

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

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

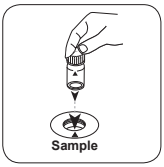
Küvette(n) verschließen.



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

• • •

Tablette(n) durch Umschwenken lösen.



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

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

In der Anzeige erscheint das Ergebnis als Säurekapazität $K_{S4.3}$.

Harnstoff T M390

0,1 - 2,5 mg/L Urea Ur1

Indophenol / Urease

DE

Material

Benötigtes Material (zum Teil optional):

Reagenzien	Form/Menge	Bestell-Nr.
UREA Reagenz 1	15 mL	459300
UREA Reagenz 2	10 mL	459400
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 / 26 g	460170
Urea Pretreat (eliminiert die Störung von freiem Chlor bis zu 2 mg/l)	Tablette / 100	516110BT
UREA Reagenzien Set	1 Satz	517800BT

Vorbereitung

1. Die Probentemperatur sollte zwischen 20 °C und 30 °C liegen.
2. Die Analyse spätestens eine Stunde nach der Probennahme durchführen.
3. Bei der Analyse von Meerwasserproben muss vor Zugabe der Ammonia No. 1 Tablette zwei Messlöffel Ammonium Konditionierungs-Pulver zur Probe gegeben und durch Schwenken aufgelöst werden.

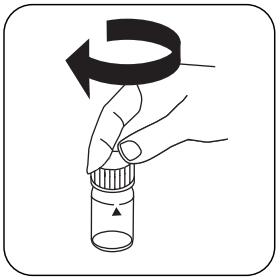
Anmerkungen

1. Die AMMONIA No. 1 Tablette löst sich erst vollständig nach Zugabe der AMMONIA No. 2 Tablette auf.
2. Ammonium und Chloramine werden bei der Harnstoffbestimmung miterfasst.

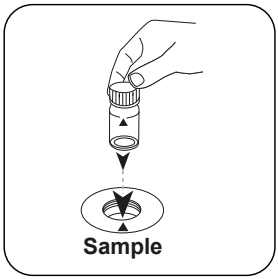
Durchführung der Bestimmung Harnstoff mit Tablette und Flüssigreagenz

Die Methode im Gerät auswählen.

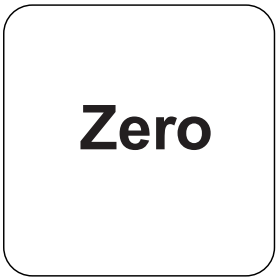
24-mm-Küvette mit **10 mL Probe** füllen.



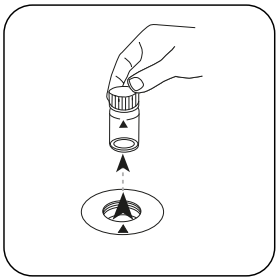
Küvette(n) verschließen.



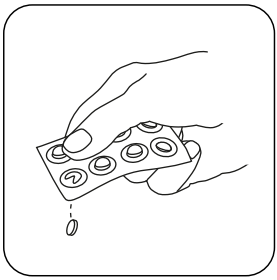
Die **Probenküvette** in den Messschacht stellen. Positionierung beachten.



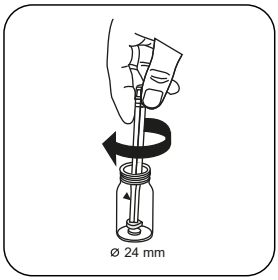
Taste **ZERO** drücken.



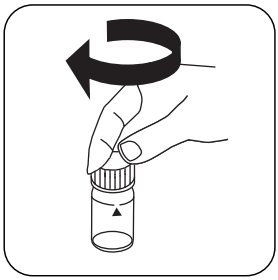
Küvette aus dem Messschacht nehmen.



Bei Anwesenheit von freiem Chlor (HOCl) **eine UREA PRETREAT Tablette** zugeben.

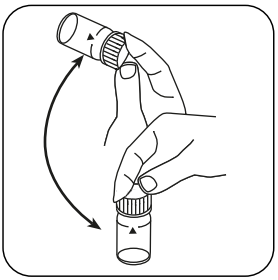


Tablette(n) unter leichter Drehung zerdrücken.

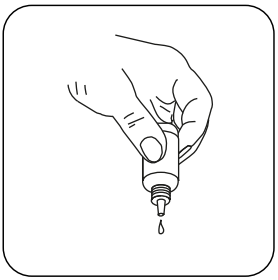


Küvette(n) verschließen.

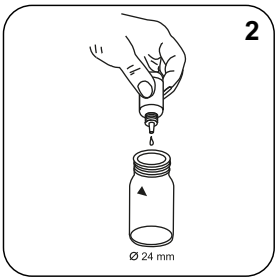
DE



Tablette(n) durch Umschwenken lösen.

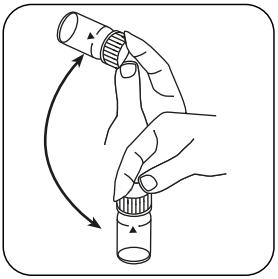


Die Tropfflaschen senkrecht halten und durch langsames Drücken gleich große Tropfen zugeben.

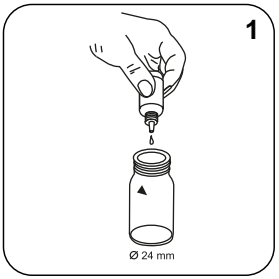


2 Tropfen Urea Reagenz 1 zugeben.

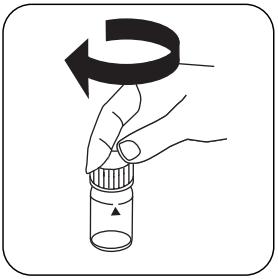
Küvette(n) verschließen.



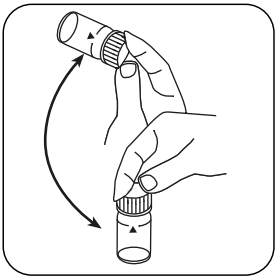
Inhalt durch Umschwenken mischen.



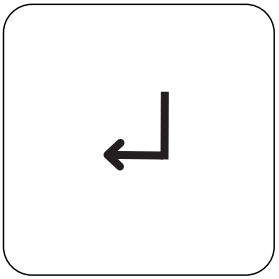
1 Tropfen Urea Reagenz 2 zugeben.



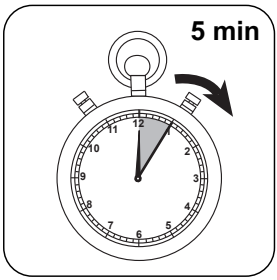
Küvette(n) verschließen.



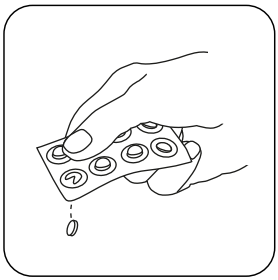
Inhalt durch Umschwenken mischen.



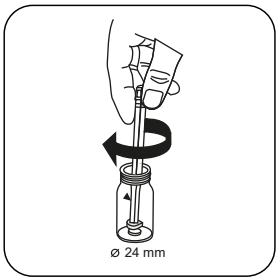
Taste **ENTER** drücken.



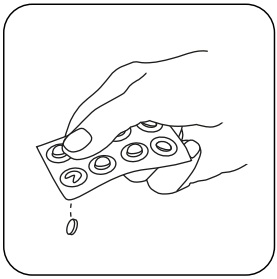
5 Minute(n) Reaktionszeit abwarten.



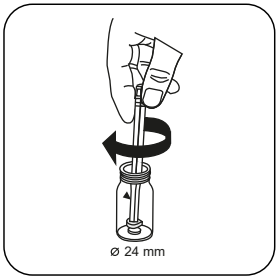
Eine **AMMONIA No.1 Tablette** zugeben.



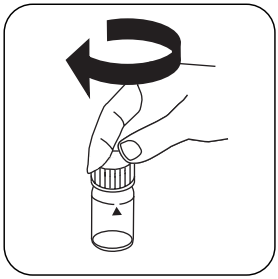
Tablette(n) unter leichter Drehung zerdrücken.



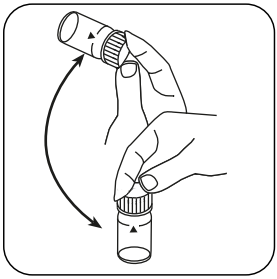
Eine **AMMONIA No.2 Tablette** zugeben.



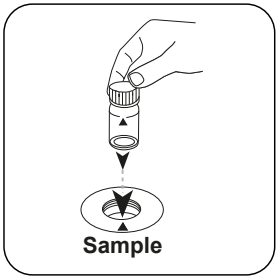
Tablette(n) unter leichter Drehung zerdrücken.



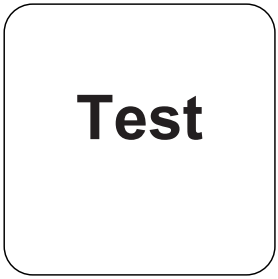
Küvette(n) verschließen.



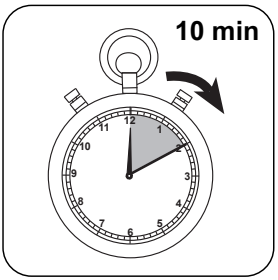
Tablette(n) durch Umschwenken lösen.



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



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



DE

10 Minute(n)
Reaktionszeit abwarten.

Nach Ablauf der Reaktionszeit erfolgt automatisch die Messung.

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

Chemische Methode

Indophenol / Urease

Appendix

Störungen

Permanente Störungen

- Konzentrationen über 2 mg/L Harnstoff können zu Ergebnissen innerhalb des Messbereiches führen. In diesem Fall ist die Wasserprobe mit harnstofffreiem Wasser zu verdünnen und die Messung zu wiederholen (Plausibilitätstest).

Ausschließbare Störungen

- Eine UREA PRETREAT Tablette eliminiert die Störung von freiem Chlor bis zu 2 mg/L (zwei Tabletten bis zu 4 mg/L, drei Tabletten bis zu 6 mg/L).

Störung	Stört ab / [mg/L]
Cl_2	2

Literaturverweise

R.J. Creno, R.E. Wenk, P. Bohling, Automated Micromeasurement of Urea Using Urease and the Berthelot Reaction, American Journal of Clinical Pathology (1970), 54 (6), p. 828-832

inklusive Rührstab

Harnstoff T M391

0,2 - 5 mg/L Urea[i)] Ur2

Indophenol / Urease

DE

Material

Benötigtes Material (zum Teil optional):

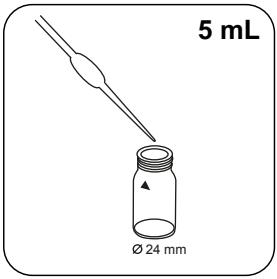
Reagenzien	Form/Menge	Bestell-Nr.
UREA Reagenz 1	15 mL	459300
UREA Reagenz 2	10 mL	459400
Ammonia No. 1	Tablette / 100	512580BT
Ammonia No. 1	Tablette / 250	512581BT
Ammonia No. 2	Tablette / 100	512590BT
Ammonia No. 2	Tablette / 250	512591BT
Set Ammonia No. 1/No. 2[#]	je 100	517611BT
Set Ammonia No. 1/No. 2[#]	je 250	517612BT
Ammonium Konditionierpulver	Pulver / 26 g	460170
Urea Pretreat (eliminiert die Störung von freiem Chlor bis zu 2 mg/l)	Tablette / 100	516110BT
UREA Reagenzien Set	1 Satz	517800BT

Vorbereitung

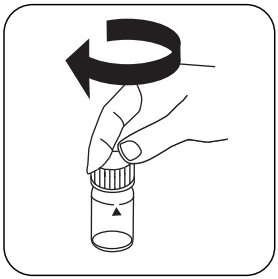
1. Bei der Analyse von Meerwasserproben muss vor Zugabe der Ammonia No. 1 Tablette zwei Messlöffel Ammonium Konditionierungs-Pulver zur Probe gegeben und durch Schwenken aufgelöst werden.

Durchführung der Bestimmung Harnstoff mit Tablette und Flüssigreagenz

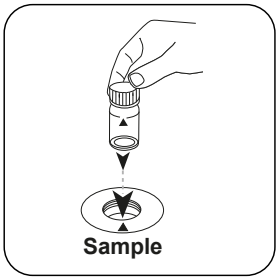
Die Methode im Gerät auswählen.



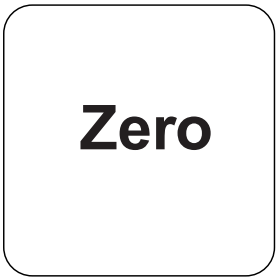
5 mL Probe und **5 mL VE-Wasser** in die Probenküvette geben.



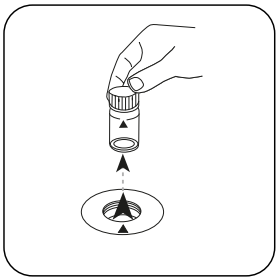
Küvette(n) verschließen.



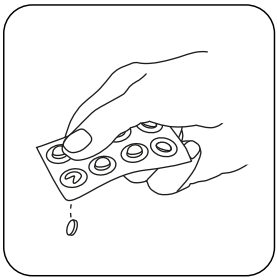
Die **Probenküvette** in den Messschacht stellen. Positionierung beachten.



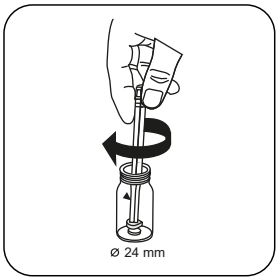
Taste **ZERO** drücken.



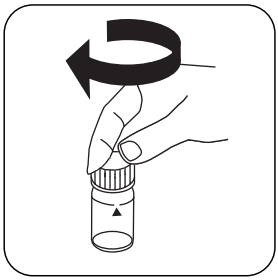
Küvette aus dem Messschacht nehmen.



Bei Anwesenheit von freiem Chlor (HOCl) **eine UREA PRETREAT Tablette** zugeben.

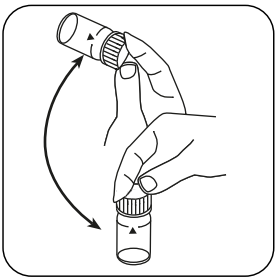


Tablette(n) unter leichter Drehung zerdrücken.

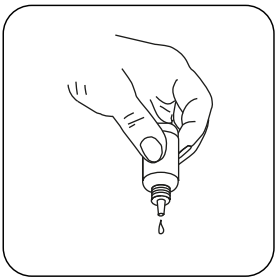


Küvette(n) verschließen.

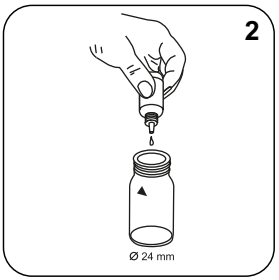
DE



Tablette(n) durch Umschwenken lösen.

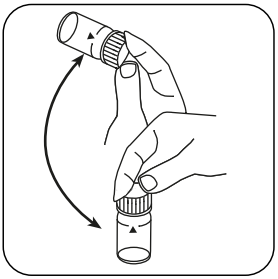


Die Tropfflaschen senkrecht halten und durch langsames Drücken gleich große Tropfen zugeben.

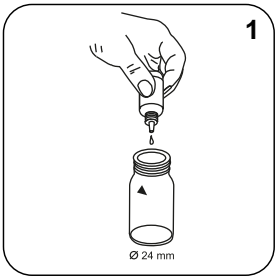


2 Tropfen UREA Reagenz 1 zugeben.

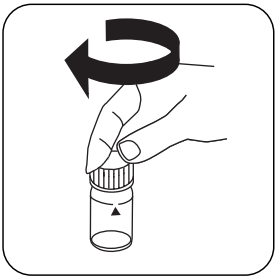
Küvette(n) verschließen.



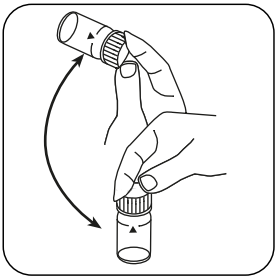
Inhalt durch Umschwenken mischen.



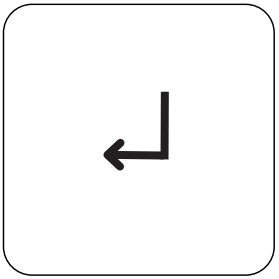
1 Tropfen UREA Reagenz 2 zugeben.



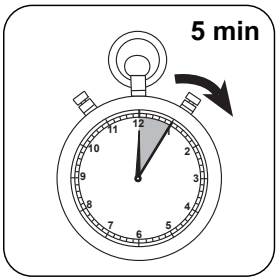
Küvette(n) verschließen.



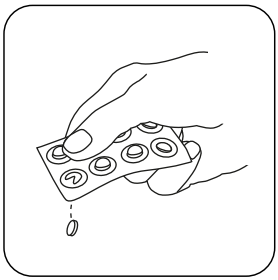
Inhalt durch Umschwenken mischen.



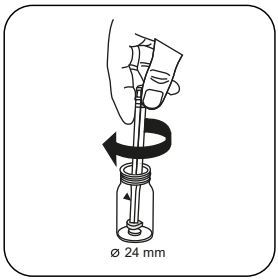
Taste **ENTER** drücken.



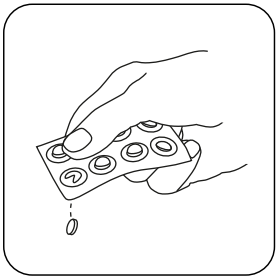
5 Minute(n) Reaktionszeit abwarten.



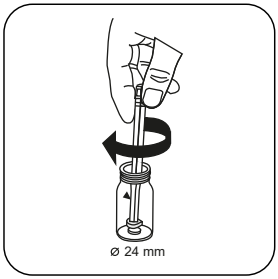
Eine **AMMONIA No. 1 Tablette** zugeben.



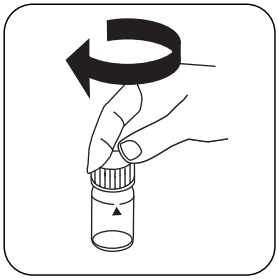
Tablette(n) unter leichter Drehung zerdrücken.



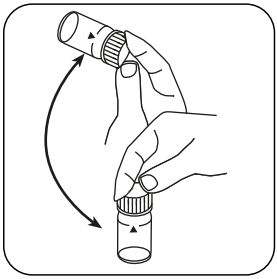
Eine **AMMONIA No. 2 Tablette** zugeben.



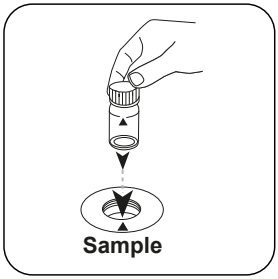
Tablette(n) unter leichter Drehung zerdrücken.



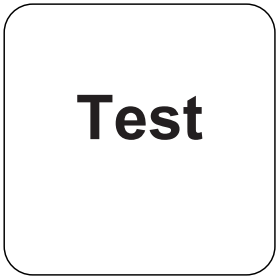
Küvette(n) verschließen.



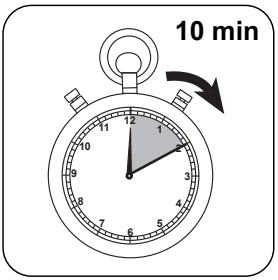
Tablette(n) durch Umschwenken lösen.



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



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



DE

10 Minute(n)
Reaktionszeit abwarten.

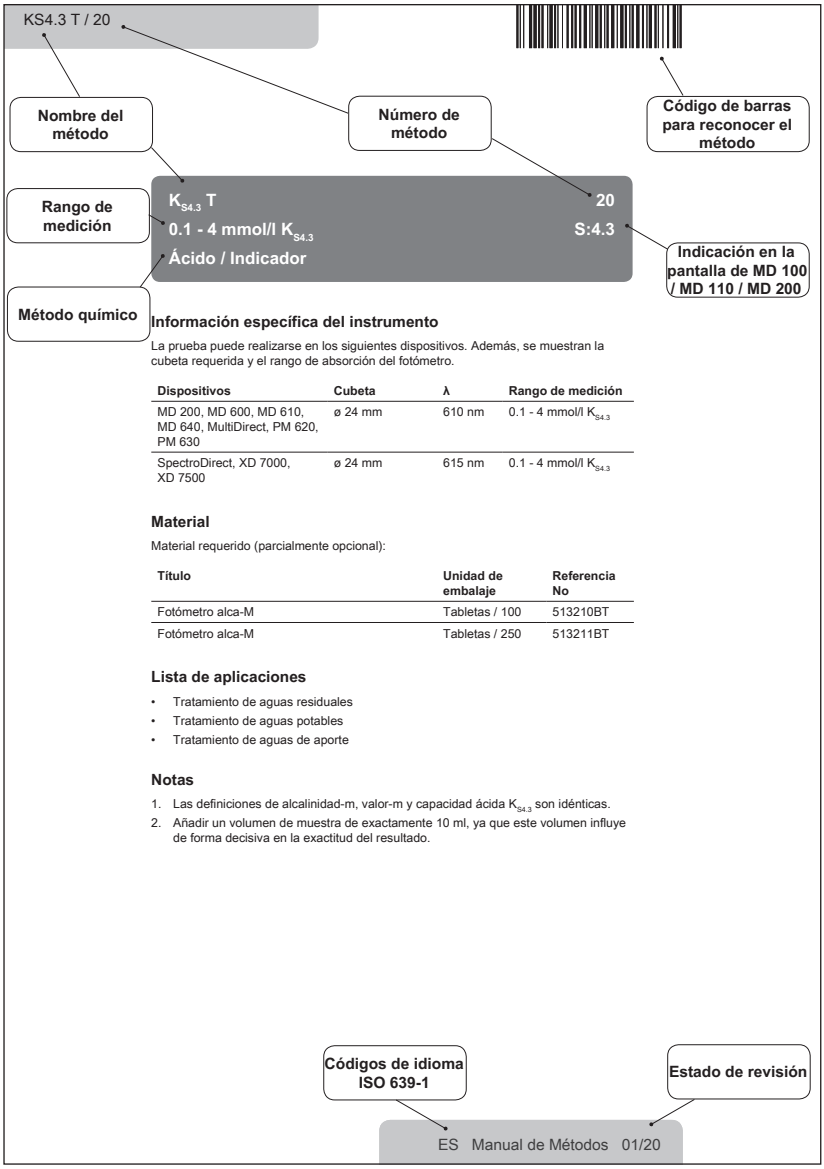
Nach Ablauf der Reaktionszeit erfolgt automatisch die Messung.

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

Chemische Methode

Indophenol / Urease

[i] Hoher Messbereich durch Verdünnung | [#] inklusive Rührstab



Información específica del instrumento

La prueba puede realizarse en los siguientes dispositivos. Además, se muestran la cubeta requerida y el rango de absorción del fotómetro.

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

Material

Material requerido (parcialmente opcional):

Título	Unidad de embalaje	Referencia No
Fotómetro alca-M	Tabletas / 100	513210BT
Fotómetro alca-M	Tabletas / 250	513211BT

Lista de aplicaciones

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

Notas

1. Las definiciones de alcalinidad-m, valor-m y capacidad ácida $K_{S4.3}$ son idénticas.
2. Añadir un volumen de muestra de exactamente 10 ml, ya que este volumen influye de forma decisiva en la exactitud del resultado.

Realización de la determinación

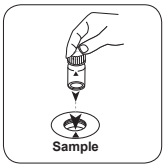
Ejecución de la determinación Capacidad ácida $K_{S4.3}$ con tableta

Seleccionar el método en el aparato.

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

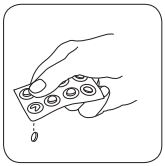
Llenar la cubeta de 24 mm con **10 ml de muestra** .

Cerrar la(s) cubeta(s).

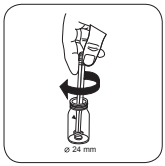


Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!

• • •



Añadir **tableta ALKA-M-PHOTOMETER**.



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

Cerrar la(s) cubeta(s).

Urea T M390

0.1 - 2.5 mg/L Urea Ur1

Urease / Indofenol

ES

Material

Material requerido (parcialmente opcional):

Reactivos	Unidad de embalaje	No. de referencia
Reactivo 1 para UREA	15 mL	459300
UREA Reagent 2-10 ml	10 mL	459400
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 / 26 g	460170
Urea Pretreat (compensates for the interference of free Chlorine up to 2 mg/l)	Tabletas / 100	516110BT
Juego de reactivos para urea	1 Set	517800BT

Preparación

1. La temperatura de la muestra deberá encontrarse entre 20 °C y 30 °C.
2. Realizar la determinación en el plazo máximo de una hora después de la toma de la muestra.
3. En la determinación de muestras marinas, se deberá añadir a la muestra acuosa dos cucharas de polvo acondicionador de amonio, antes de agregar la tableta Ammonia nº 1, disolviéndola mediante agitación.

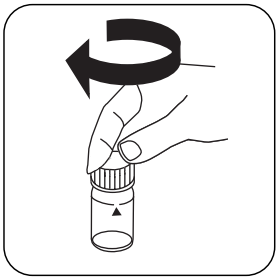
Notas

1. La tableta AMMONIA nº 1 se disolverá completamente una vez añadida la tableta AMMONIA nº 2.
2. En la determinación de ácido úrico se detectarán también amonio y cloroaminas.

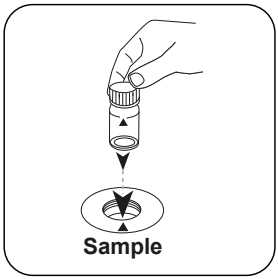
Ejecución de la determinación Urea con tableta y reactivo líquido

Seleccionar el método en el aparato.

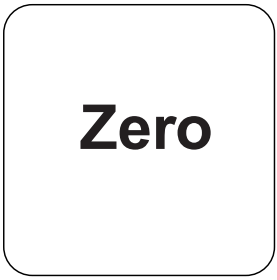
Llenar la cubeta de 24 mm con **10 mL de muestra** .



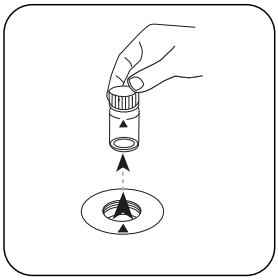
Cerrar la(s) cubeta(s).



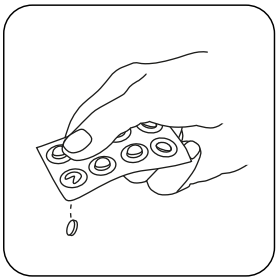
Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!



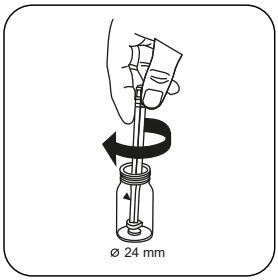
Pulsar la tecla **ZERO**.



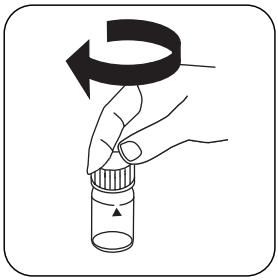
Extraer la cubeta del compartimiento de medición.



Si hay cloro libre (HOCl), añadir **una tableta UREA PRETREAT**.

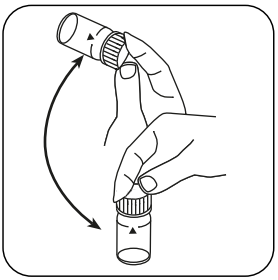


Triturar la(s) tableta(s) girando ligeramente.

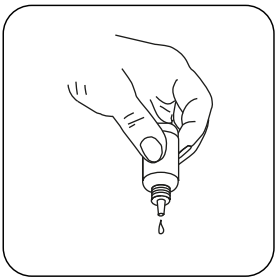


Cerrar la(s) cubeta(s).

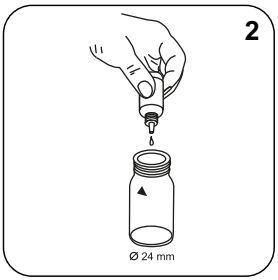
ES



Disolver la(s) tableta(s) girando.

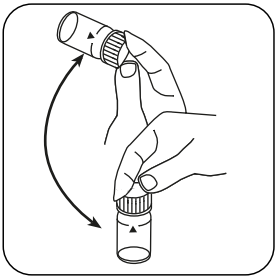


Mantener la botella cuentagotas vertical y añadir gotas del mismo tamaño presionando lentamente.

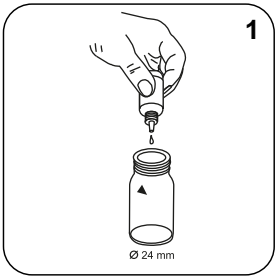


Añadir **2 gotas de Urea Reagenz 1**.

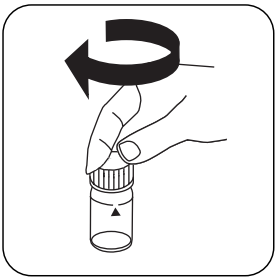
Cerrar la(s) cubeta(s).



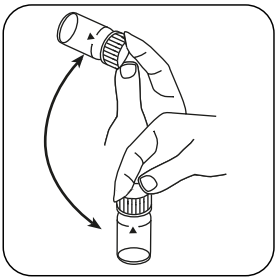
Mezclar el contenido girando.



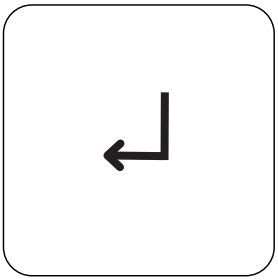
Añadir **1 gotas de Urea Reagenz 2**.



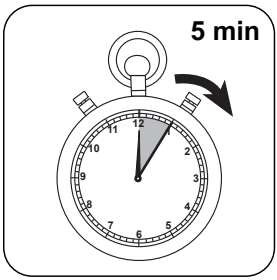
Cerrar la(s) cubeta(s).



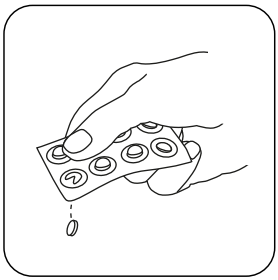
Mezclar el contenido girando.



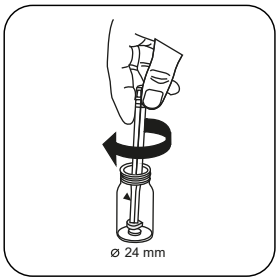
Pulsar la tecla **ENTER**.



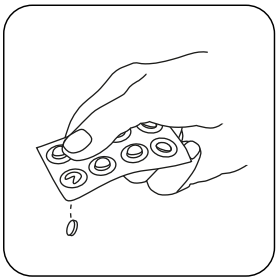
Esperar **5 minutos como periodo de reacción**.



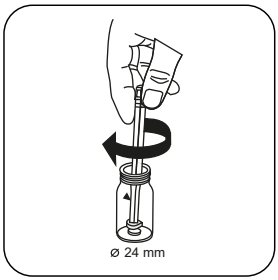
Añadir **tableta AMMONIA No.1**.



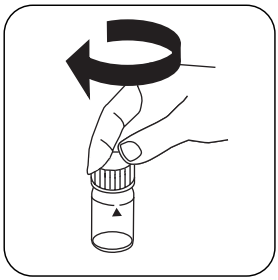
Triturar la(s) tableta(s) girando ligeramente.



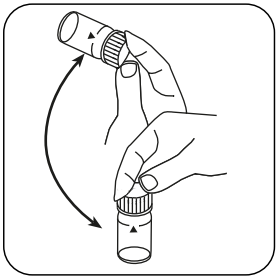
Añadir **tableta AMMONIA No.2**.



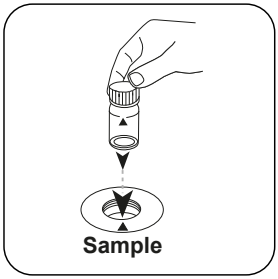
Triturar la(s) tableta(s) girando ligeramente.



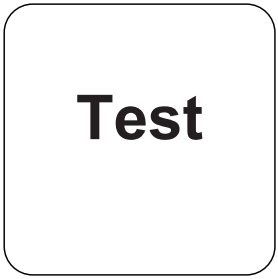
Cerrar la(s) cubeta(s).



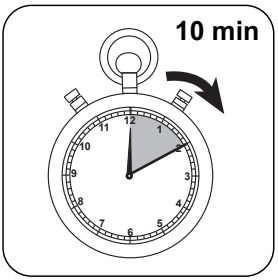
Disolver la(s) tableta(s) girando.



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



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



ES

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 Urea.

Método químico

Urease / Indofenol

Apéndice

Interferencia

Interferencias persistentes

- Las concentraciones de urea mayores a 2 mg/L pueden conducir a resultados hasta dentro del campo de medición. En este caso, se deberá diluir la muestra con agua libre de cloro y repetirse a continuación el análisis (prueba de plausibilidad).

Interferencias extraibles

- Una tableta UREA PRETREAT elimina la perturbación del cloro libre hasta 2 mg/L (dos tabletas hasta 4 mg/L, tres tabletas hasta 6 mg/L).

Interferencia	de / [mg/L]
Cl_2	2

Bibliografía

R.J. Creno, R.E. Wenk, P. Bohling, Automated Micromeasurement of Urea Using Urease and the Berthelot Reaction, American Journal of Clinical Pathology (1970), 54 (6), p. 828-832

Urea T M391

0.2 - 5 mg/L Urea[i)] Ur2

Urease / Indofenol

ES

Material

Material requerido (parcialmente opcional):

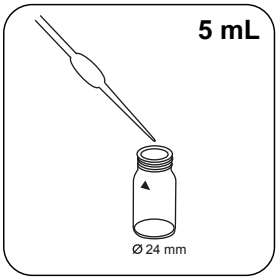
Reactivos	Unidad de embalaje	No. de referencia
Reactivo 1 para UREA	15 mL	459300
UREA Reagent 2-10 ml	10 mL	459400
Amonio nº 1	Tabletas / 100	512580BT
Amonio nº 1	Tabletas / 250	512581BT
Amonio nº 2	Tabletas / 100	512590BT
Amonio nº 2	Tabletas / 250	512591BT
Juego amonio nº 1/nº 2#	100 cada	517611BT
Juego amonio nº 1/nº 2#	250 cada	517612BT
Polvo de acondicionamiento de amonio	Polvos / 26 g	460170
Urea Pretreat (compensates for the interference of free Chlorine up to 2 mg/l)	Tabletas / 100	516110BT
Juego de reactivos para urea	1 Set	517800BT

Preparación

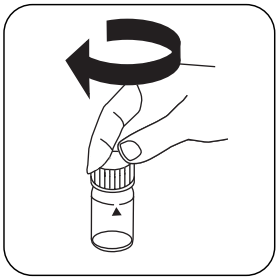
1. En la determinación de muestras marinas, se deberá añadir a la muestra acuosa dos cucharas de polvo acondicionador de amonio, antes de agregar la tableta Ammonia nº 1, disolviéndola mediante agitación.

Ejecución de la determinación Urea con tableta y reactivo líquido

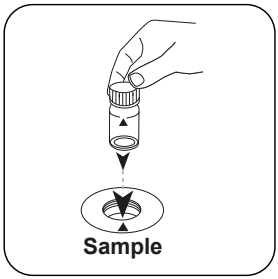
Seleccionar el método en el aparato.



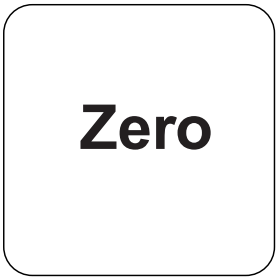
Añadir en la cubeta de muestra **5 mL de muestra** y **5 mL de agua desionizada**.



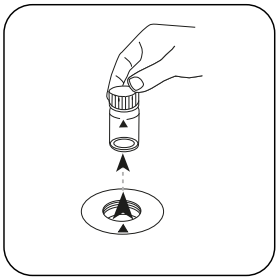
Cerrar la(s) cubeta(s).



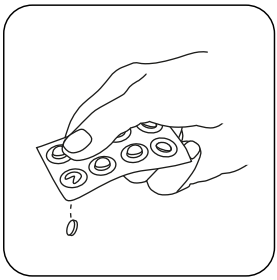
Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!



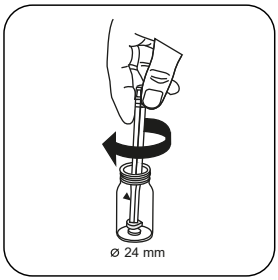
Pulsar la tecla **ZERO**.



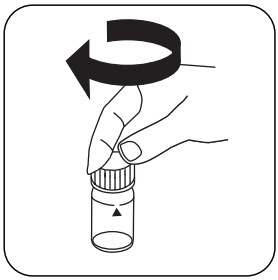
Extraer la cubeta del compartimiento de medición.



Si hay cloro libre (HOCl), añadir **una tableta UREA PRETREAT**.



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



Cerrar la(s) cubeta(s).

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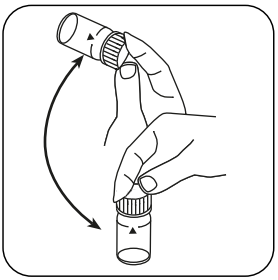
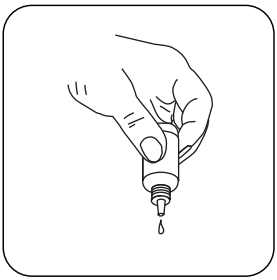
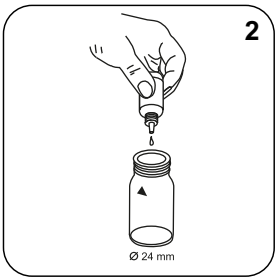


Disolver la(s) tableta(s) girando.

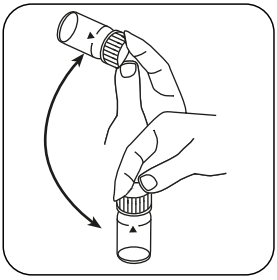


Mantener la botella cuentagotas vertical y añadir gotas del mismo tamaño presionando lentamente.

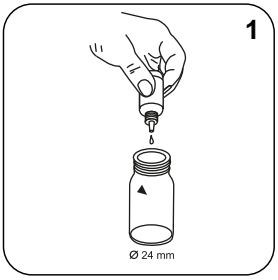


Añadir **2 gotas de UREA Reagenz 1**.

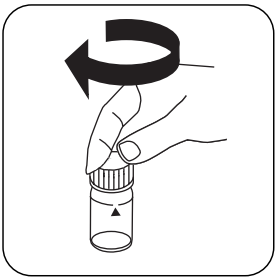
Cerrar la(s) cubeta(s).



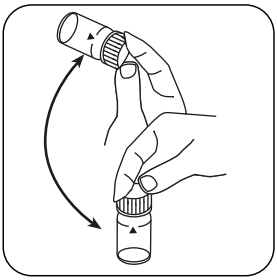
Mezclar el contenido girando.



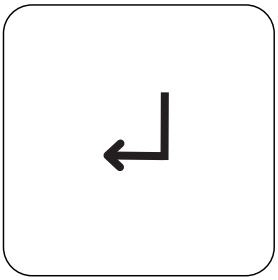
Añadir **1 gotas de UREA Reagenz 2**.



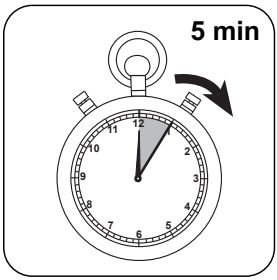
Cerrar la(s) cubeta(s).



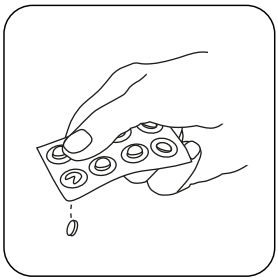
Mezclar el contenido girando.



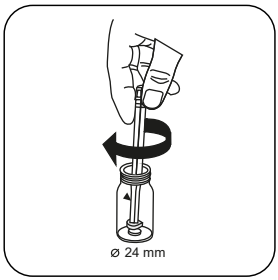
Pulsar la tecla **ENTER**.



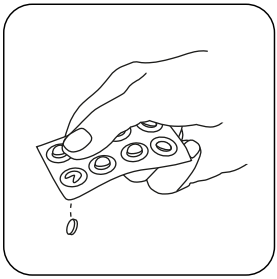
Esperar **5 minutos como periodo de reacción**.



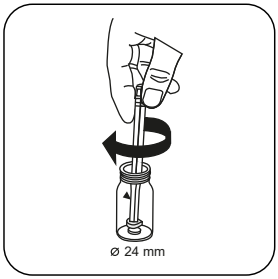
Añadir **tableta AMMONIA No. 1**.



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



Añadir **tableta AMMONIA No. 2**.



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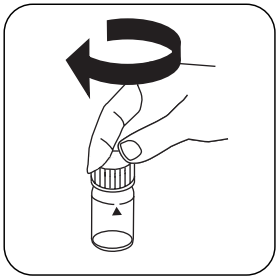
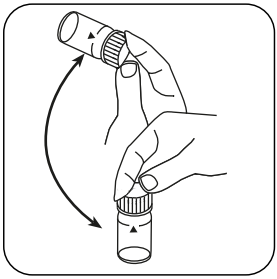
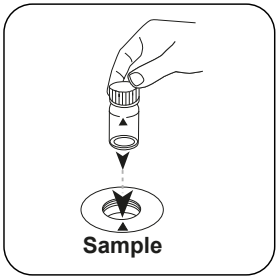


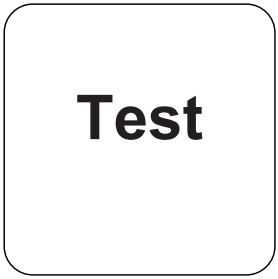
Cerrar la(s) cubeta(s).



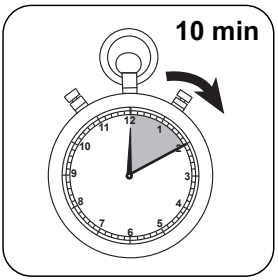
Disolver la(s) tableta(s) girando.



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



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



ES

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

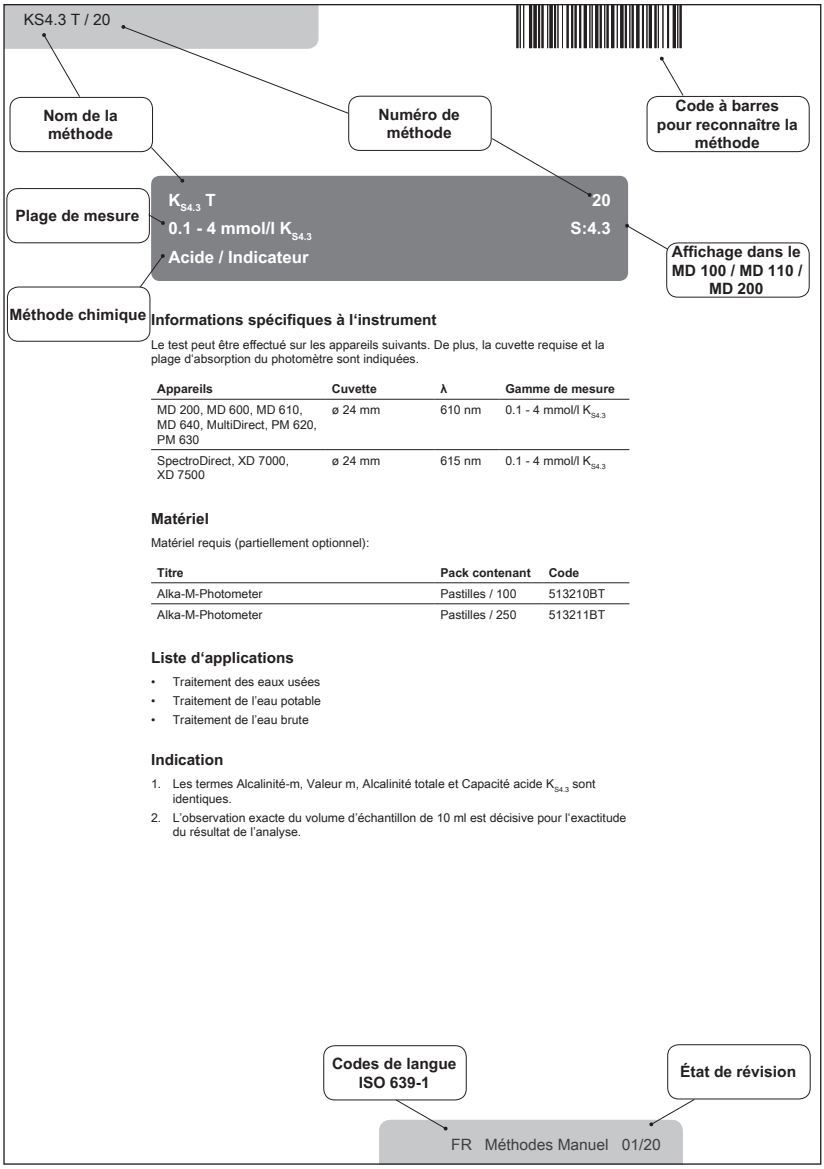
Finalizado el periodo de reacción se realizará la determinación automáticamente.

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

Método químico

Urease / Indofenol

[i] Campo de medición elevado con dilución



Informations spécifiques à l'instrument

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

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

Matériel

Matériel requis (partiellement optionnel):

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

Liste d'applications

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

Indication

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

Procédure du test

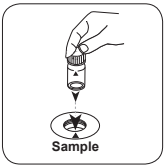
Réalisation de la quantification Capacité acide $K_{S4.3}$ avec pastille

Sélectionnez la méthode sur l'appareil.

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

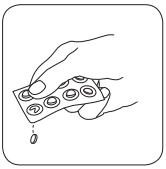
Remplissez une cuvette de 24 mm de **10 ml d'échantillon**.

Fermez la(les) cuvette(s).

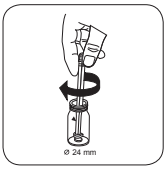


Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.

• • •



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



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

Fermez la(les) cuvette(s).

Urée T M390

0.1 - 2.5 mg/L Urea Ur1

Indophénol / Uréase

FR

Matériel

Matériel requis (partiellement optionnel):

Réactifs	Pack contenant	Code
UREE Réactif 1	15 mL	459300
UREE Réactif 2	10 mL	459400
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 / 26 g	460170
Traitement préliminaire urée (compensates for the interference of free Chlorine up to 2 mg/l)	Pastilles / 100	516110BT
Kit de réactifs UREE	1 Kit	517800BT

Préparation

1. La température de l'échantillon devrait être comprise entre 20 °C et 30 °C.
2. L'analyse devra avoir lieu au plus tard une heure après le prélèvement de l'échantillon.
3. Lors de l'analyse des échantillons d'eau de mer, il faudra ajouter avant l'apport de la pastille Ammonia N° 1, deux cuillères de mesure de poudre réactive de traitement de l'ammonium à l'échantillon qui sera dissoute en mettant le tube à l'envers puis à l'endroit.

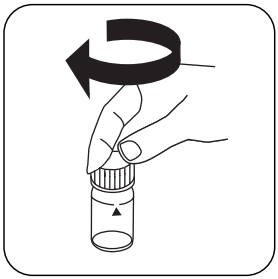
Indication

1. La pastille AMMONIA No. 1 ne se dissout entièrement qu'après avoir ajouté la pastille AMMONIA No. 2.
2. L'ammonium et les chloramines sont également pris en compte lors de la quantification de l'urée.

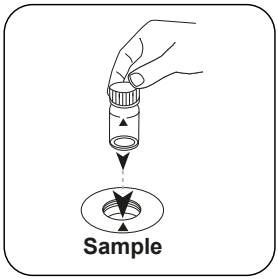
Réalisation de la quantification Urée avec pastille et réactif liquide

Sélectionnez la méthode sur l'appareil.

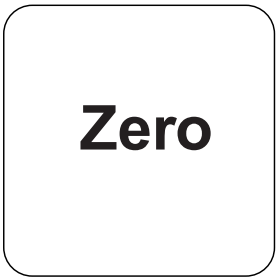
Remplissez une cuvette de 24 mm de **10 mL d'échantillon**.



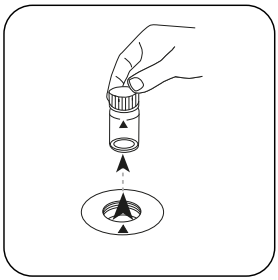
Fermez la(les) cuvette(s).



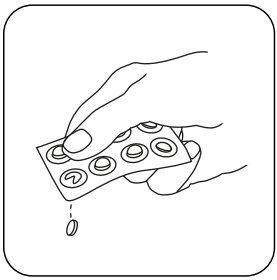
Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.



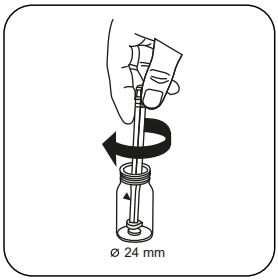
Appuyez sur la touche **ZERO**.



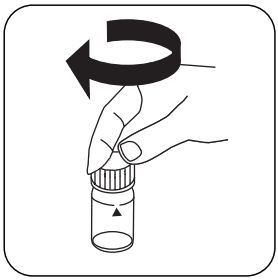
Retirez la cuvette de la chambre de mesure.



En présence de chlore libre (HOCl), ajoutez une **pastille de UREA PRETREAT**.

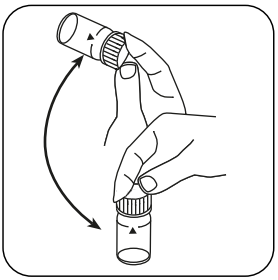


Écrasez la(les) pastille(s) en la(les) tournant un peu.

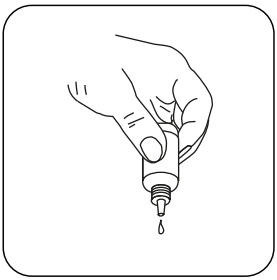


Fermez la(les) cuvette(s).

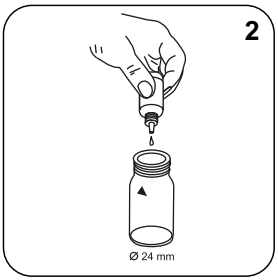
FR



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

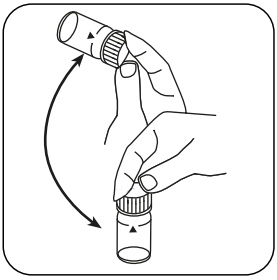


Tenez les flacons compte-goutte à la verticale et ajoutez des gouttes uniformes en appuyant lentement.

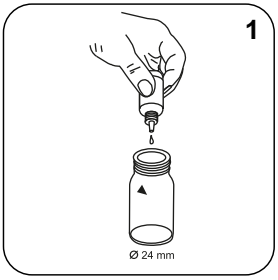


Ajoutez **2 gouttes de Urea Reagenz 1**.

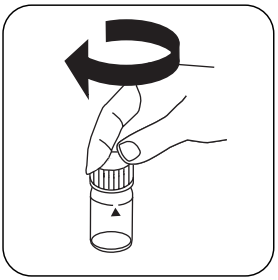
Fermez la(les) cuvette(s).



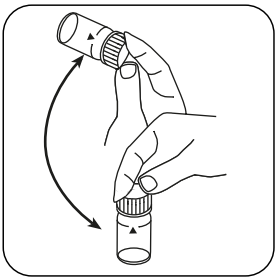
Mélangez le contenu en mettant le tube plusieurs fois à l'envers puis à l'endroit.



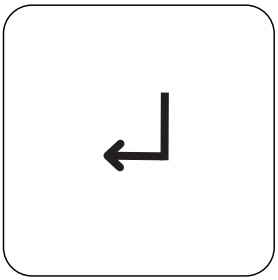
Ajoutez **1 gouttes de Urea Reagenz 2**.



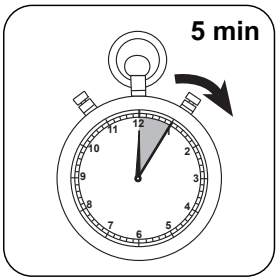
Fermez la(les) cuvette(s).



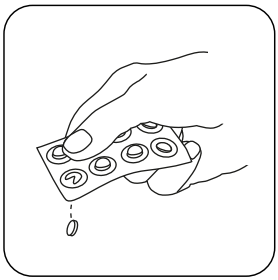
Mélangez le contenu en mettant le tube plusieurs fois à l'envers puis à l'endroit.



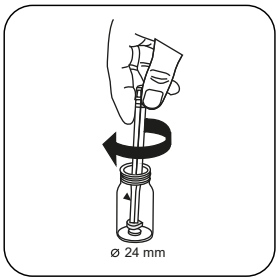
Appuyez sur la touche **ENTER**.



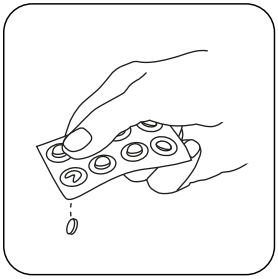
Attendez la fin du **temps de réaction de 5 minute(s)** .



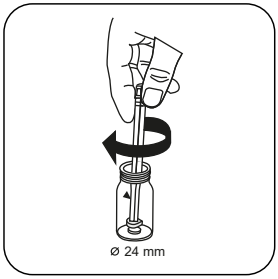
Ajoutez une **pastille de AMMONIA No.1**.



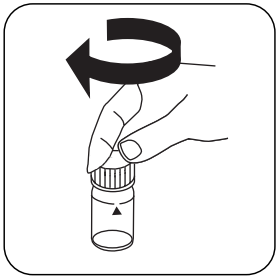
Écrasez la(les) pastille(s) en la(les) tournant un peu.



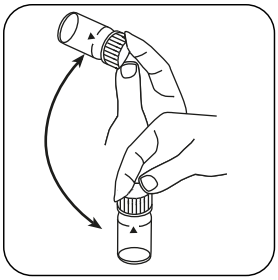
Ajoutez une **pastille de AMMONIA No.2**.



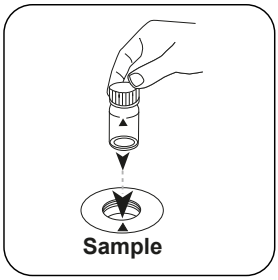
Écrasez la(les) pastille(s) en la(les) tournant un peu.



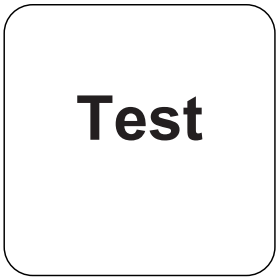
Fermez la(les) cuvette(s).



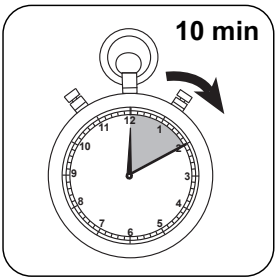
Dissolvez la(les) pastille(s) en mettant le tube plusieurs fois à l'envers.



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



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



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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 urée.

Méthode chimique

Indophénol / Uréase

Appendice

Interférences

Interférences persistantes

- Les concentrations d'urée supérieures à 2 mg/L peuvent donner des résultats dans la plage de mesure. Dans ce cas, diluez l'échantillon d'eau en utilisant de l'eau exempte d'urée et répétez la mesure (test de plausibilité).

Interférences exclues

- Une pastille UREA PRETREAT élimine la perturbation causée par le chlore libre jusqu'à 2 mg/L (deux pastilles jusqu'à 4 mg/L, trois pastilles jusqu'à 6 mg/L).

Interférences	de / [mg/L]
Cl_2	2

Bibliographie

R.J. Creno, R.E. Wenk, P. Bohling, Automated Micromeasurement of Urea Using Urease and the Berthelot Reaction, American Journal of Clinical Pathology (1970), 54 (6), p. 828-832

[1] # agitateur inclus

Urée T M391

0.2 - 5 mg/L Urea[i)] Ur2

Indophénol / Uréase

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Matériel

Matériel requis (partiellement optionnel):

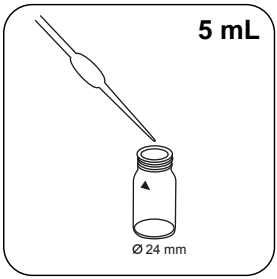
Réactifs	Pack contenant	Code
UREE Réactif 1	15 mL	459300
UREE Réactif 2	10 mL	459400
Ammoniac N° 1	Pastilles / 100	512580BT
Ammoniac N° 1	Pastilles / 250	512581BT
Ammoniac N° 2	Pastilles / 100	512590BT
Ammoniac N° 2	Pastilles / 250	512591BT
Kit ammoniac N° 1/N° 2#	100 chacun	517611BT
Kit ammoniac N° 1/N° 2#	250 chacun	517612BT
Poudre de conditionnement ammonium	Poudre / 26 g	460170
Traitement préliminaire urée (compensates for the interference of free Chlorine up to 2 mg/l)	Pastilles / 100	516110BT
Kit de réactifs UREE	1 Kit	517800BT

Préparation

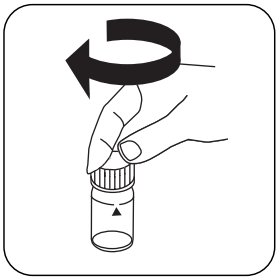
1. Lors de l'analyse des échantillons d'eau de mer, il faudra ajouter avant l'apport de la pastille Ammonia N° 1, deux cuillères de mesure de poudre réactive de traitement de l'ammonium à l'échantillon qui sera dissoute en mettant le tube à l'envers puis à l'endroit.

Réalisation de la quantification Urée avec pastille et réactif liquide

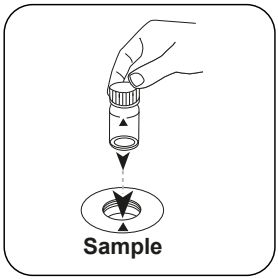
Sélectionnez la méthode sur l'appareil.



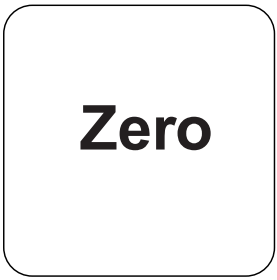
Versez **5 mL d'échantillon** et **5 mL d'eau déminéralisée** dans la cuvette d'échantillonnage.



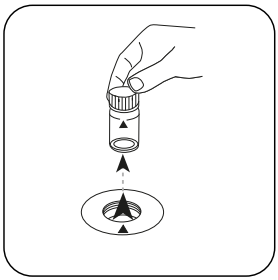
Fermez la(les) cuvette(s).



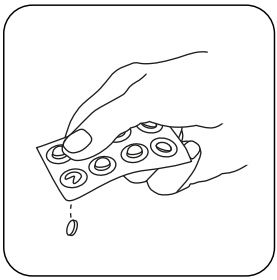
Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.



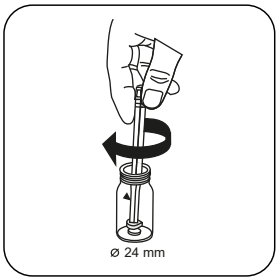
Appuyez sur la touche **ZERO**.



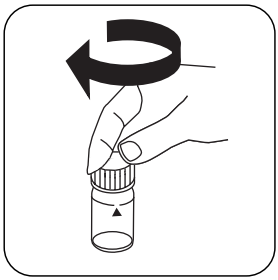
Retirez la cuvette de la chambre de mesure.



En présence de chlore libre (HOCl), ajoutez une **pastille de UREA PRETREAT**.

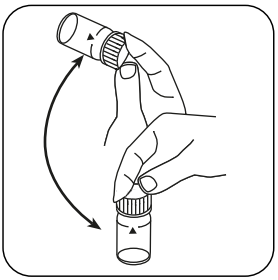


Écrasez la(les) pastille(s) en la(les) tournant un peu.

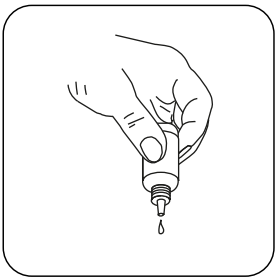


Fermez la(les) cuvette(s).

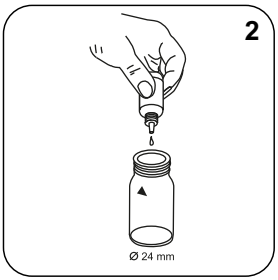
FR



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

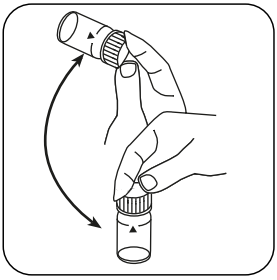


Tenez les flacons compte-goutte à la verticale et ajoutez des gouttes uniformes en appuyant lentement.

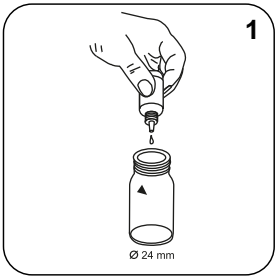


Ajoutez **2 gouttes de UREA Reagenz 1**.

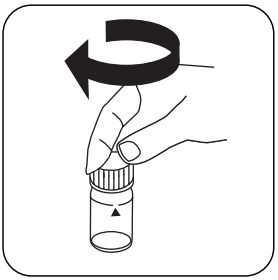
Fermez la(les) cuvette(s).



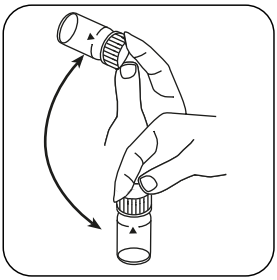
Mélangez le contenu en mettant le tube plusieurs fois à l'envers puis à l'endroit.



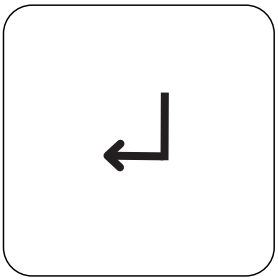
Ajoutez **1 gouttes de UREA Reagenz 2**.



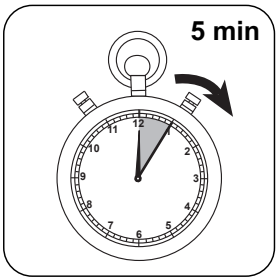
Fermez la(les) cuvette(s).



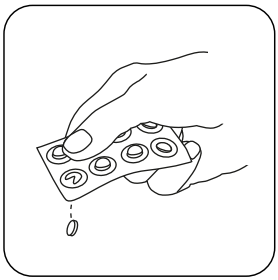
Mélangez le contenu en mettant le tube plusieurs fois à l'envers puis à l'endroit.



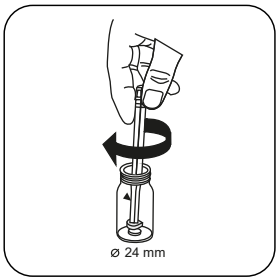
Appuyez sur la touche **ENTER**.



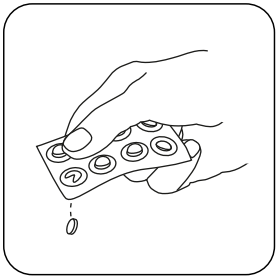
Attendez la fin du **temps de réaction de 5 minute(s)** .



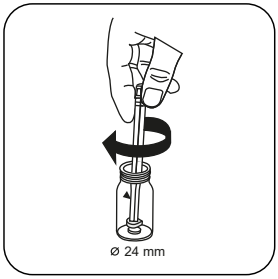
Ajoutez une **pastille de AMMONIA No. 1**.



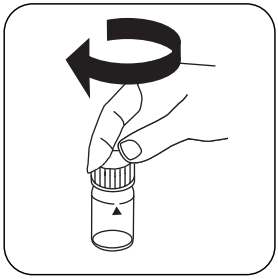
Écrasez la(les) pastille(s) en la(les) tournant un peu.



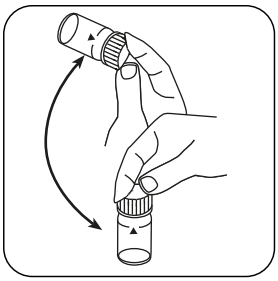
Ajoutez une **pastille de AMMONIA No. 2**.



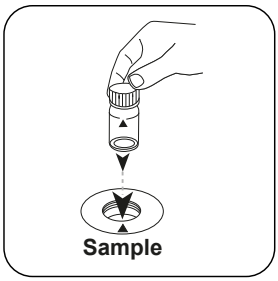
Écrasez la(les) pastille(s) en la(les) tournant un peu.



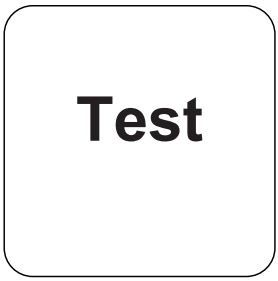
Fermez la(les) cuvette(s).



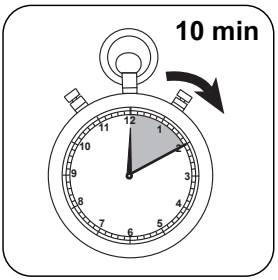
Dissolvez la(les) pastille(s) en mettant le tube plusieurs fois à l'envers.



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



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



FR

Attendez la fin du
temps de réaction de 10 minute(s) .

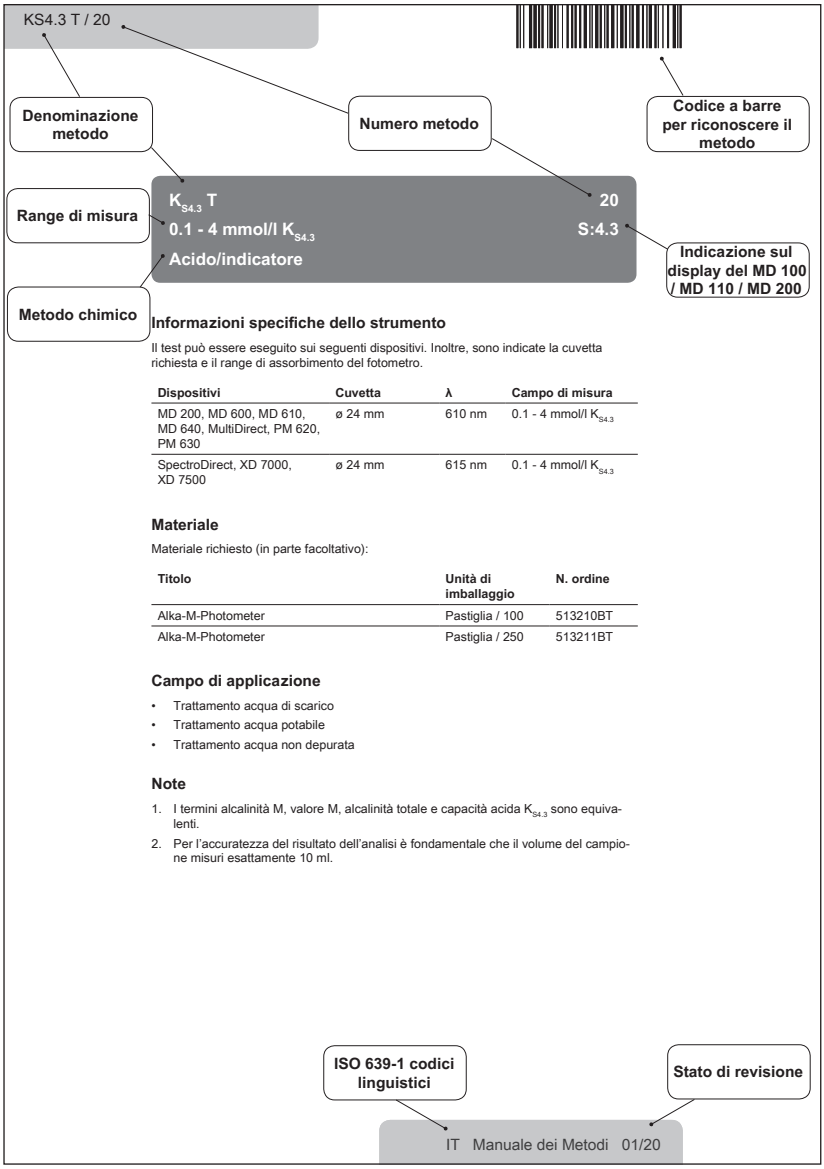
À l'issue du temps de réaction, la mesure est effectuée automatiquement.

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

Méthode chimique

Indophénol / Uréase

[j] Gamme haute par dilution | [j]# agitateur inclus



Informazioni specifiche dello strumento

Il test può essere eseguito sui seguenti dispositivi. Inoltre, sono indicate la cuvetta richiesta e il range di assorbimento del fotometro.

Dispositivi	Cuvetta	λ	Campo di misura
MD 200, MD 600, MD 610, MD 640, MultiDirect, PM 620, PM 630	ø 24 mm	610 nm	0.1 - 4 mmol/l $K_{S4.3}$
SpectroDirect, XD 7000, XD 7500	ø 24 mm	615 nm	0.1 - 4 mmol/l $K_{S4.3}$

Materiale

Materiale richiesto (in parte facoltativo):

Titolo	Unità di imballaggio	N. ordine
Alka-M-Photometer	Pastiglia / 100	513210BT
Alka-M-Photometer	Pastiglia / 250	513211BT

Campo di applicazione

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

Note

1. I termini alcalinità M, valore M, alcalinità totale e capacità acida $K_{S4.3}$ sono equivalenti.
2. Per l'accuratezza del risultato dell'analisi è fondamentale che il volume del campione misuri esattamente 10 ml.

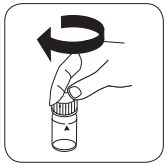
Svolgimento della misurazione

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

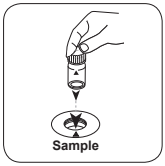
Selezionare il metodo nel dispositivo.

Con i seguenti dispositivi, per questo metodo non è necessario eseguire una misurazione ZERO: XD 7000, XD 7500

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



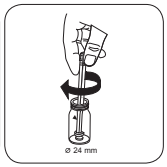
Chiudere la/e cuvetta/e.



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

• • •

Aggiungere **una pastiglia ALKA-M-PHOTOMETER**.



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

Chiudere la/e cuvetta/e.

Urea T M390

0.1 - 2.5 mg/L Urea Ur1

Indofenolo/ureasi

IT

Materiale

Materiale richiesto (in parte facoltativo):

Reagenti	Unità di imballaggio	N. ordine
Reagente UREA 1	15 mL	459300
Reagente UREA 2	10 mL	459400
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 / 26 g	460170
Urea Pretreat (compensates for the interference of free Chlorine up to 2 mg/l)	Pastiglia / 100	516110BT
Set di reagenti UREA	1 set	517800BT

Preparazione

1. La temperatura del campione deve essere compresa tra 20 °C e 30 °C.
2. Eseguire l'analisi al più tardi un'ora dopo il prelievo del campione.
3. Nell'analisi di campioni di acqua di mare, prima di aggiungere la pastiglia AMMONIA No. 1 si deve aggiungere due cucchiai dosatore di polvere condizionante di ammonio al campione e quindi farla sciogliere con un movimento oscillatorio.

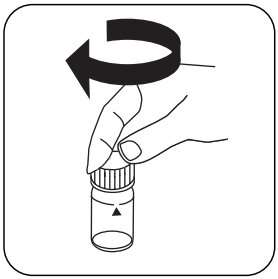
Note

1. La pastiglia AMMONIA No. 1 si scioglie completamente soltanto dopo aver aggiunto la pastiglia AMMONIA No. 2.
2. L'ammonio e la clorammina vengono rilevati nell'ambito della rilevazione dell'urea.

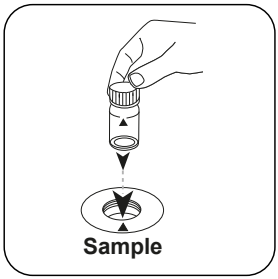
Esecuzione della rilevazione Urea con pastiglia e reagente liquido

Selezionare il metodo nel dispositivo.

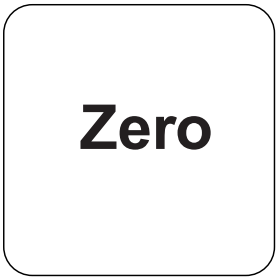
Riempire una cuvetta da 24 mm con **10 mL di campione**.



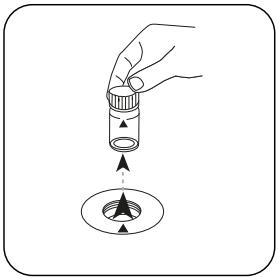
Chiudere la/e cuvetta/e.



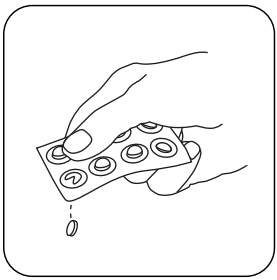
Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



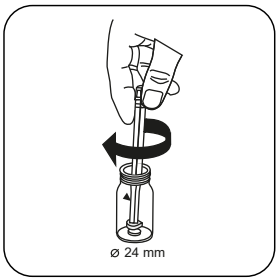
Premere il tasto **ZERO**.



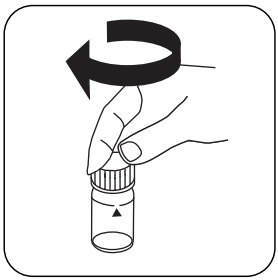
Prelevare la cuvetta dal vano di misurazione.



In presenza di cloro libero (HOCl) aggiungere **una pastiglia UREA PRETREAT**.

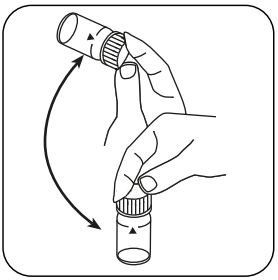


Frantumare la/e pastiglia/e con una leggera rotazione.

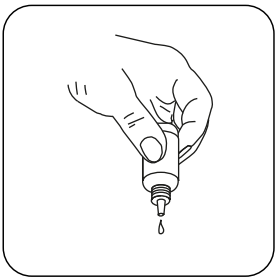


Chiudere la/e cuvetta/e.

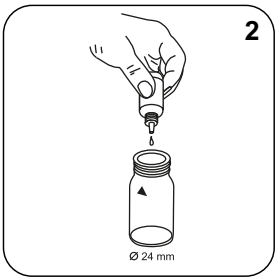
IT



Far sciogliere la/e pastiglia/e agitando.

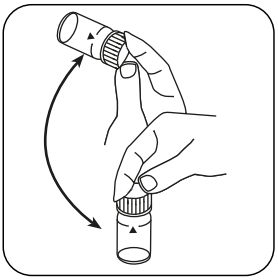


Tenere le boccette contagocce in posizione verticale e introdurre, premendo lentamente, gocce della stessa dimensione nella cuvetta.

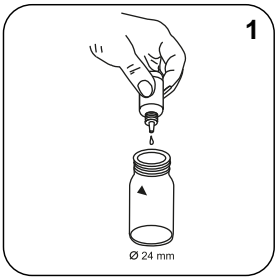


Aggiungere **2 gocce di Urea Reagenz 1**.

Chiudere la/e cuvetta/e.

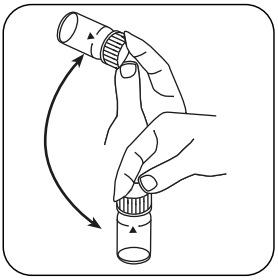


Miscelare il contenuto capovolgendo.

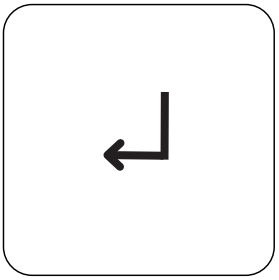


Aggiungere **1 gocce di Urea Reagenz 2**.

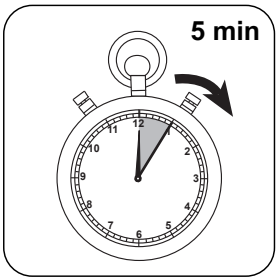
Chiudere la/e cuvetta/e.



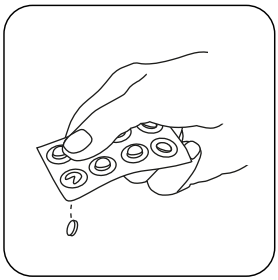
Miscelare il contenuto capovolgendo.



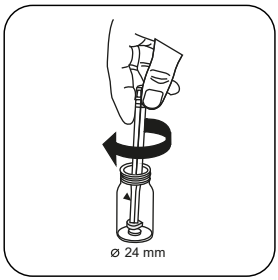
Premere il tasto **ENTER**.



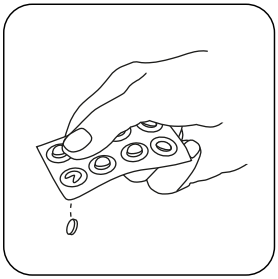
Attendere un **tempo di reazione di 5 minuto/i** .



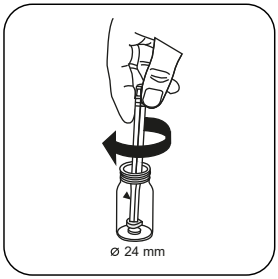
Aggiungere **una pastiglia AMMONIA No.1**.



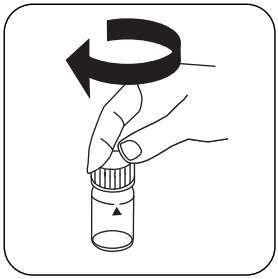
Frantumare la/e pastiglia/e con una leggera rotazione.



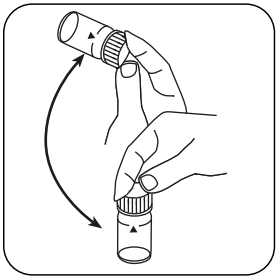
Aggiungere **una pastiglia AMMONIA No.2**.



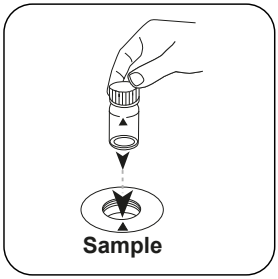
Frantumare la/e pastiglia/e con una leggera rotazione.



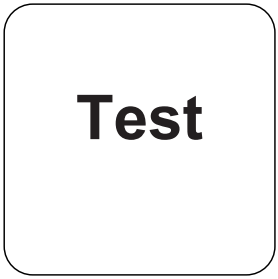
Chiudere la/e cuvetta/e.



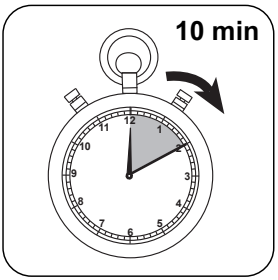
Far sciogliere la/e pastiglia/e agitando.



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



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



IT

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 Urea.

Metodo chimico

Indofenolo/ureasi

Appendice

Interferenze

Interferenze permanenti

- Le concentrazioni di urea maggiori di 2 mg/L possono dare risultati entro il range di misura. In questo caso il campione di acqua deve essere diluito con acqua priva di urea e la misurazione deve essere ripetuta (test di plausibilità).

Interferenze escludibili

- Una pastiglia di UREA PRETREAT elimina l'interferenza del cloro libero fino a 2 mg/L (due pastiglie fino a 4 mg/L, tre pastiglie fino a 6 mg/L).

Interferenze	da / [mg/L]
Cl_2	2

Riferimenti bibliografici

R.J. Creno, R.E. Wenk, P. Bohling, Automated Micromeasurement of Urea Using Urease and the Berthelot Reaction, American Journal of Clinical Pathology (1970), 54 (6), pagg. 828-832

[1] #Bacchetta compresa

Urea T M391

0.2 - 5 mg/L Urea[i)] Ur2

Indofenolo/ureasi

IT

Materiale

Materiale richiesto (in parte facoltativo):

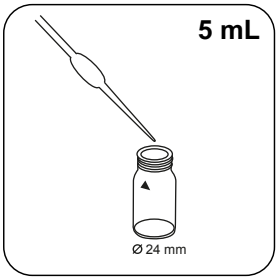
Reagenti	Unità di imballaggio	N. ordine
Reagente UREA 1	15 mL	459300
Reagente UREA 2	10 mL	459400
Ammonio No. 1	Pastiglia / 100	512580BT
Ammonio No. 1	Pastiglia / 250	512581BT
Ammonio No. 2	Pastiglia / 100	512590BT
Ammonio No. 2	Pastiglia / 250	512591BT
Set Ammonia No. 1/no. 2#	ciascuna 100	517611BT
Set Ammonia No. 1/no. 2#	ciascuna 250	517612BT
Polvere condizionante di ammonio	Polvere / 26 g	460170
Urea Pretreat (compensates for the interference of free Chlorine up to 2 mg/l)	Pastiglia / 100	516110BT
Set di reagenti UREA	1 set	517800BT

Preparazione

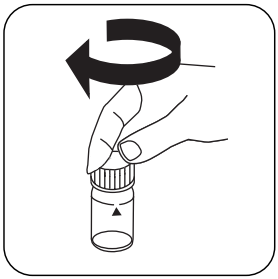
1. Nell'analisi di campioni di acqua di mare, prima di aggiungere la pastiglia AMMONIA No. 1 si deve aggiungere due cucchiai dosatore di polvere condizionante di ammonio al campione e quindi farla sciogliere con un movimento oscillatorio.

Esecuzione della rilevazione Urea con pastiglia e reagente liquido

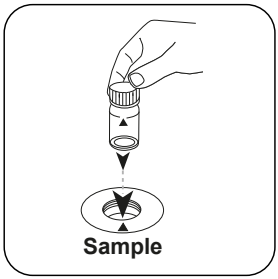
Selezionare il metodo nel dispositivo.



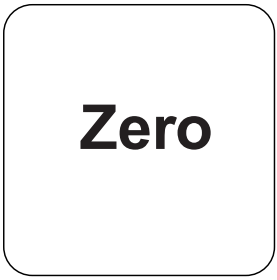
Immettere **5 mL di campione** e **5 mL di acqua demineralizzata** nella cuvetta del campione.



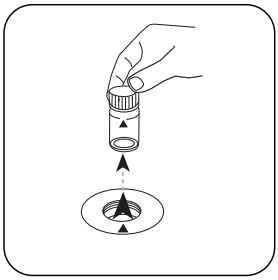
Chiudere la/e cuvetta/e.



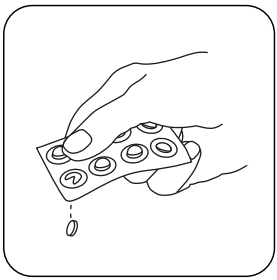
Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



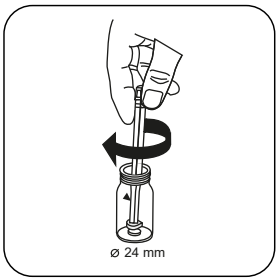
Premere il tasto **ZERO**.



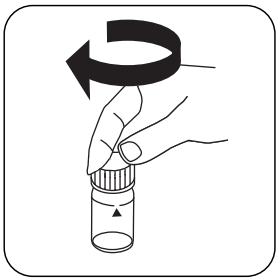
Prelevare la cuvetta dal vano di misurazione.



In presenza di cloro libero (HOCl) aggiungere **una pastiglia UREA PRETREAT**.

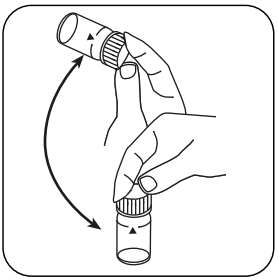


Frantumare la/e pastiglia/e con una leggera rotazione.

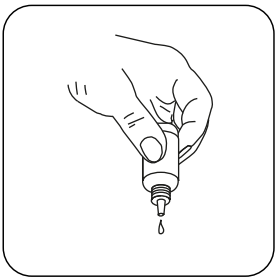


Chiudere la/e cuvetta/e.

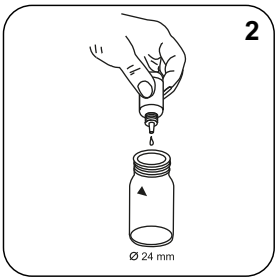
IT



Far sciogliere la/e pastiglia/e agitando.

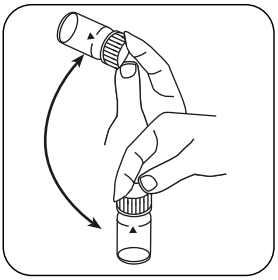


Tenere le boccette contagocce in posizione verticale e introdurre, premendo lentamente, gocce della stessa dimensione nella cuvetta.

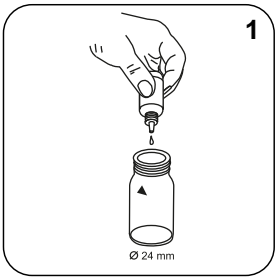


Aggiungere **2 gocce di UREA Reagenz 1**.

Chiudere la/e cuvetta/e.

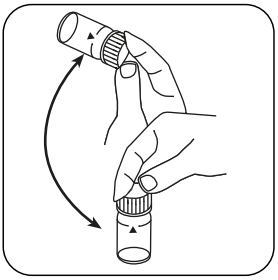


Miscelare il contenuto capovolgendo.

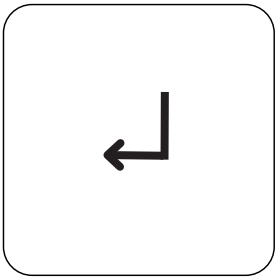


Aggiungere **1 gocce di UREA Reagenz 2**.

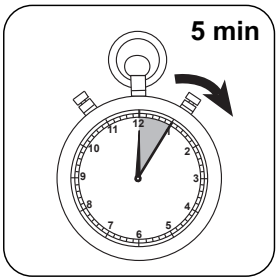
Chiudere la/e cuvetta/e.



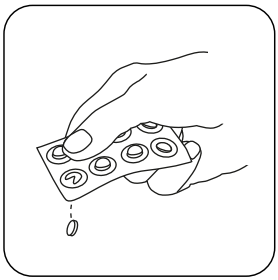
Miscelare il contenuto capovolgendo.



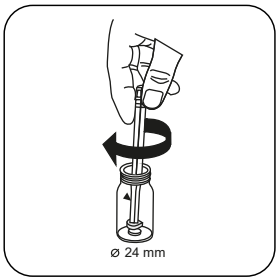
Premere il tasto **ENTER**.



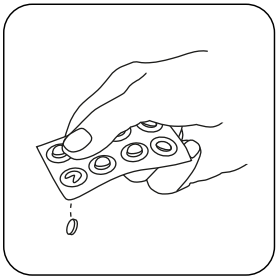
Attendere un **tempo di reazione di 5 minuto/i** .



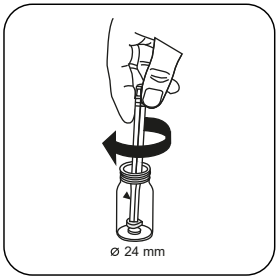
Aggiungere **una pastiglia AMMONIA No. 1**.



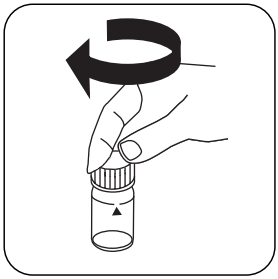
Frantumare la/e pastiglia/e con una leggera rotazione.



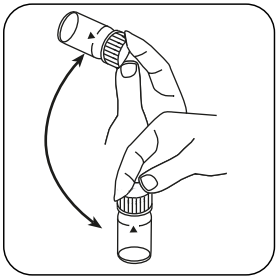
Aggiungere **una pastiglia AMMONIA No. 2**.



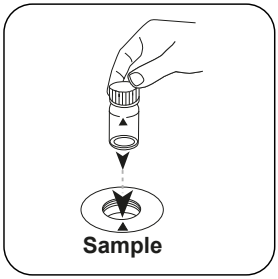
Frantumare la/e pastiglia/e con una leggera rotazione.



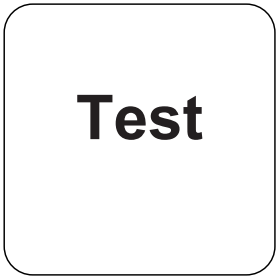
Chiudere la/e cuvetta/e.



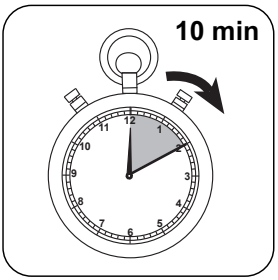
Far sciogliere la/e pastiglia/e agitando.



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



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



IT

Attendere un **tempo di reazione di 10 minuto/i** .

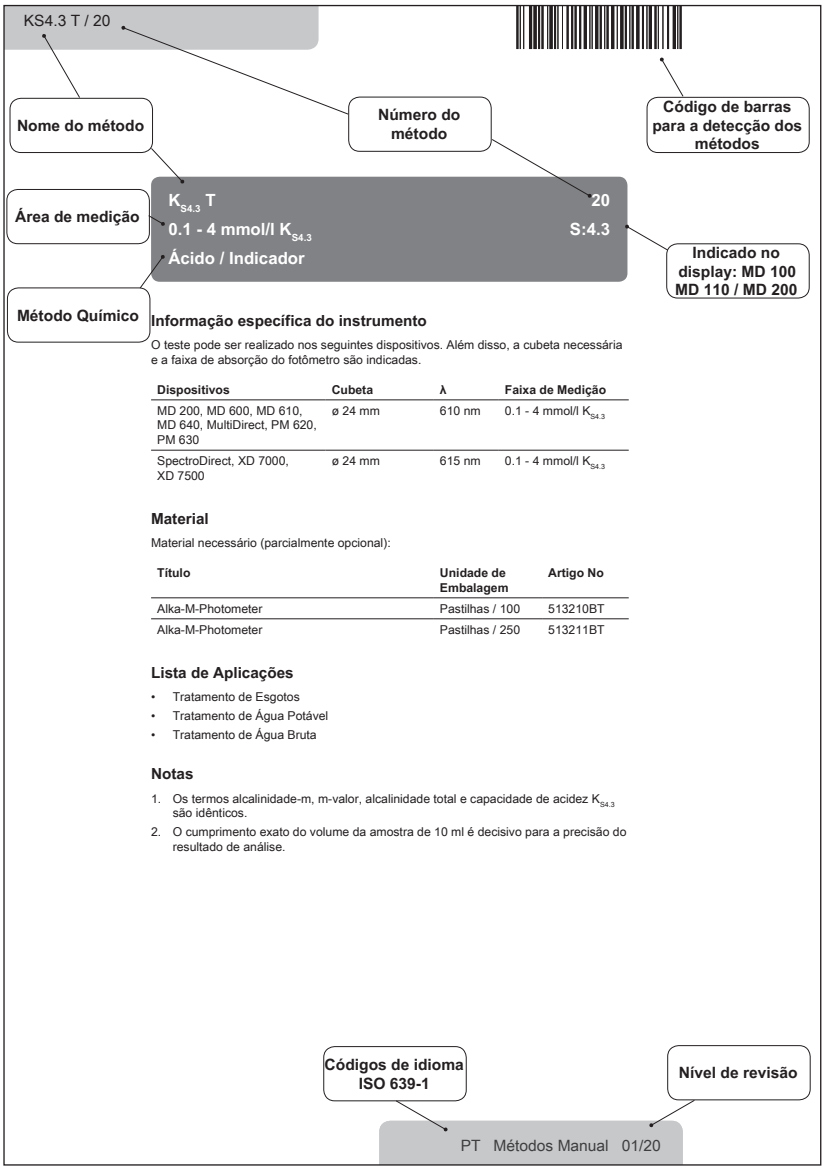
Allo scadere del tempo di reazione viene effettuata automaticamente la misurazione.

Sul display compare il risultato in mg/L di Urea.

Metodo chimico

Indofenolo/ureasi

[1] Elevato intervallo di misurazione grazie alla diluizione | [2] #Bacchetta compresa


KS4.3 T / 20
Nome do método
Número do método
Código de barras para a detecção dos métodos
Área de medição
$K_{S4.3}$ T
20
0.1 - 4 mmol/l $K_{S4.3}$
S:4.3
Ácido / Indicador
Indicado no display: MD 100 MD 110 / MD 200
Método Químico
Informação específica do instrumento
O teste pode ser realizado nos seguintes dispositivos. Além disso, a cubeta necessária e a faixa de absorção do fotômetro são indicadas.
Dispositivos | Cubeta | λ | Faixa de Medição
MD 200, MD 600, MD 610, MD 640, MultiDirect, PM 620, PM 630 | ø 24 mm | 610 nm | 0.1 - 4 mmol/l $K_{S4.3}$
SpectroDirect, XD 7000, XD 7500 | ø 24 mm | 615 nm | 0.1 - 4 mmol/l $K_{S4.3}$
Material
Material necessário (parcialmente opcional):
Título | Unidade de Embalagem | Artigo No
Alka-M-Photometer | Pastilhas / 100 | 513210BT
Alka-M-Photometer | Pastilhas / 250 | 513211BT
Lista de Aplicações
• Tratamento de Esgotos
• Tratamento de Água Potável
• Tratamento de Água Bruta
Notas
1. Os termos alcalinidade-m, m-valor, alcalinidade total e capacidade de acidez $K_{S4.3}$ são idênticos.
2. O cumprimento exato do volume da amostra de 10 ml é decisivo para a precisão do resultado de análise.
Códigos de idioma ISO 639-1
Nível de revisão
PT Métodos Manual 01/20

Efetuar a medição

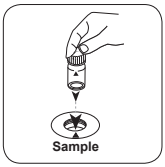
Realização da determinação Capacidade de acidez $K_{S4.3}$ com pastilha

Escolher o método no equipamento.

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

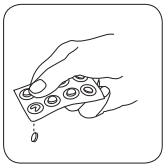
Encher a célula de 24 mm com **10 ml de amostra** .

Fechar a(s) célula(s).

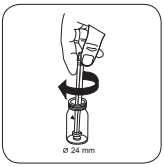


Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.

• • •



Pastilha ALKA-M-PHOTOMETER.



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

Fechar a(s) célula(s).

Ureia T M390

0.1 - 2.5 mg/L Urea Ur1

Indophenol / Urease

PT

Material

Material necessário (parcialmente opcional):

Reagentes	Unidade de Embalagem	Código do Produto
UREA Reagente 1	15 mL	459300
UREA Reagente 2	10 mL	459400
Amónia Não. 1	Pastilhas / 100	512580BT
Amónia Não. 1	Pastilhas / 250	512581BT
Amónia Não. 2	Pastilhas / 100	512590BT
Amónia Não. 2	Pastilhas / 250	512591BT
Set Amónio Não. 1/Não. 2#	cada 100	517611BT
Set Amónio Não. 1/Não. 2#	cada 250	517612BT
Pó de condicionamento de amónio	Pó / 26 g	460170
Pré-tratamento da ureia (compensates for the interference of free Chlorine up to 2 mg/l)	Pastilhas / 100	516110BT
Kit de reagentes UREA	1 Conjunto	517800BT

Preparação

1. A temperatura da amostra deve situar-se entre 20 °C e 30 °C.
2. A análise tem de ser efetuada o mais tardar uma hora após a recolha da amostra.
3. Na análise de amostras de água do mar deve se, antes da adição da pastilha Ammonia No. 1, introduzir na amostra duas colheres medida de pó de condicionamento de amónio e dissolver por agitação.

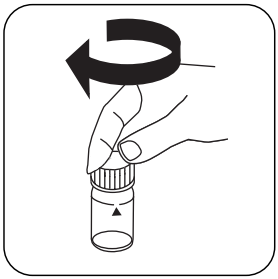
Notas

1. A pastilha AMMONIA No. 1 dissolve-se totalmente apenas depois da adição da pastilha AMMONIA No. 2.
2. O amónio e a cloramina são juntamente captados na determinação de ureia.

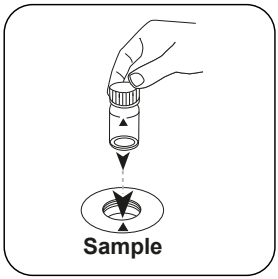
Realização da determinação Ureia com pastilha e reagente líquido

Escolher o método no equipamento.

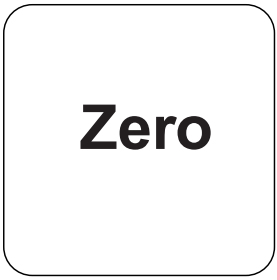
Encher a célula de 24 mm com **10 mL de amostra** .



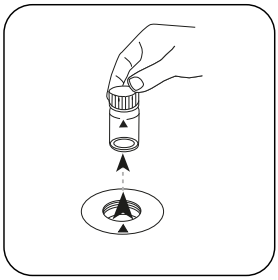
Fechar a(s) célula(s).



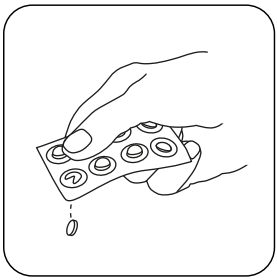
Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.



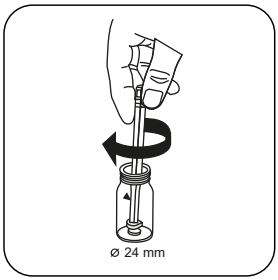
Premir a tecla **ZERO**.



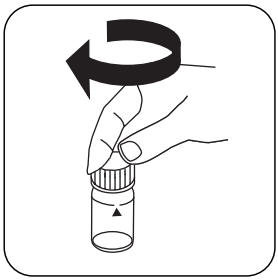
Retirar a célula do compartimento de medição.



Na presença de cloro livre (HOCl) adicionar **umas pastilha UREA PRETREAT**.

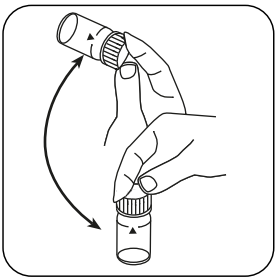


Esmagar a(s) pastilha(s) rodando ligeiramente.

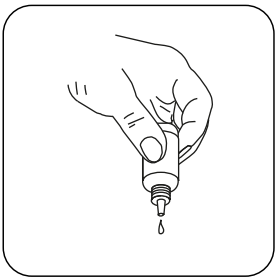


Fechar a(s) célula(s).

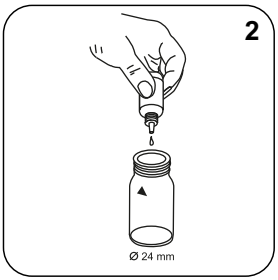
PT



Dissolver a(s) pastilha(s) girando.

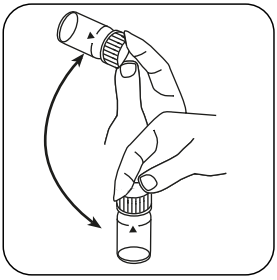


Manter os frascos conta gotas na vertical e pressionar lentamente para adicionar gotas de igual dimensão.

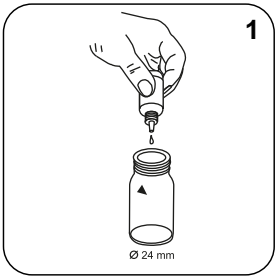


Adicionar **2 gotas Urea Reagenz 1**.

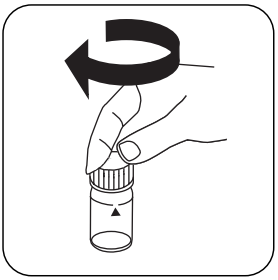
Fechar a(s) célula(s).



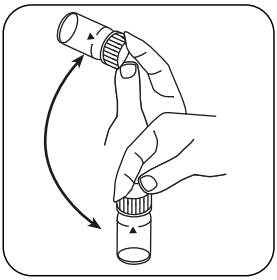
Misturar o conteúdo girando.



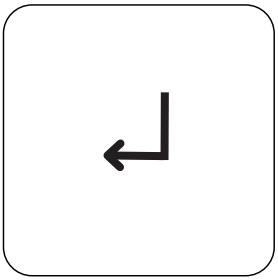
Adicionar **1 gotas Urea Reagenz 2**.



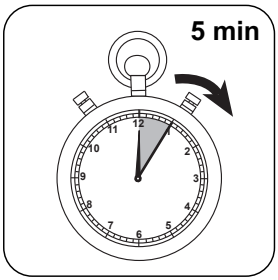
Fechar a(s) célula(s).



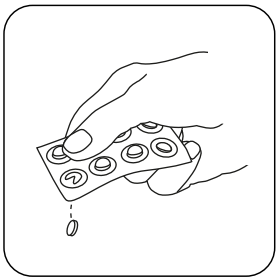
Misturar o conteúdo girando.



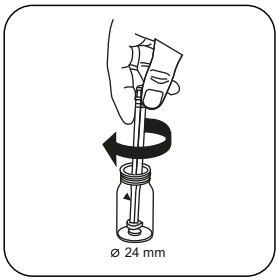
Premir a tecla **ENTER**.



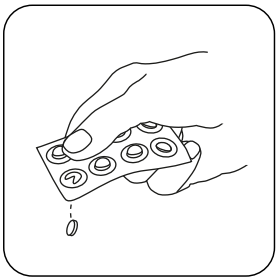
Aguardar **5 minuto(s) de tempo de reação**.



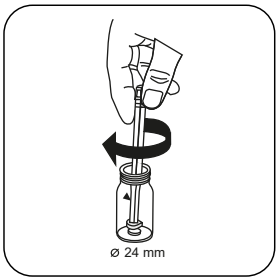
Pastilha AMMONIA No.1.



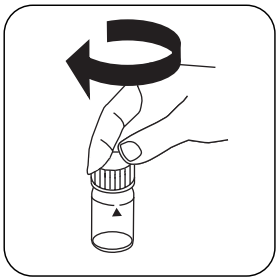
Esmagar a(s) pastilha(s) rodando ligeiramente.



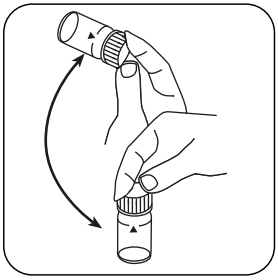
Pastilha AMMONIA No.2.



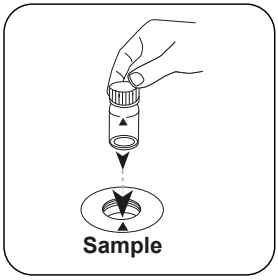
Esmagar a(s) pastilha(s) rodando ligeiramente.



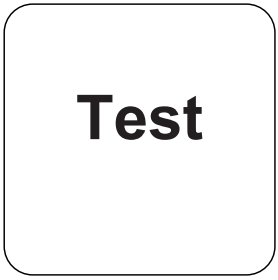
Fechar a(s) célula(s).



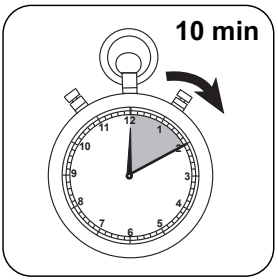
Dissolver a(s) pastilha(s) girando.



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



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



PT

Aguardar **10 minuto(s) de tempo de reação**.

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

No visor aparece o resultado em mg/L Uréia.

Método Químico

Indophenol / Urease

Apêndice

Texto de Interferências

Interferências Pesistentes

- Concentrações de ureia superiores a 2 mg/L podem causar resultados dentro da área de medição. Neste caso, deve diluir a amostra de água em água sem ureia e repetir a medição (teste de plausibilidade).

Interferências Removíveis

- Uma pastilha de UREA PRETREAT elimina a interferência do cloro livre até 2 mg/L (duas pastilhas até 4 mg/L, três pastilhas até 6 mg/L).

Interferências	a partir de / [mg/L]
Cl_2	2

Bibliografia

R.J. Creno, R.E. Wenk, P. Bohling, Automated Micromeasurement of Urea Using Urease and the Berthelot Reaction, American Journal of Clinical Pathology (1970), 54 (6), p. 828-832

[#]incluindo vareta de agitação

Ureia T M391

0.2 - 5 mg/L Urea[i)] Ur2

Indophenol / Urease

PT

Material

Material necessário (parcialmente opcional):

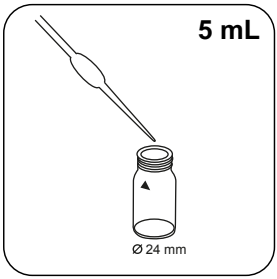
Reagentes	Unidade de Embalagem	Código do Produto
UREA Reagente 1	15 mL	459300
UREA Reagente 2	10 mL	459400
Amónia Não. 1	Pastilhas / 100	512580BT
Amónia Não. 1	Pastilhas / 250	512581BT
Amónia Não. 2	Pastilhas / 100	512590BT
Amónia Não. 2	Pastilhas / 250	512591BT
Set Amónio Não. 1/Não. 2[#]	cada 100	517611BT
Set Amónio Não. 1/Não. 2[#]	cada 250	517612BT
Pó de condicionamento de amónio	Pó / 26 g	460170
Pré-tratamento da ureia (compensates for the interference of free Chlorine up to 2 mg/l)	Pastilhas / 100	516110BT
Kit de reagentes UREA	1 Conjunto	517800BT

Preparação

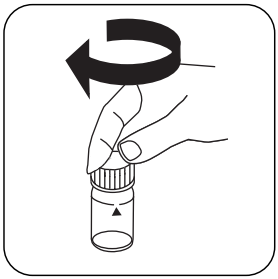
1. Na análise de amostras de água do mar deve se, antes da adição da pastilha Ammonia No. 1, introduzir na amostra duas colheres medida de pó de condicionamento de amónio e dissolver por agitação.

Realização da determinação Ureia com pastilha e reagente líquido

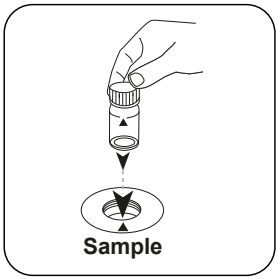
Escolher o método no equipamento.



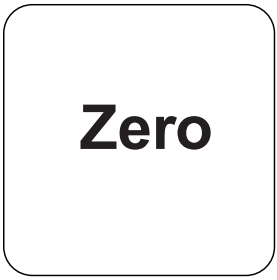
Adicionar **5 mL de amostra** e **5 mL de água desmineralizada** à célula de amostra.



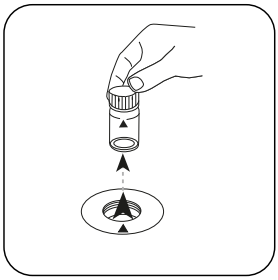
Fechar a(s) célula(s).



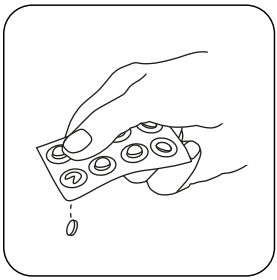
Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.



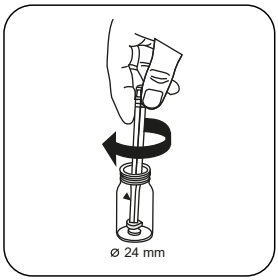
Premir a tecla **ZERO**.



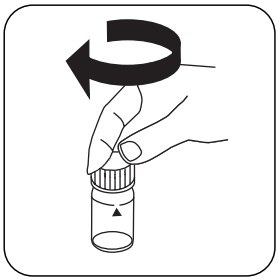
Retirar a célula do compartimento de medição.



Na presença de cloro livre (HOCl) adicionar **umas pastilha UREA PRETREAT**.

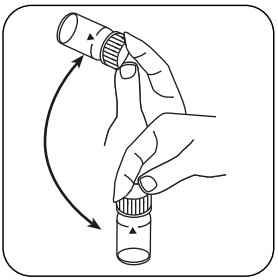


Esmagar a(s) pastilha(s) rodando ligeiramente.

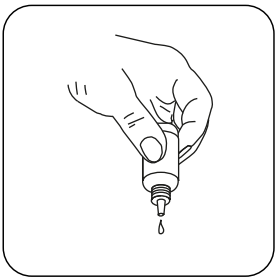


Fechar a(s) célula(s).

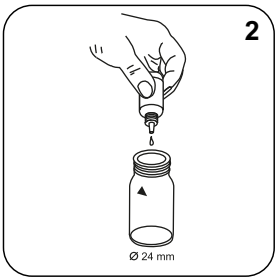
PT



Dissolver a(s) pastilha(s) girando.

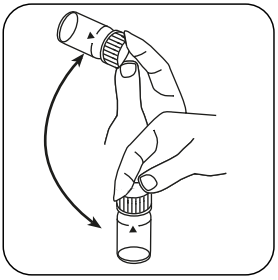


Manter os frascos conta gotas na vertical e pressionar lentamente para adicionar gotas de igual dimensão.

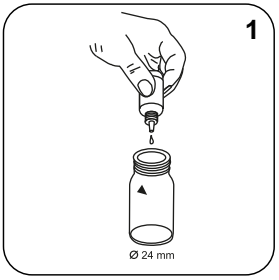


Adicionar **2 gotas UREA Reagenz 1**.

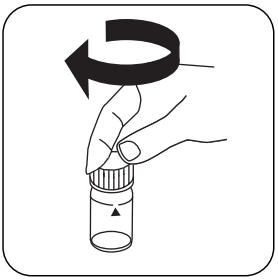
Fechar a(s) célula(s).



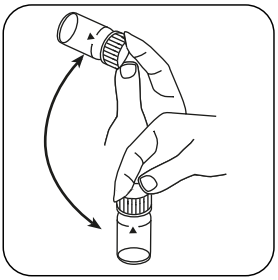
Misturar o conteúdo girando.



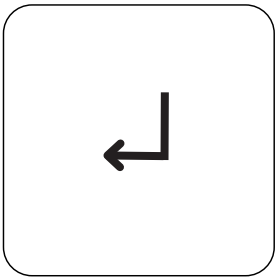
Adicionar **1 gotas UREA Reagenz 2**.



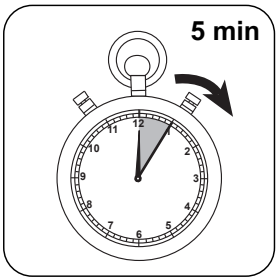
Fechar a(s) célula(s).



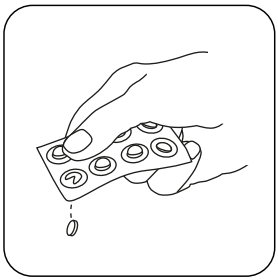
Misturar o conteúdo girando.



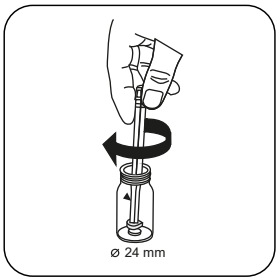
Premir a tecla **ENTER**.



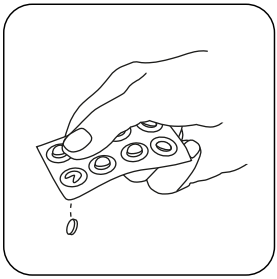
Aguardar **5 minuto(s) de tempo de reação**.



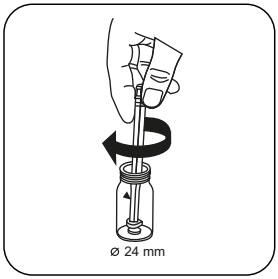
Pastilha AMMONIA No. 1.



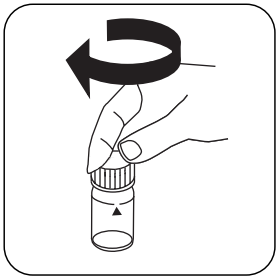
Esmagar a(s) pastilha(s) rodando ligeiramente.



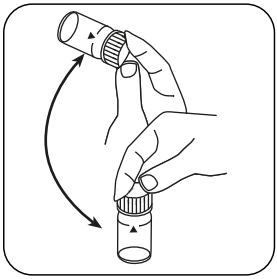
Pastilha AMMONIA No. 2.



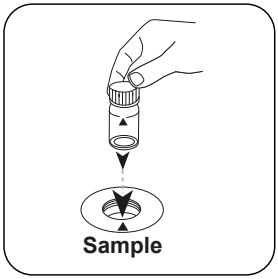
Esmagar a(s) pastilha(s) rodando ligeiramente.



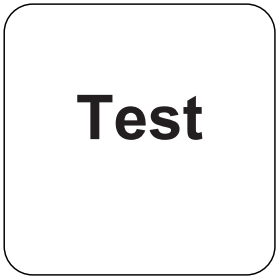
Fechar a(s) célula(s).



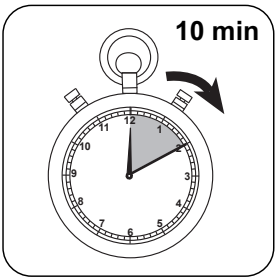
Dissolver a(s) pastilha(s) girando.



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



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



PT

Aguardar **10 minuto(s) de tempo de reação**.

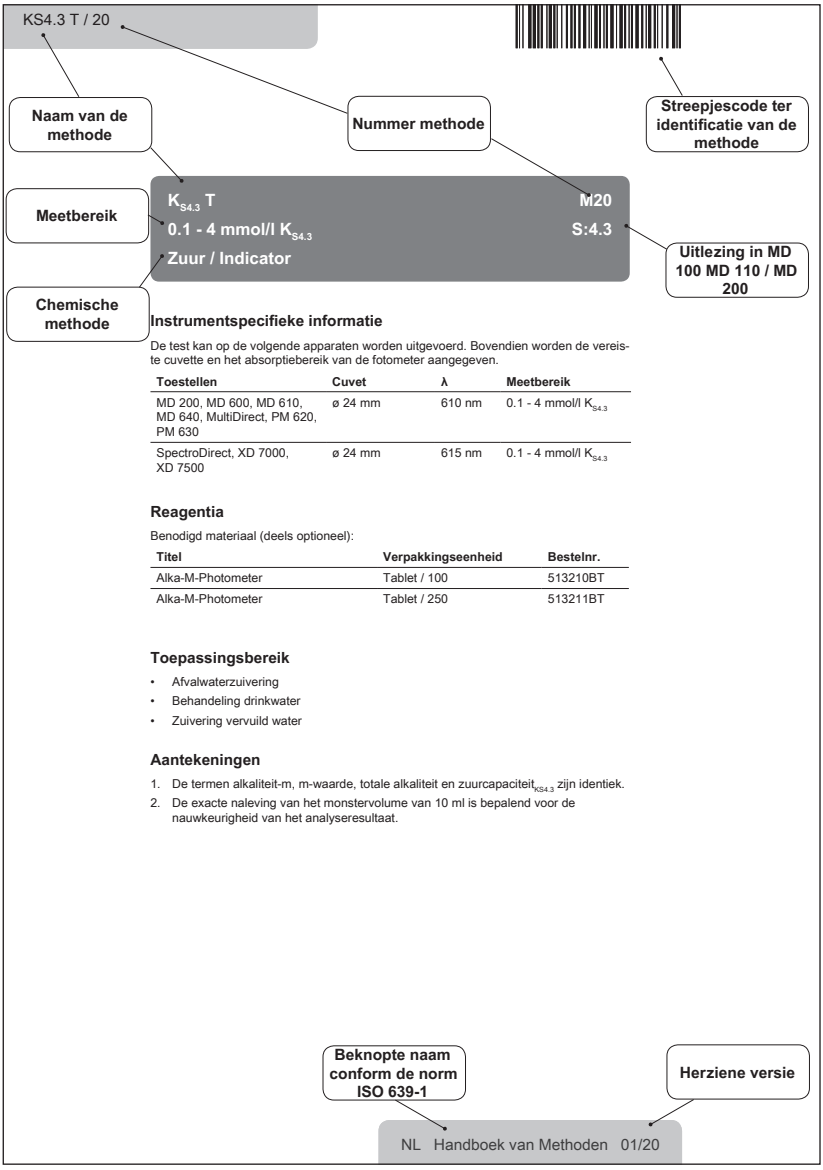
Decorrido o tempo de reação, a medição é efetuada automaticamente.

No visor aparece o resultado em mg/L Uréia.

Método Químico

Indophenol / Urease

[9]Faixa de medição alta devido à diluição | #incluindo vareta de agitação



Instrumentspecifieke informatie

De test kan op de volgende apparaten worden uitgevoerd. Bovendien worden de vereiste cuvette en het absorptiebereik van de fotometer aangegeven.

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

Reagentia

Benodigd materiaal (deels optioneel):

Titel	Verpakkingseenheid	Bestelnr.
Alka-M-Photometer	Tablet / 100	513210BT
Alka-M-Photometer	Tablet / 250	513211BT

Toepassingsbereik

- Afvalwaterzuivering
- Behandeling drinkwater
- Zuivering vervuild water

Aantekeningen

1. De termen alkaliteit-m, m-waarde, totale alkaliteit en zuurcapaciteit$_{KS4.3}$ zijn identiek.
2. De exacte naleving van het monstervolume van 10 ml is bepalend voor de nauwkeurigheid van het analyseresultaat.

Uitvoering van de meting

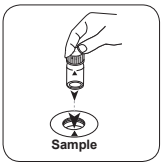
Uitvoering van de bepaling Zuurcapaciteit $K_{S4.3}$ met tablet

De methode in het apparaat selecteren.

Voor deze methode moet bij de volgende apparaten geen nulmeting worden uitgevoerd:
XD 7000, XD 7500

Spoelbakje van 24 mm met **10 ml staal** vullen.

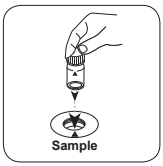
De spoelbakjes afsluiten.



Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.

• • •

Tabletten oplossen door om te draaien



Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.

De toets **TEST** (XD: **START**) indrukken.

De display toont het resultaat als Zuurcapaciteit $K_{S4.3}$.

Ureum T M390

0.1 - 2.5 mg/L Urea Ur1

Indofenol / Urease

NL

Reagentia

Benodigd materiaal (deels optioneel):

Reagentia	Verpakkingseenheid	Bestelnr.
UREUM reagens 1	15 mL	459300
UREUM reagens 2	10 mL	459400
Ammonia Nr. 1	Tablet / 100	512580BT
Ammonia Nr. 1	Tablet / 250	512581BT
Ammonia Nr. 2	Tablet / 100	512590BT
Ammonia Nr. 2	Tablet / 250	512591BT
Set ammonia nr. 1/Nr. 2#	per 100	517611BT
Set ammonia nr. 1/Nr. 2#	per 250	517612BT
Ammonium conditioneringspoeder	Poeder / 26 g	460170
Urea Pretreat (compenseert de interferentie van vrij chloor tot 2 mg / l)	Tablet / 100	516110BT
UREA reagentia set	1 Zin	517800BT

Voorbereiding

1. De bemonsteringstemperatuur moet tussen 20 en 30 °C liggen.
2. Voer de analyse uiterlijk één uur na de bemonstering uit.
3. Bij de analyse van zeewatermonsters moet voor toediening van het ammoniak-nr. 1 tablet, twee maatlepels ammoniumconditioneringspoeder aan het monster worden toegevoegd en door roteren opgelost.

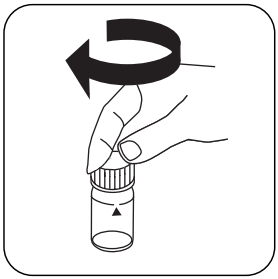
Aantekeningen

1. Het AMMONIA-nr. 1 tablet lost pas volledig op na toevoeging van AMMONIA-nr. 2 tablet.
2. Ammonium en chlooraminen zijn inbegrepen in de bepaling van ureum.

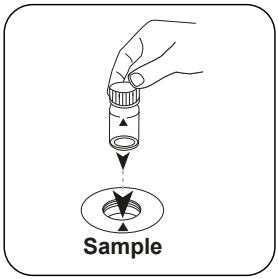
Uitvoering van de bepaling Ureum met tablet en vloeibaar reagens

De methode in het apparaat selecteren.

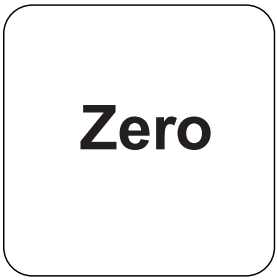
Spoelbakje van 24 mm met **10 mL staal** vullen.



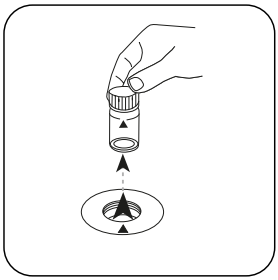
De spoelbakjes afsluiten.



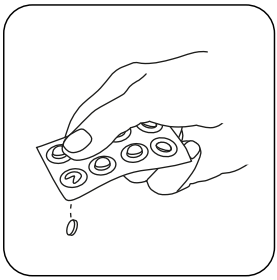
Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.



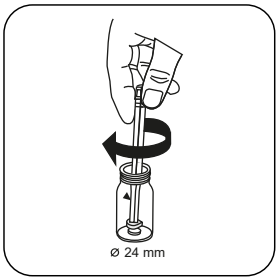
De toets **NUL** indrukken.



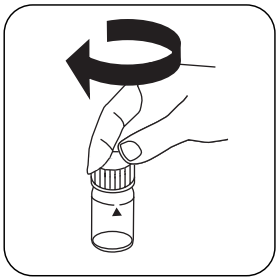
Het spoelbakje uit de meetschacht nemen.



Bij de aanwezigheid van vrij chloor (HOCl) **een UREA PRETREATtablet** toevoegen.

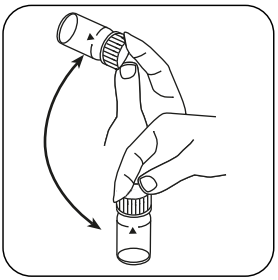


De tabletten onder lichte rotatie verpletteren.

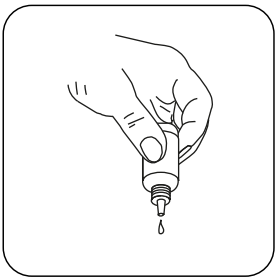


De spoelbakjes afsluiten.

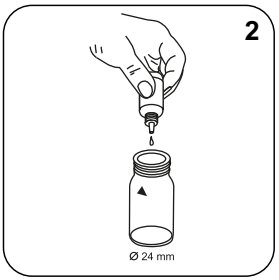
NL



Tabletten oplossen door om te draaien

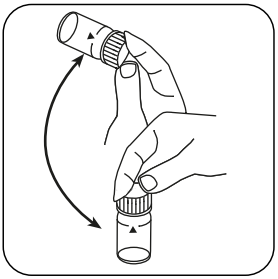


De druppelflessen verticaal houden en even grote druppels toevoegen door langzaam te drukken.

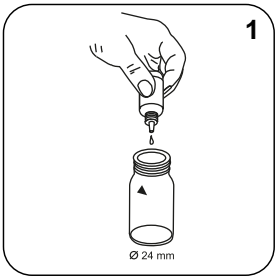


2 druppels Ureum reagens 1 toevoegen.

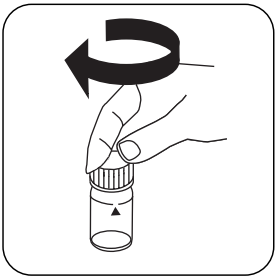
De spoelbakjes afsluiten.



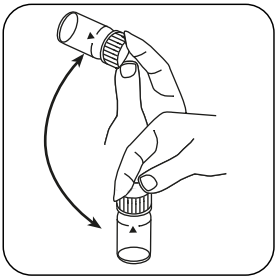
De inhoud mengen door om te draaien.



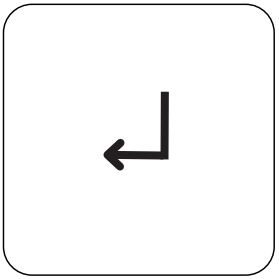
1 druppels Ureum reagens 2 toevoegen.



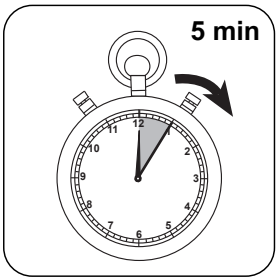
De spoelbakjes afsluiten.



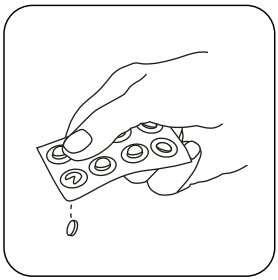
De inhoud mengen door om te draaien.



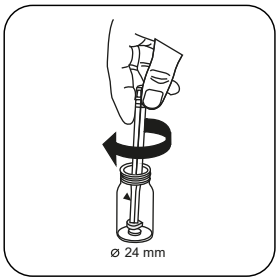
De toets **ENTER** indrukken.



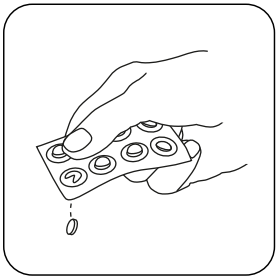
De reactietijd van 5 minuten afwachten.



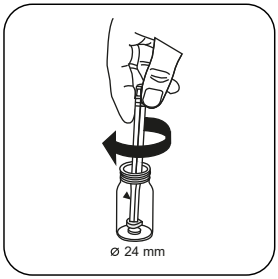
Een AMMONIA Nr. 1 tablet toevoegen.



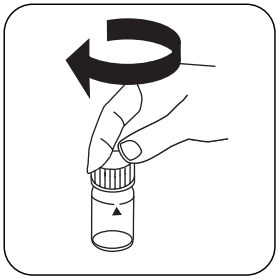
De tabletten onder lichte rotatie verpletteren.



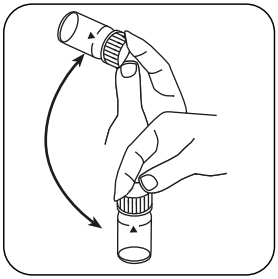
Een AMMONIA Nr. 2 tablet toevoegen.



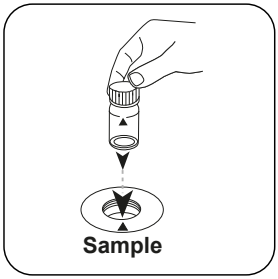
De tabletten onder lichte rotatie verpletteren.



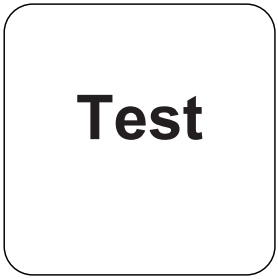
De spoelbakjes afsluiten.



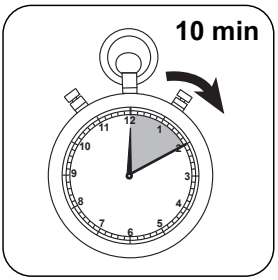
Tabletten oplossen door om te draaien



Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.



De toets **TEST** (XD: **START**) indrukken.



NL

De reactietijd van
10 minuten afwachten.

Na afloop van de reactietijd wordt de meting automatisch uitgevoerd.

De display toont het resultaat in mg/L Ureum.

Chemische methode

Indofenol / Urease

Aanhangsel

Verstoringen

Permanente verstoringen

- Concentraties boven 2 mg/L ureum kunnen leiden tot resultaten binnen het meetbereik. Verdun in dit geval het watermonster met ureumvrij water en herhaal de meting (plausibiliteitstest).

Uit te sluiten verstoringen

- Eén UREA PRETREAT-tablet elimineert de verstoring van vrij chloor tot 2 mg/L (twee tabletten tot 4 mg/L, drie tabletten tot 6 mg/L).

Verstoringen	verstoort vanaf
Cl_2	2

Literatuurverwijzing

R.J. Creno, R.E. Wenk, P. Bohling, Automated Micromeasurement of Urea Using Urease and the Berthelot Reaction, American Journal of Clinical Pathology (1970), 54 (6), blz. 828-832

[#] met inbegrip van de mengstaaf

Ureum T M391

0.2 - 5 mg/L Urea[i)] Ur2

Indofenol / Urease

NL

Reagentia

Benodigd materiaal (deels optioneel):

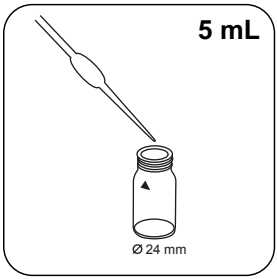
Reagentia	Verpakkingseenheid	Bestelnr.
UREUM reagens 1	15 mL	459300
UREUM reagens 2	10 mL	459400
Ammonia Nr. 1	Tablet / 100	512580BT
Ammonia Nr. 1	Tablet / 250	512581BT
Ammonia Nr. 2	Tablet / 100	512590BT
Ammonia Nr. 2	Tablet / 250	512591BT
Set ammonia nr. 1/Nr. 2#	per 100	517611BT
Set ammonia nr. 1/Nr. 2#	per 250	517612BT
Ammonium conditioneringspoeder	Poeder / 26 g	460170
Urea Pretreat (compenseert de interferentie van vrij chloor tot 2 mg / l)	Tablet / 100	516110BT
UREA reagentia set	1 Zin	517800BT

Voorbereiding

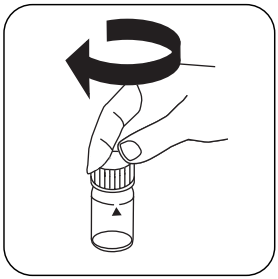
1. Bij de analyse van zeewatermonsters moet voor toediening van het ammoniak-nr. 1 tablet, twee maatlepels ammoniumconditioneringspoeder aan het monster worden toegevoegd en door roteren opgelost.

Uitvoering van de bepaling Ureum met tablet en vloeibaar reagens

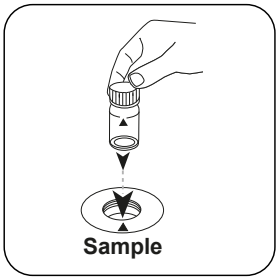
De methode in het apparaat selecteren.



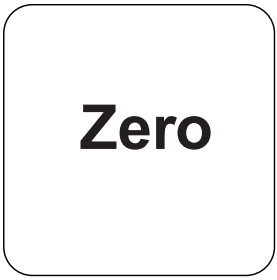
5 mL staal en **5 mL gedeïoniseerd water** aan het staalspoelbakje toevoegen.



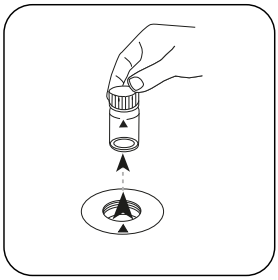
De spoelbakjes afsluiten.



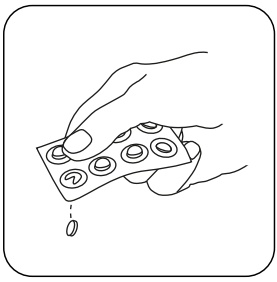
Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.



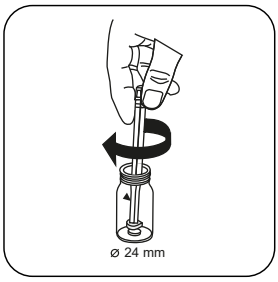
De toets **NUL** indrukken.



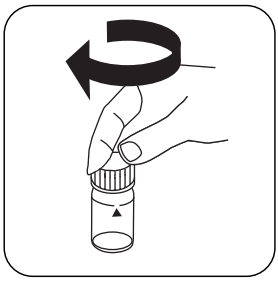
Het spoelbakje uit de meetschacht nemen.



Bij de aanwezigheid van vrij chloor (HOCl) **een UREA PRETREATtablet** toevoegen.

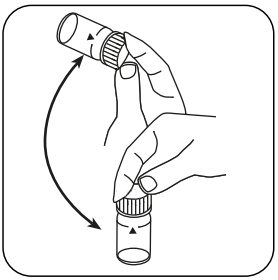


De tabletten onder lichte rotatie verpletteren.

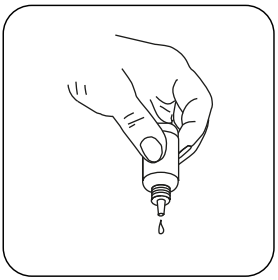


De spoelbakjes afsluiten.

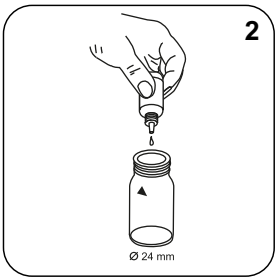
NL



Tabletten oplossen door om te draaien

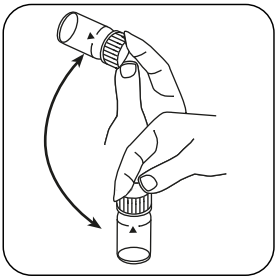


De druppelflessen verticaal houden en even grote druppels toevoegen door langzaam te drukken.

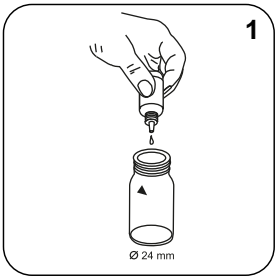


2 druppels UREUM reagens 1 toevoegen.

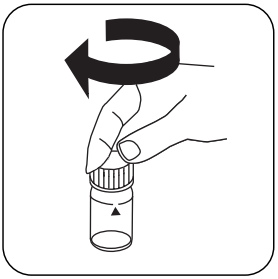
De spoelbakjes afsluiten.



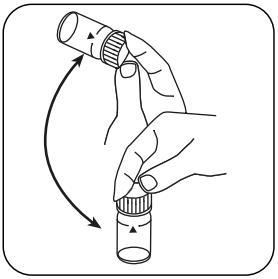
De inhoud mengen door om te draaien.



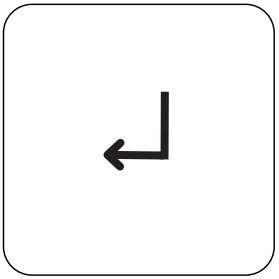
1 druppels UREUM reagens 2 toevoegen.



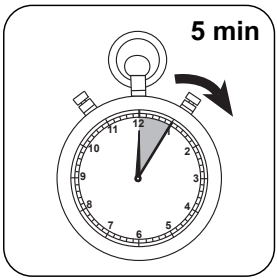
De spoelbakjes afsluiten.



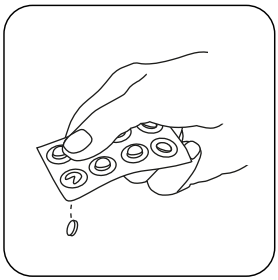
De inhoud mengen door om te draaien.



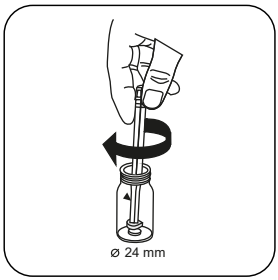
De toets **ENTER** indrukken.



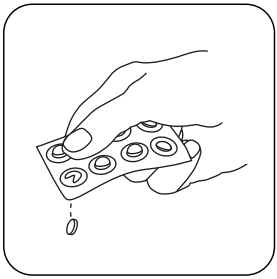
De reactietijd van 5 minuten afwachten.



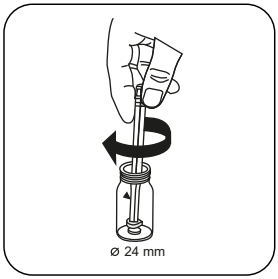
Een AMMONIA Nr. 1 tablet toevoegen.



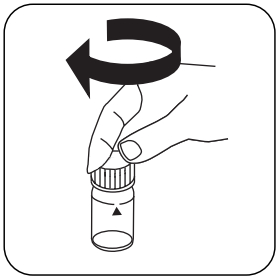
De tabletten onder lichte rotatie verpletteren.



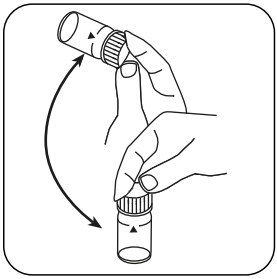
Een AMMONIA Nr. 2 tablet toevoegen.



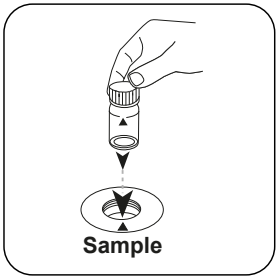
De tabletten onder lichte rotatie verpletteren.



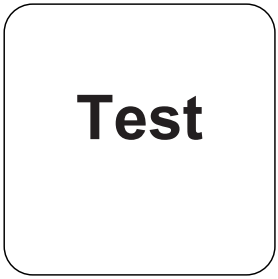
De spoelbakjes afsluiten.



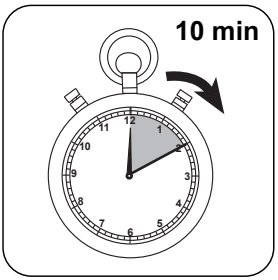
Tabletten oplossen door om te draaien



Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.



De toets **TEST** (XD: **START**) indrukken.



NL

De reactietijd van
10 minuten afwachten.

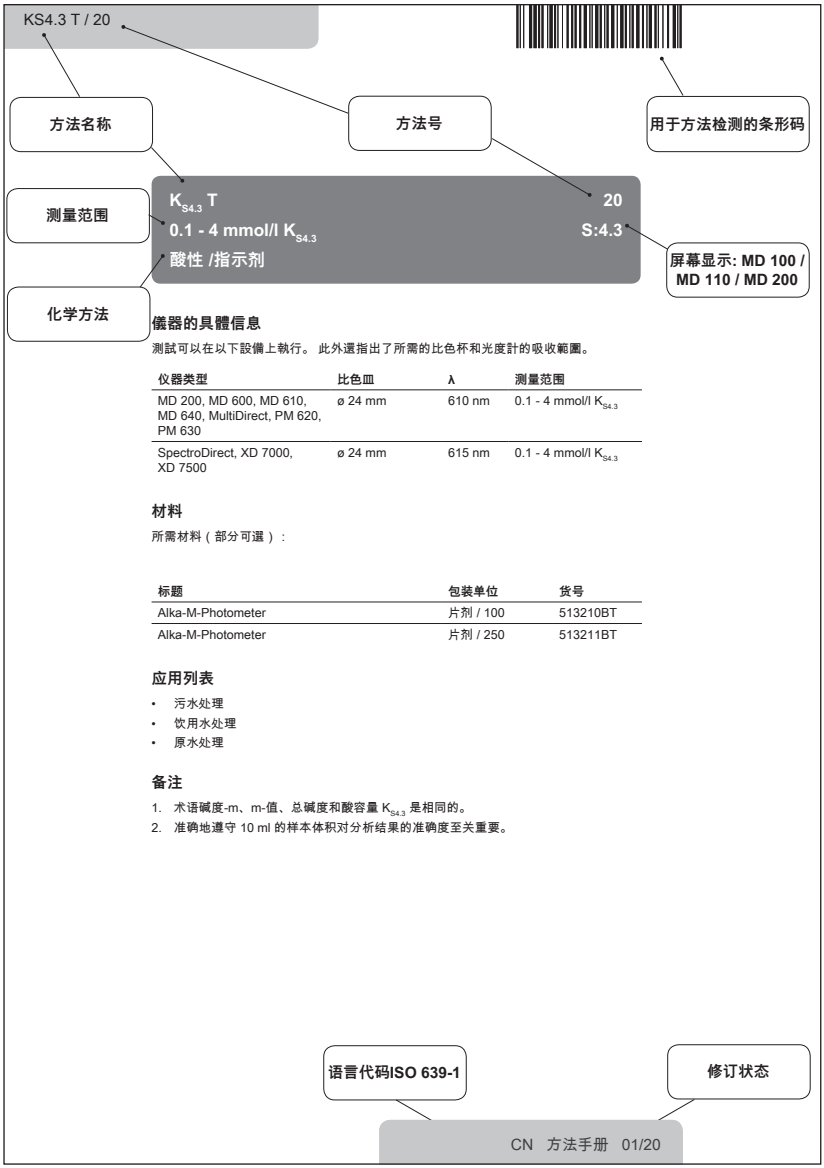
Na afloop van de reactietijd wordt de meting automatisch uitgevoerd.

De display toont het resultaat in mg/L Ureum.

Chemische methode

Indofenol / Urease

[i] hoog meetbereik als gevolg van verdunning | [#] met inbegrip van de mengstaaf



儀器的具體信息

測試可以在以下設備上執行。 此外還指出了所需的比色杯和光度計的吸收範圍。

仪器类型	比色皿	λ	测量范围
MD 200, MD 600, MD 610, MD 640, MultiDirect, PM 620, PM 630	ø 24 mm	610 nm	0.1 - 4 mmol/l $K_{S4.3}$
SpectroDirect, XD 7000, XD 7500	ø 24 mm	615 nm	0.1 - 4 mmol/l $K_{S4.3}$

材料

所需材料（部分可選）：

标题	包装单位	货号
Alka-M-Photometer	片剂 / 100	513210BT
Alka-M-Photometer	片剂 / 250	513211BT

应用列表

- 污水处理
- 饮用水处理
- 原水处理

备注

1. 术语碱度-m、m-值、总碱度和酸容量 $K_{S4.3}$ 是相同的。
2. 准确地遵守 10 ml 的样本体积对分析结果的准确度至关重要。

KS4.3 T / 20

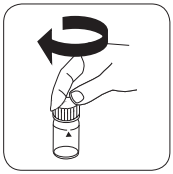
开始测量

进行测定 $K_{S4.3}$ 片剂酸容量

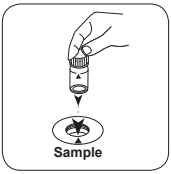
选择设备中的方法。

对于这种方法，在以下设备上不能进行 ZERO 测量：XD 7000, XD 7500

用 **10 ml** 样本填充 24 mm 比色杯。

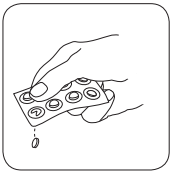


密封比色杯。

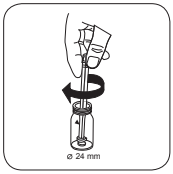


将样本比色杯放入测量轴中。注意定位。

• • •



加入 **ALKA-M-PHOTOMETER** 片剂。



用轻微的扭转压碎片剂。

密封比色杯。

CN 方法手册 01/20

T 尿素 M390

0.1 - 2.5 mg/L Urea Ur1

靛酚/ 尿酸

材料
所需材料（部分可選）：

ZH

试剂	包装单位	货号
尿素试剂 1	15 mL	459300
尿素试剂 2	10 mL	459400
氨 No.1	片剂 / 100	512580BT
氨 No.1	片剂 / 250	512581BT
氨 No.2	片剂 / 100	512590BT
氨 No.2	片剂 / 250	512591BT
套件氨 No.1/No.2#	各100次	517611BT
套件氨 No.1/No.2#	各250次	517612BT
铵调制粉	粉剂 / 26 g	460170
尿素预处理 (compensates for the interference of free Chlorine up to 2 mg/l)	片剂 / 100	516110BT
尿素试剂套件	1 组	517800BT

准备

1. 样本温度必须在 20 °C 至 30 °C 之间。
2. 取样后不得迟于 1 小时进行分析。
3. 分析海水样本时必须在加入 AMMONIA No.1 片剂之前将两勺铵调节粉末加入到样本中并通过晃动来溶解。

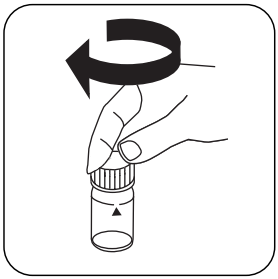
备注

1. AMMONIA No.1 片剂只有在加入 AMMONIA No.2 片剂后才能完全溶解。
2. 尿素测定中包括铵和氯胺。

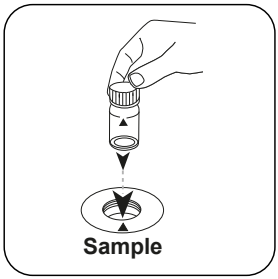
进行测定 尿素片剂和液剂

选择设备中的方法。

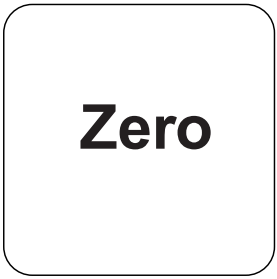
用 **10 mL 样本**填充 24 mm 比色杯。



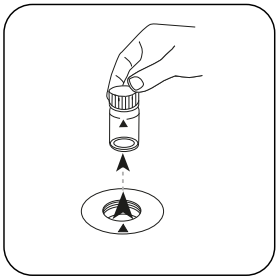
密封比色杯。



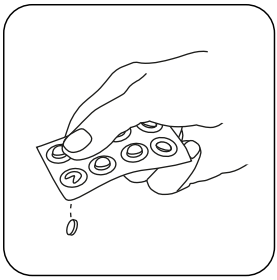
将**样本比色杯**放入测量轴中。注意定位。



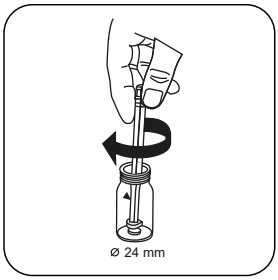
按下 **ZERO** 按钮。



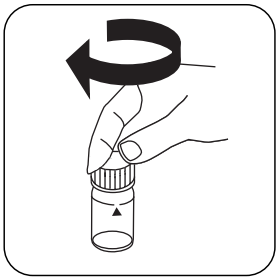
从测量轴上取下比色杯。



在游离氯（HOCl）的存在下，加入**一片 UREA PRETREAT 片剂**。

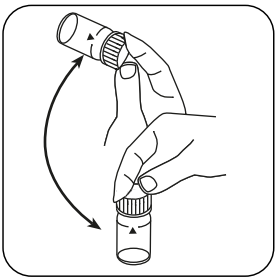


用轻微的扭转压碎片剂。

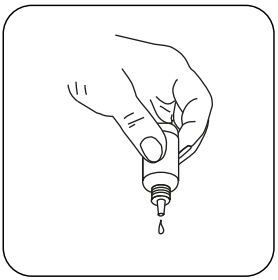


密封比色杯。

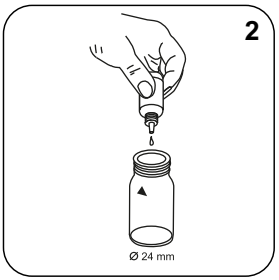
ZH



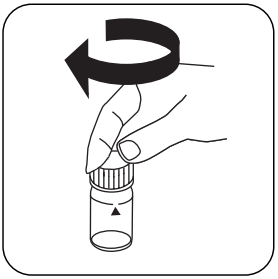
通过旋转溶解片剂。



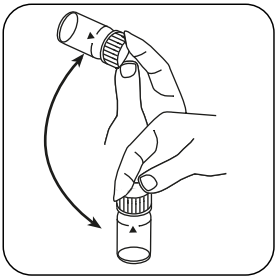
垂直握住滴瓶，慢慢加入相同大小的滴剂。



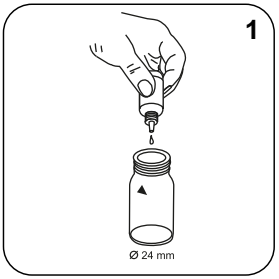
加入 **2 滴 Urea Reagenz 1**。



密封比色杯。

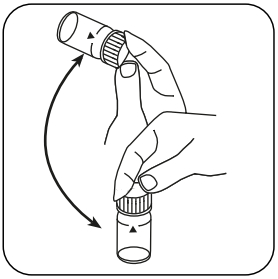


通过旋转混合内容物。

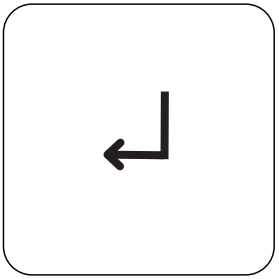


加入 **1 滴 Urea Reagenz 2**。

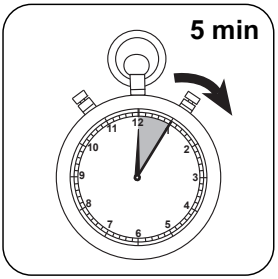
密封比色杯。



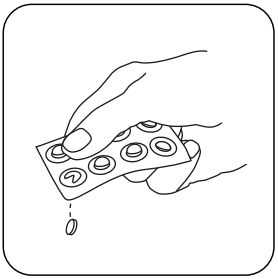
通过旋转混合内容物。



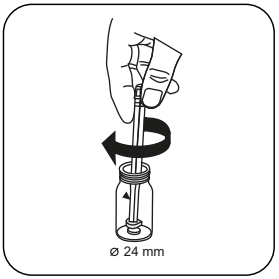
按下 **ENTER** 按钮。



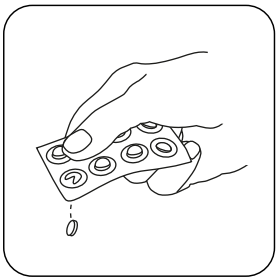
等待 **5 分钟反应时间** 。



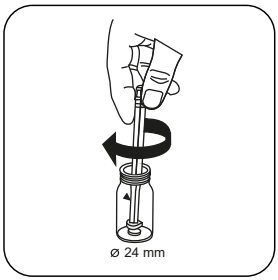
加入 **AMMONIA No.1 片剂** 。



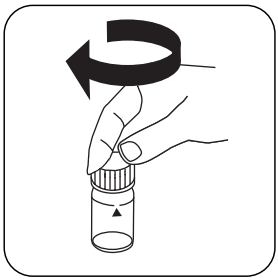
用轻微的扭转压碎片剂。



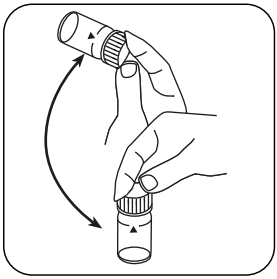
加入 **AMMONIA No.2 片剂**。



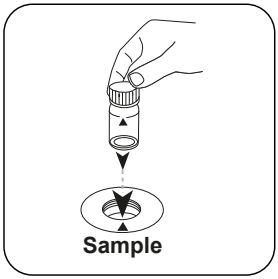
用轻微的扭转压碎片剂。



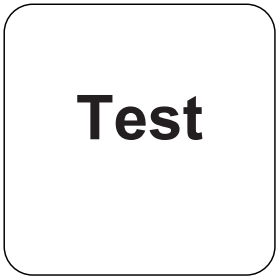
密封比色杯。



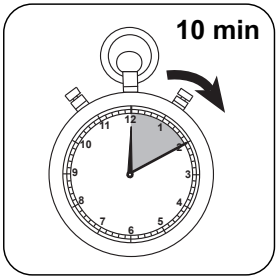
通过旋转溶解片剂。



将**样本比色杯**放入测量轴中。注意定位。



按下 **TEST** (XD: **START**) 按钮。



等待 **10 分钟反应时间**。

反应时间结束后，自动进行测量。

结果在显示屏上显示为 mg / l 尿素。

化学方法

靛酚/ 尿酸

附錄

ZH

干扰说明

持续干扰

- 高于 2 mg/L 尿素的浓度可导致测量范围内的结果。在这种情况下应用不含尿素的水稀释水样，并重复测量（可信度测试）。

可消除干扰

- 一片 UREA PRETREAT 片剂可消除高达 2 mg/L 游离氯的干扰（两片高达 4 mg/L，三片高达 6 mg/L）。

干擾	從/ [mg/l]
Cl_2	2

参考文献

R.J.Creno, R.E.Wenk, P. Bohling, Automated Micromeasurement of Urea Using Urease and the Berthelot Reaction, American Journal of Clinical Pathology (1970), 54 (6), p. 828-832

i含搅拌棒, 10cm

T 尿素 M391

0.2 - 5 mg/L Urea[i)] Ur2

靛酚/ 尿酸

材料
所需材料（部分可選）：

ZH

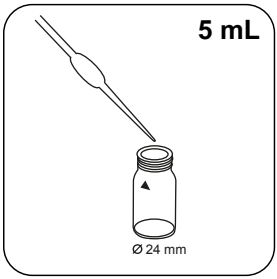
试剂	包装单位	货号
尿素试剂 1	15 mL	459300
尿素试剂 2	10 mL	459400
氨 No.1	片剂 / 100	512580BT
氨 No.1	片剂 / 250	512581BT
氨 No.2	片剂 / 100	512590BT
氨 No.2	片剂 / 250	512591BT
套件氨 No.1/No.2#	各100次	517611BT
套件氨 No.1/No.2#	各250次	517612BT
铵调制粉	粉剂 / 26 g	460170
尿素预处理 (compensates for the interference of free Chlorine up to 2 mg/l)	片剂 / 100	516110BT
尿素试剂套件	1 组	517800BT

准备

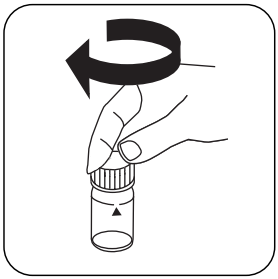
1. 分析海水样本时必须在加入 AMMONIA No.1 片剂之前将两勺铵调节粉末加入到样本中并通过晃动来溶解。

进行测定 尿素片剂和液剂

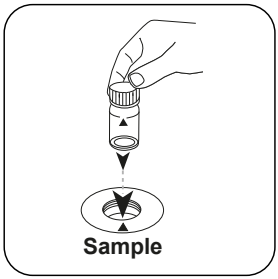
选择设备中的方法。



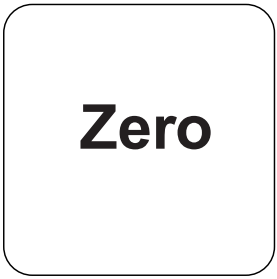
添加 **5 mL 样本**和 **5 mL 去离子水**到样本比色杯中。



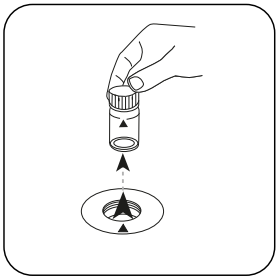
密封比色杯。



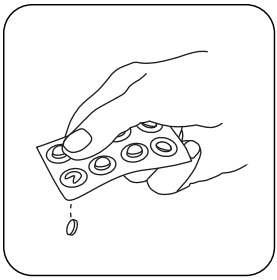
将**样本比色杯**放入测量轴中。注意定位。



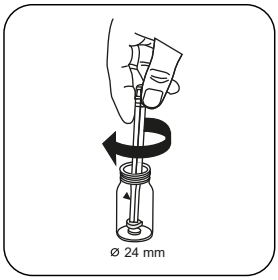
按下 **ZERO** 按钮。



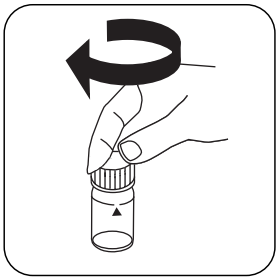
从测量轴上取下比色杯。



在游离氯（HOCl）的存在下，加入**一片 UREA PRETREAT 片剂**。

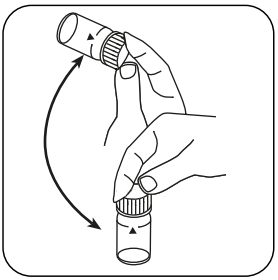


用轻微的扭转压碎片剂。

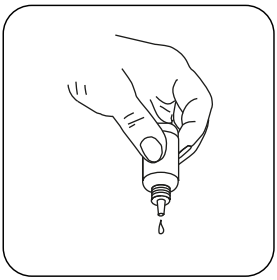


密封比色杯。

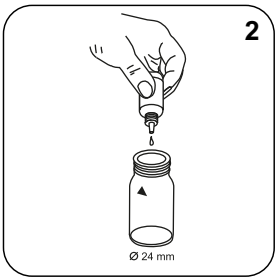
ZH



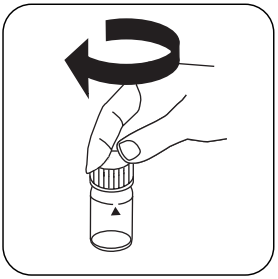
通过旋转溶解片剂。



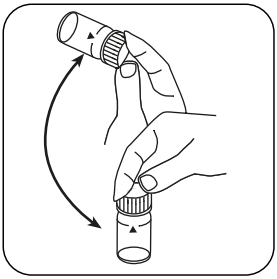
垂直握住滴瓶，慢慢加入相同大小的滴剂。



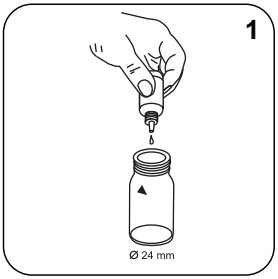
加入 **2 滴 UREA Reagenz 1**。



密封比色杯。

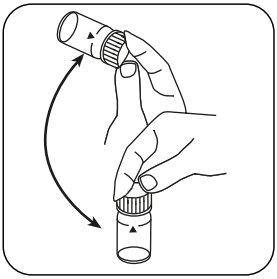


通过旋转混合内容物。

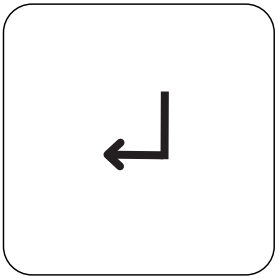


加入 **1 滴 UREA Reagenz 2**。

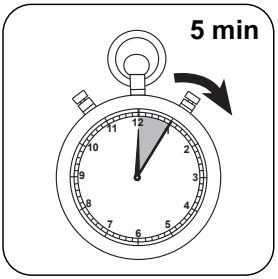
密封比色杯。



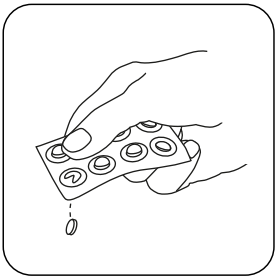
通过旋转混合内容物。



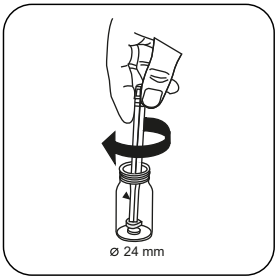
按下 **ENTER** 按钮。



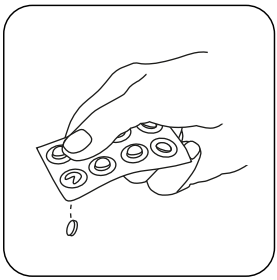
等待 **5 分钟反应时间** 。



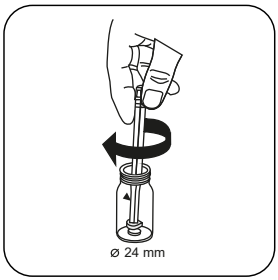
加入 **AMMONIA No. 1 片剂** 。



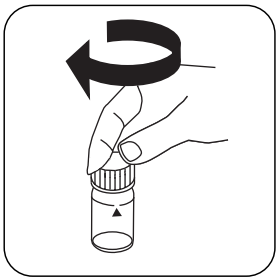
用轻微的扭转压碎片剂。



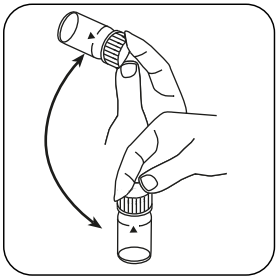
加入 **AMMONIA No. 2 片剂**。



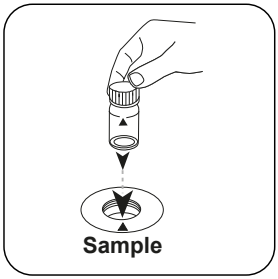
用轻微的扭转压碎片剂。



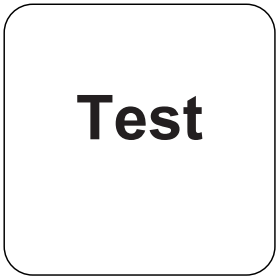
密封比色杯。



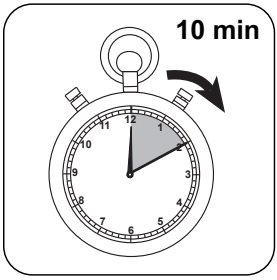
通过旋转溶解片剂。



将**样本比色杯**放入测量轴中。注意定位。



按下 **TEST** (XD: **START**) 按钮。



等待 **10 分钟反应时间**。

反应时间结束后，自动进行测量。

结果在显示屏上显示为 mg / l 尿素。

化学方法

靛酚/ 尿酸

[1] 通过稀释进行高量程测定 | # i含搅拌棒, 10cm

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