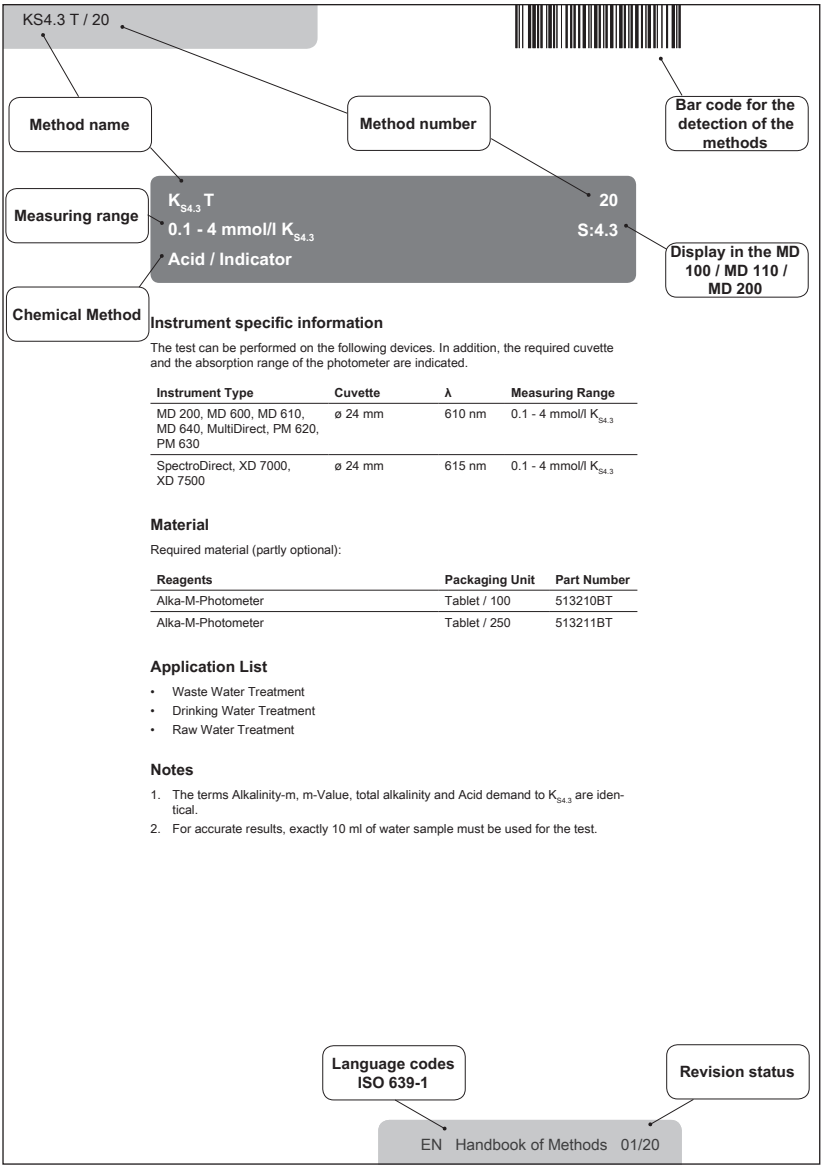
Lovibond® Water Testing

Tintometer® Group

Manual of Methods

MD 100 • MD 110 • MD 200

Ammonia



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

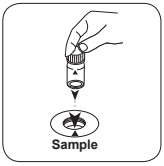
Implementation of the provision Acid capacity $K_{S4.3}$ with Tablet

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.

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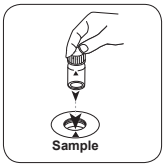
Dissolve tablet(s) by inverting.



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.

Ammonia T M60

0.02 - 1 mg/L N A

Indophenole Blue

EN

Material

Required material (partly optional):

Reagents	Packaging Unit	Part Number
Ammonia No. 1	Tablet / 100	512580BT
Ammonia No. 1	Tablet / 250	512581BT
Ammonia No. 2	Tablet / 100	512590BT
Ammonia No. 2	Tablet / 250	512591BT
Set Ammonia No. 1/No. 2 100 Pc.#	100 each	517611BT
Set Ammonia No. 1/No. 2 250 Pc.#	250 each	517612BT
Ammonia Conditioning Powder	Powder / 26 g	460170

Preparation

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

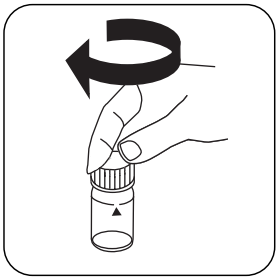
Notes

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

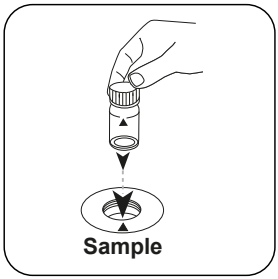
Determination of Ammonium with Tablet

Select the method on the device.

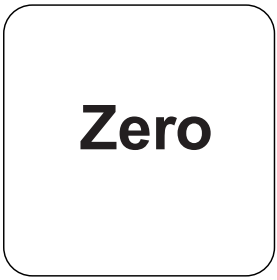
Fill 24 mm vial with **10 mL sample**.



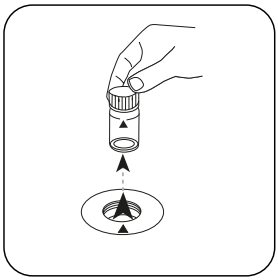
Close vial(s).



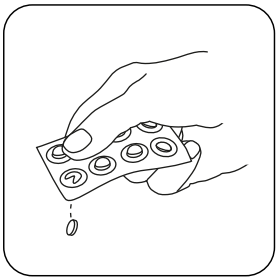
Place **sample vial** in the sample chamber. Pay attention to the positioning.



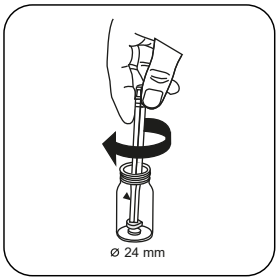
Press the **ZERO** button.



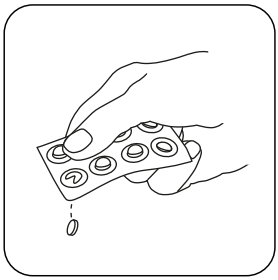
Remove the vial from the sample chamber.



Add **AMMONIA No. 1 tablet** .



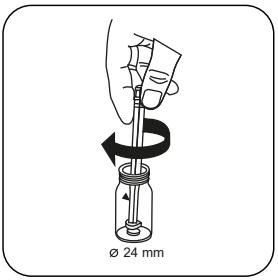
Crush tablet(s) by rotating slightly.



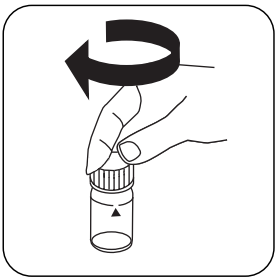
Add **AMMONIA No. 2 tablet** .

EN

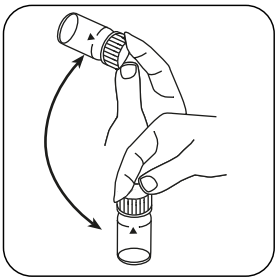
EN



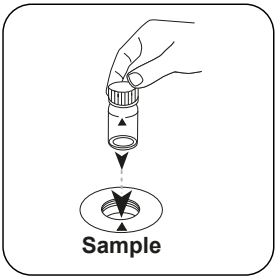
Crush tablet(s) by rotating slightly.



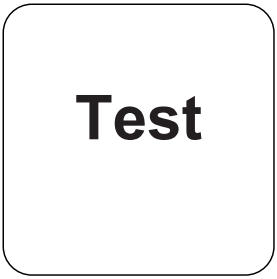
Close vial(s).



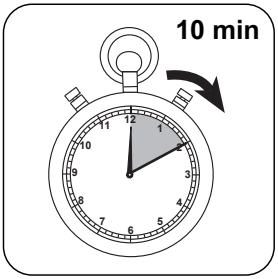
Dissolve tablet(s) by inverting.



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



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



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

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

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

Analyses

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

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

Chemical Method

Indophenole Blue

Appendix

Interferences

Persistant Interferences

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

Bibliography

Photometrische Analyseverfahren, Schwedt, Wissenschaftliche Verlagsgesellschaft mbH, Stuttgart 1989

According to

APHA Method 4500-NH3 F

including stirring rod, 10 cm

Ammonia PP M62

0.01 - 0.8 mg/L N A

Salicylate

EN

Material

Required material (partly optional):

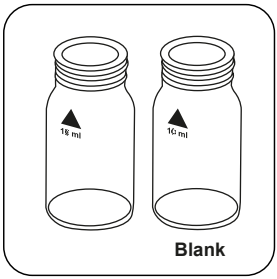
Reagents	Packaging Unit	Part Number
VARIO Ammonia Nitrogen, Set F10	1 Set	535500

Preparation

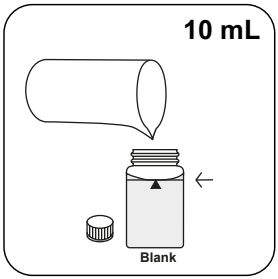
1. Extremely alkaline or acidic water samples should be adjusted with 0.5 mol/l (1N) Sulphuric acid or 1 mol/l (1 N) Sodium hydroxide to pH 7.

Determination of Ammonium with Vario Powder Pack

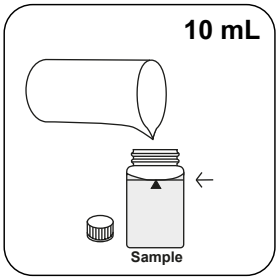
Select the method on the device.



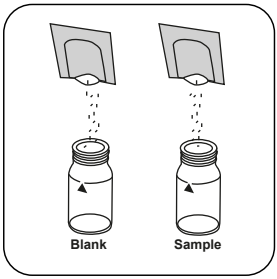
Prepare two clean 24 mm vials. Mark one as a blank.



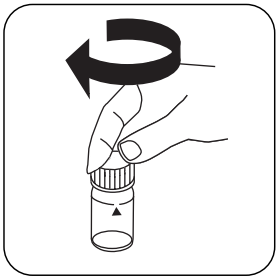
Put **10 mL deionised water** in the blank.



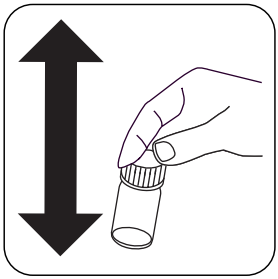
Put **10 mL sample** in the sample vial.



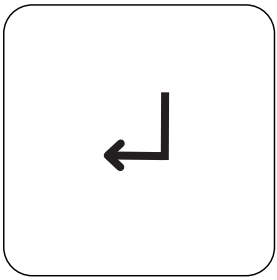
Add **a VARIO Ammonium Salicylate F10 powder pack** in each vial.



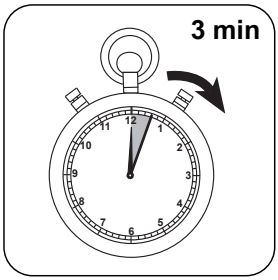
Close vial(s).



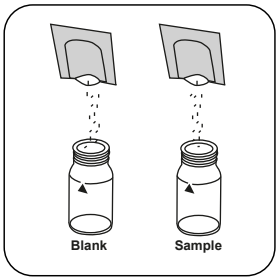
Dissolve the contents by shaking.



Press the **ENTER** button.



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



Add **a Vario Ammonium Cyanurate F10 powder pack** in each vial.

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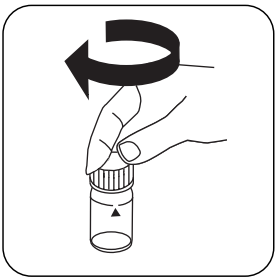
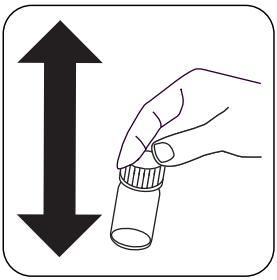
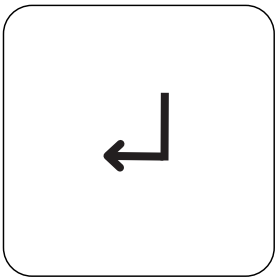


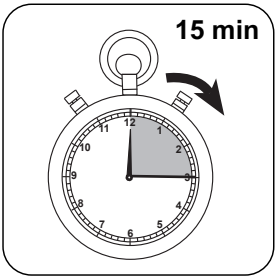
Close vial(s).



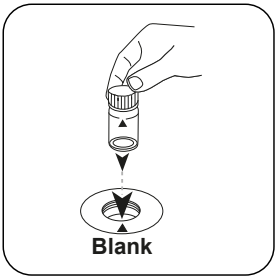
Dissolve the contents by shaking.



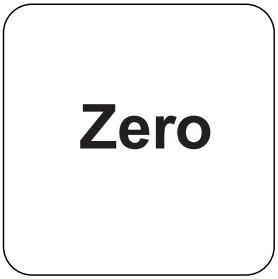
Press the **ENTER** button.



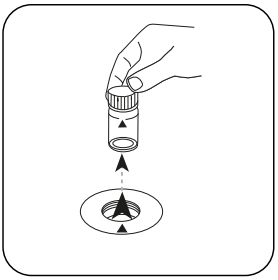
Wait for **15 minute(s) reaction time**.



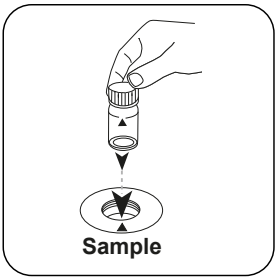
Place **blank** in the sample chamber. Pay attention to the positioning.



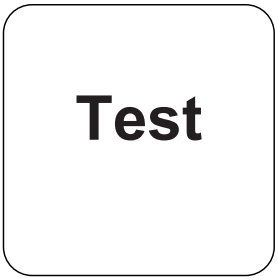
Press the **ZERO** button.



Remove the vial from the sample chamber.



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



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

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

Analyses

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

Unit	Cite form	Scale Factor
mg/l	N	1
mg/l	NH_4	1.288
mg/l	NH_3	1.22

Chemical Method

Salicylate

Appendix

Interferences

Persistant Interferences

- Sulphide intensifies the colouration.

Removeable Interferences

- Iron interferes with the test at all concentrations. Iron interference is eliminated as follows.
  a) Determine the concentration of iron present in the sample by performing a total Iron test.
  b) in the blank, use the same iron concentration as that determined instead of the deionised water.
- Less common interferences such as Hydrazine and Glycine will cause intensified colours in the prepared sample. Turbidity and colour will give erroneous high values. For samples where there are severe interferences, distillation will be necessary.

Interference	from / [mg/L]
Ca^{2+}	1000 ($CaCO_3$)
Mg^{2+}	6000 ($CaCO_3$)
NO_3^-	100
NO_2^-	12
PO_4^{3-}	100
SO_4^{2-}	300

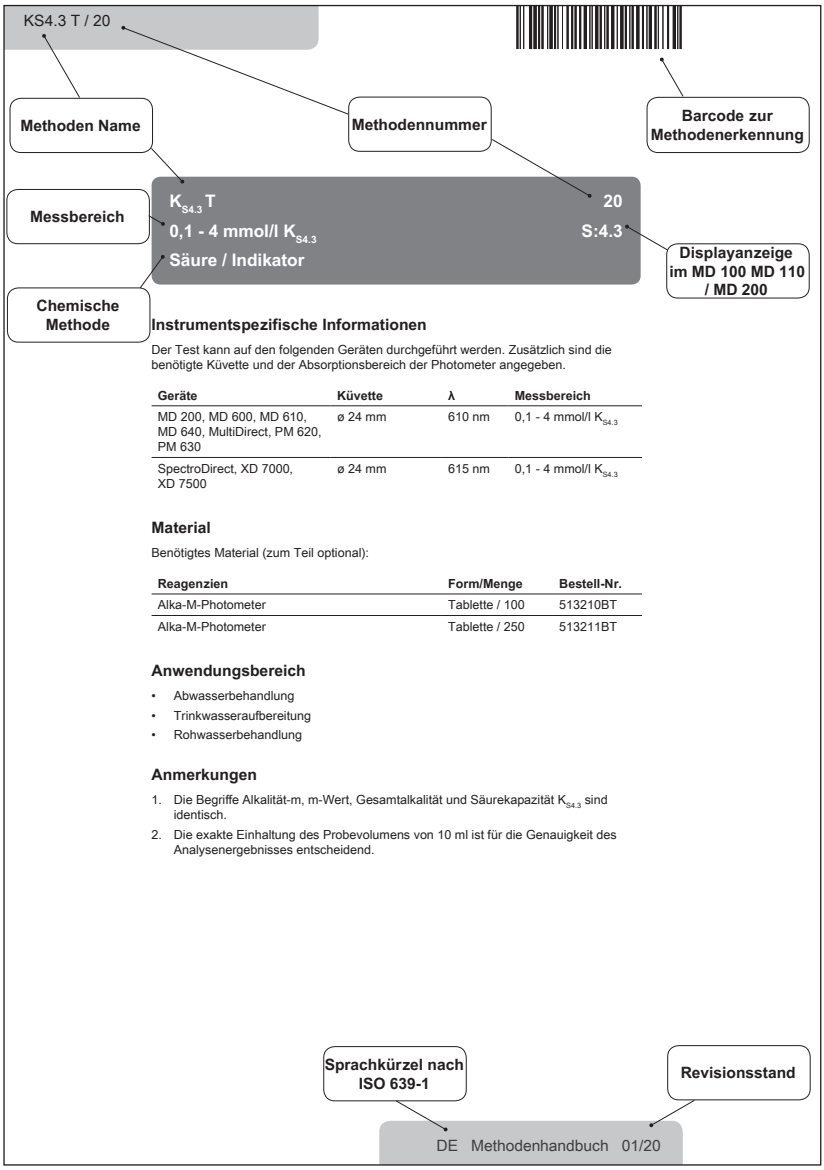
Method Validation

Limit of Detection	0.02 mg/L
Limit of Quantification	0.07 mg/L
End of Measuring Range	0.08 mg/L
Sensitivity	0.42 mg/L / Abs
Confidence Intervall	0.014 mg/L
Standard Deviation	0.006 mg/L
Variation Coefficient	1.45 %

Derived from

DIN 38406-E5-1
ISO 7150-1

DE



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.

Durchführung der Messung

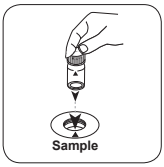
Durchführung der Bestimmung Säurekapazität $K_{S4.3}$ mit Tablette

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.

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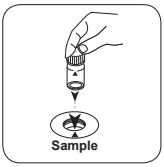
Tablette(n) durch Umschwenken lösen.



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

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

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

Ammonium T M60

0,02 - 1 mg/L N A

Indophenol Blau

DE

Material

Benötigtes Material (zum Teil optional):

Reagenzien	Form/Menge	Bestell-Nr.
Ammonia No. 1	Tablette / 100	512580BT
Ammonia No. 1	Tablette / 250	512581BT
Ammonia No. 2	Tablette / 100	512590BT
Ammonia No. 2	Tablette / 250	512591BT
Set Ammonia No. 1/No. 2#	je 100	517611BT
Set Ammonia No. 1/No. 2#	je 250	517612BT
Ammonium Konditionierpulver	Pulver / 26 g	460170

Vorbereitung

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

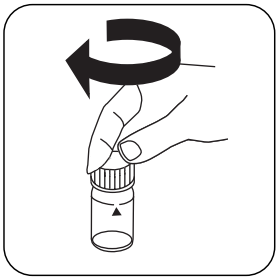
Anmerkungen

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

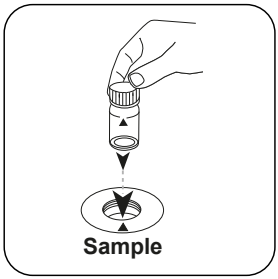
Durchführung der Bestimmung Ammonium mit Tablette

Die Methode im Gerät auswählen.

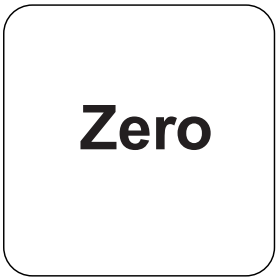
24-mm-Küvette mit **10 mL Probe** füllen.



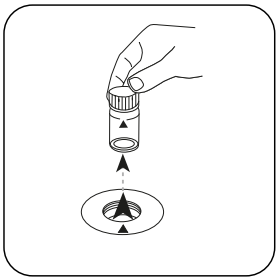
Küvette(n) verschließen.



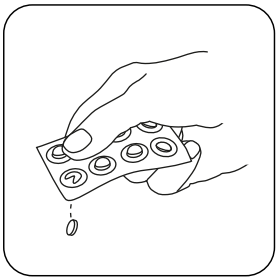
Die **Probenküvette** in den Messschacht stellen. Positionierung beachten.



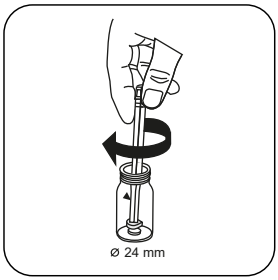
Taste **ZERO** drücken.



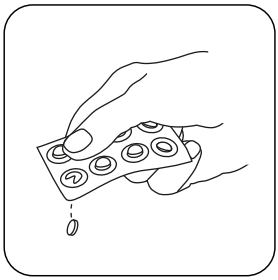
Küvette aus dem Messschacht nehmen.



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

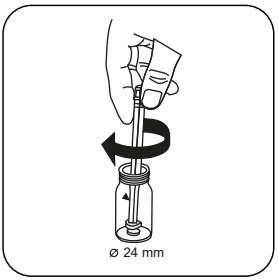


Tablette(n) unter leichter Drehung zerdrücken.

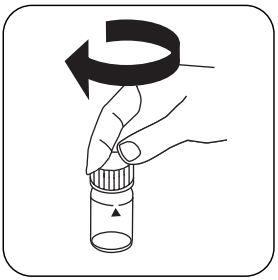


Eine **AMMONIA No. 2 Tablette** zugeben.

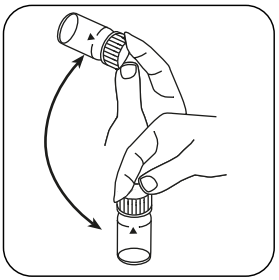
DE



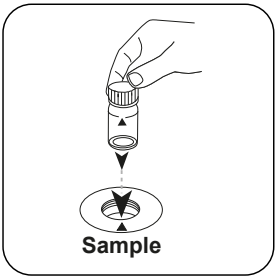
Tablette(n) unter leichter Drehung zerdrücken.



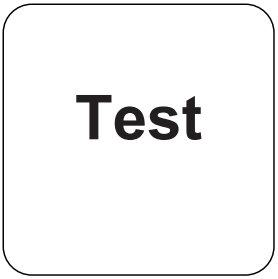
Küvette(n) verschließen.



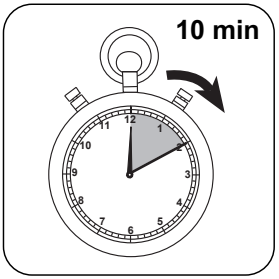
Tablette(n) durch Umschwenken lösen.



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



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



10 Minute(n) Reaktionszeit abwarten.

Nach Ablauf der Reaktionszeit erfolgt automatisch die Messung.

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

Auswertung

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

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

Chemische Methode

Indophenol Blau

Appendix

Störungen

Permanente Störungen

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

Literaturverweise

Photometrische Analyseverfahren, Schwedt, Wissenschaftliche Verlagsgesellschaft mbH, Stuttgart 1989

Gemäß

APHA Method 4500-NH3 F

inklusive Rührstab

Ammonium PP M62

0,01 - 0,8 mg/L N A

Salicylat

DE

Material

Benötigtes Material (zum Teil optional):

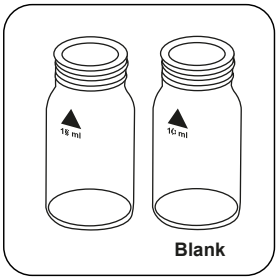
Reagenzien	Form/Menge	Bestell-Nr.
VARIO Ammonia Nitrogen, Set F10	1 Satz	535500

Vorbereitung

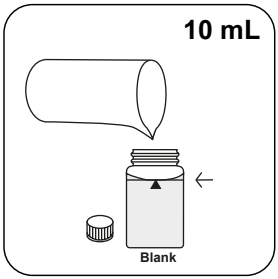
1. Extrem basische oder saure Wasserproben sollten mit 0,5 mol/l (1N) Schwefelsäure bzw. 1 mol/l (1N) Natronlauge auf einen pH-Wert von 7 eingestellt werden.

Durchführung der Bestimmung Ammonium mit Vario Pulverpäckchen

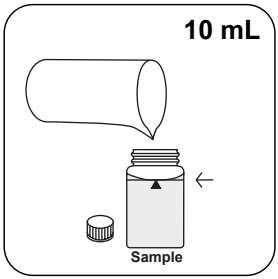
Die Methode im Gerät auswählen.



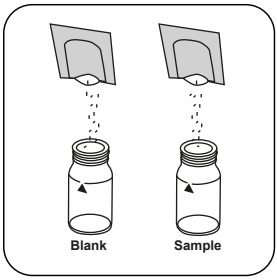
Zwei saubere 24-mm-Küvetten bereitstellen. Eine als Nullküvette kennzeichnen.



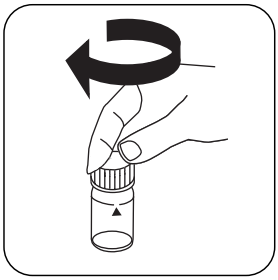
10 mL VE-Wasser in die Nullküvette geben.



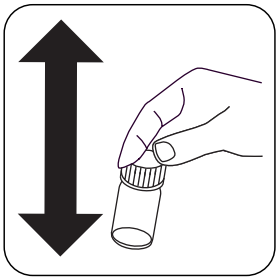
10 mL Probe in die Probenküvette geben.



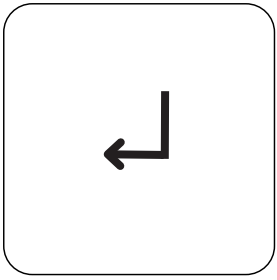
In jede Küvette **ein VARIO Ammonium Salicylate F10 Pulverpäckchen** geben.



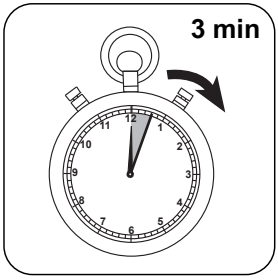
Küvette(n) verschließen.



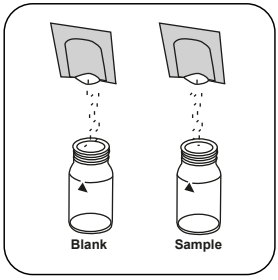
Inhalt durch Schütteln lösen.



Taste **ENTER** drücken.

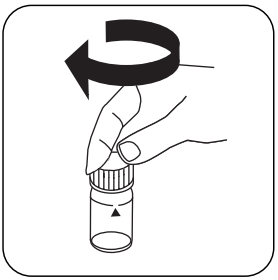


3 Minute(n) Reaktionszeit abwarten.

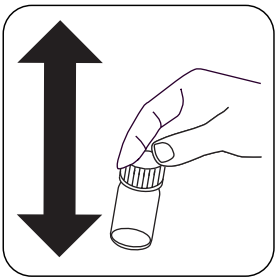


In jede Küvette **ein Vario Ammonium Cyanurate F10 Pulverpäckchen** geben.

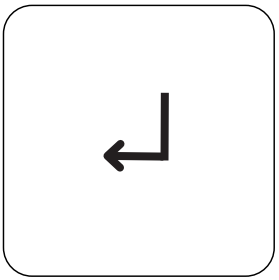
DE



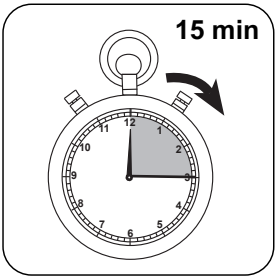
Küvette(n) verschließen.



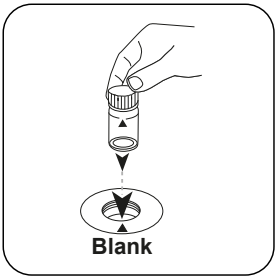
Inhalt durch Schütteln lösen.



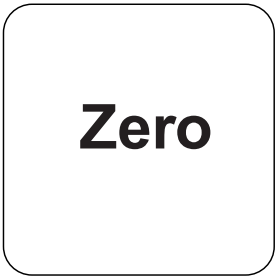
Taste **ENTER** drücken.



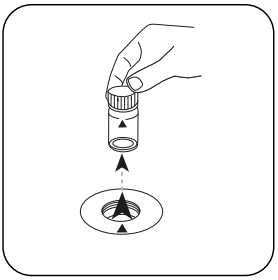
15 Minute(n) Reaktionszeit abwarten.



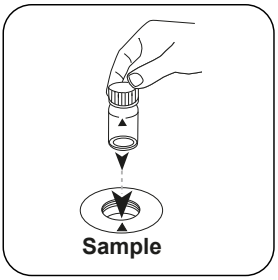
Die **Nullküvette** in den Messschacht stellen. Positionierung beachten.



Taste **ZERO** drücken.



Küvette aus dem Messschacht nehmen.



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

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

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

Auswertung

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

Einheit	Zitierform	Umrechnungsfaktor
mg/l	N	1
mg/l	NH_4	1.288
mg/l	NH_3	1.22

Chemische Methode

Salicylat

Appendix

Störungen

Permanente Störungen

- Sulfid intensiviert die Färbung.

Ausschließbare Störungen

- Eisen stört in allen Mengen die Bestimmung. Die Störung durch Eisen wird wie folgt beseitigt.
  a) Bestimmung von Eisen in der Probe mit einem Gesamt-Eisen-Test.
  b) In der Nullprobe wird ein Eisenstandard der ermittelten Konzentration, anstelle des VE-Wassers verwendet.
- Eine Störung durch Glycin und Hydrazin ist eher selten und verursacht intensivere Farben in der aufbereiteten Probe. Trübungen und Probenfarbe ergeben zu hohe Messwerte. Für Proben bei denen es zu deutlichen Störungen kommt, ist eine Destillation erforderlich.

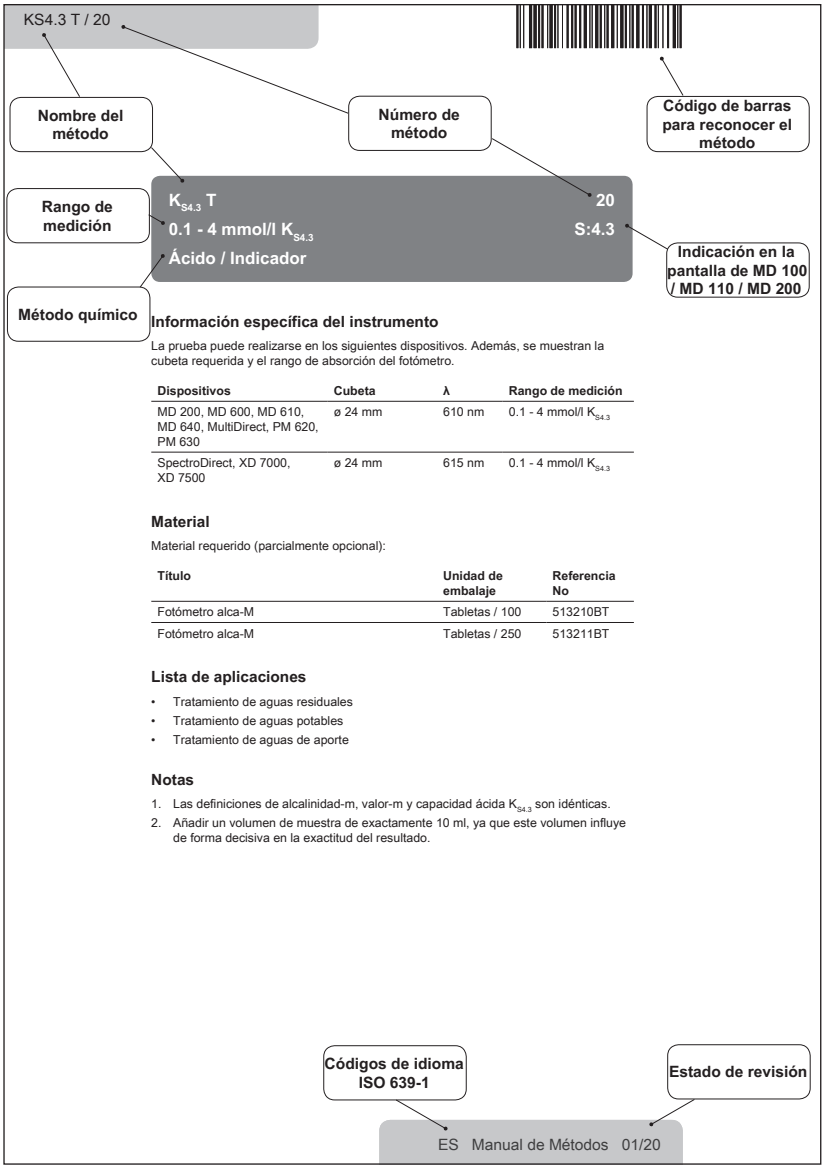
Störung	Stört ab / [mg/L]
Ca^{2+}	1000 ($CaCO_3$)
Mg^{2+}	6000 ($CaCO_3$)
NO_3^-	100
NO_2^-	12
PO_4^{3-}	100
SO_4^{2-}	300

Methodenvalidierung

Nachweisgrenze	0.02 mg/L
Bestimmungsgrenze	0.07 mg/L
Messbereichsende	0.08 mg/L
Empfindlichkeit	0.42 mg/L / Abs
Vertrauensbereich	0.014 mg/L
Verfahrensstandardabweichung	0.006 mg/L
Verfahrensvariationskoeffizient	1.45 %

Abgeleitet von

DIN 38406-E5-1
ISO 7150-1


KS4.3 T / 20
Nombre del método
Número de método
Código de barras para reconocer el método
Rango de medición
$K_{S4.3}$ T
20
0.1 - 4 mmol/l $K_{S4.3}$
S:4.3
Ácido / Indicador
Indicación en la pantalla de MD 100 / MD 110 / MD 200
Método químico
Información específica del instrumento
La prueba puede realizarse en los siguientes dispositivos. Además, se muestran la cubeta requerida y el rango de absorción del fotómetro.
Dispositivos | Cubeta | λ | Rango de medición
MD 200, MD 600, MD 610, MD 640, MultiDirect, PM 620, PM 630 | ø 24 mm | 610 nm | 0.1 - 4 mmol/l $K_{S4.3}$
SpectroDirect, XD 7000, XD 7500 | ø 24 mm | 615 nm | 0.1 - 4 mmol/l $K_{S4.3}$
Material
Material requerido (parcialmente opcional):
Título | Unidad de embalaje | Referencia No
Fotómetro alca-M | Tabletas / 100 | 513210BT
Fotómetro alca-M | Tabletas / 250 | 513211BT
Lista de aplicaciones
• Tratamiento de aguas residuales
• Tratamiento de aguas potables
• Tratamiento de aguas de aporte
Notas
1. Las definiciones de alcalinidad-m, valor-m y capacidad ácida $K_{S4.3}$ son idénticas.
2. Añadir un volumen de muestra de exactamente 10 ml, ya que este volumen influye de forma decisiva en la exactitud del resultado.
Códigos de idioma ISO 639-1
Estado de revisión
ES Manual de Métodos 01/20

Realización de la determinación

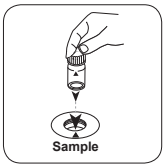
Ejecución de la determinación Capacidad ácida $K_{S4.3}$ con tableta

Seleccionar el método en el aparato.

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

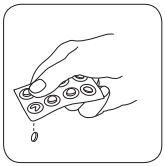
Llenar la cubeta de 24 mm con **10 ml de muestra** .

Cerrar la(s) cubeta(s).

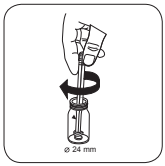


Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!

• • •



Añadir **tableta ALKA-M-PHOTOMETER**.



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

Cerrar la(s) cubeta(s).

Amonio T M60

0.02 - 1 mg/L N A

Indophenol azul

ES

Material

Material requerido (parcialmente opcional):

Reactivos	Unidad de embalaje	No. de referencia
Amonio nº 1	Tabletas / 100	512580BT
Amonio nº 1	Tabletas / 250	512581BT
Amonio nº 2	Tabletas / 100	512590BT
Amonio nº 2	Tabletas / 250	512591BT
Juego amonio nº 1/nº 2#	100 cada	517611BT
Juego amonio nº 1/nº 2#	250 cada	517612BT
Polvo de acondicionamiento de amonio	Polvos / 26 g	460170

Preparación

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

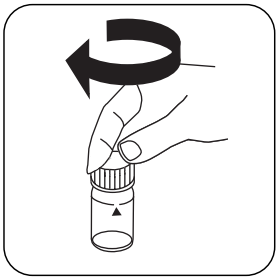
Notas

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

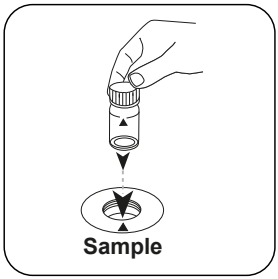
Ejecución de la determinación Amonio con tableta

Seleccionar el método en el aparato.

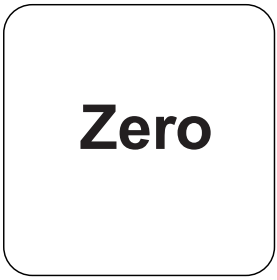
Llenar la cubeta de 24 mm con **10 mL de muestra** .



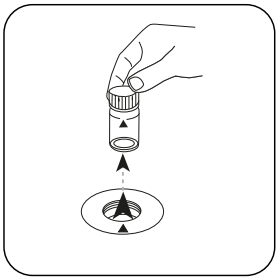
Cerrar la(s) cubeta(s).



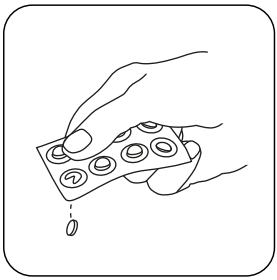
Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!



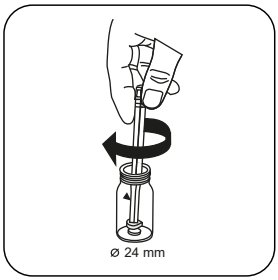
Pulsar la tecla **ZERO**.



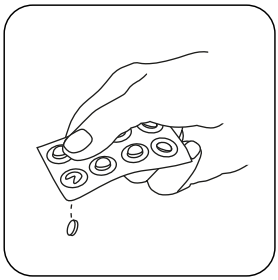
Extraer la cubeta del compartimiento de medición.



Añadir **tableta AMMONIA No. 1**.

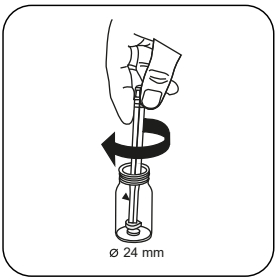


Triturar la(s) tableta(s) girando ligeramente.

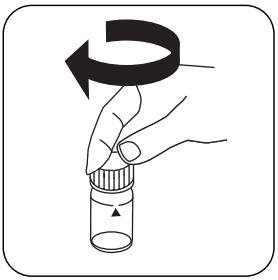


Añadir **tableta AMMONIA No. 2**.

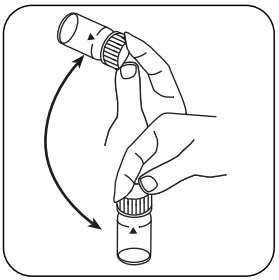
ES



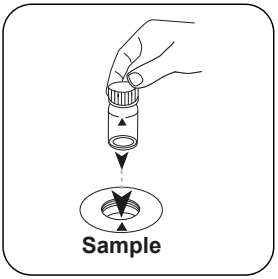
Triturar la(s) tableta(s) girando ligeramente.



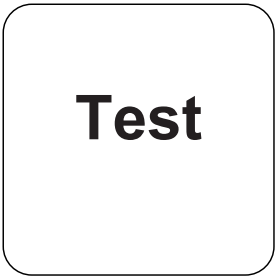
Cerrar la(s) cubeta(s).



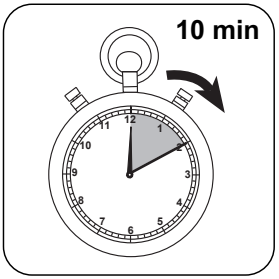
Disolver la(s) tableta(s) girando.



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



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



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

Finalizado el periodo de reacción se realizará la determinación automáticamente.

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

Evaluación

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

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

Método químico

Indophenol azul

Apéndice

Interferencia

Interferencias persistentes

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

Bibliografía

Photometrische Analyseverfahren, Schwedt, Wissenschaftliche Verlagsgesellschaft mbH, Stuttgart 1989

De acuerdo a

Método APHA 4500-NH3 F

Amonio PP M62

0.01 - 0.8 mg/L N A

Salicilato

ES

Material

Material requerido (parcialmente opcional):

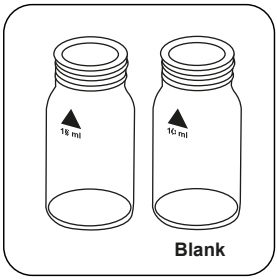
Reactivos	Unidad de embalaje	No. de referencia
Nitrógeno amoniacal VARIO, juego F10	1 Set	535500

Preparación

1. Las muestras acuosas muy ácidas o muy básicas deben neutralizarse a un valor de pH 7 con 0,5 mol/l (1N) de ácido sulfúrico o 1 mol/l (1N) de hidróxido sódico.

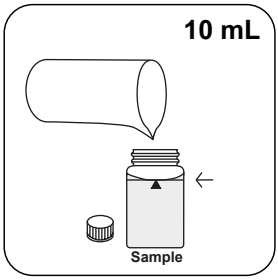
Ejecución de la determinación Amonio con sobres de polvos Vario

Seleccionar el método en el aparato.

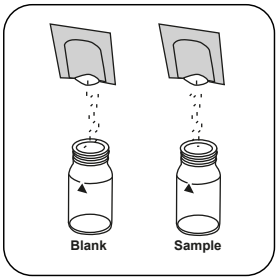


Preparar dos cubetas limpias de 24 mm. Identificar una como cubeta en blanco.

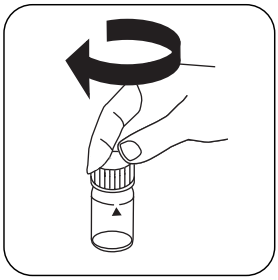
Añadir **10 mL de agua desionizada** en la cubeta en blanco.



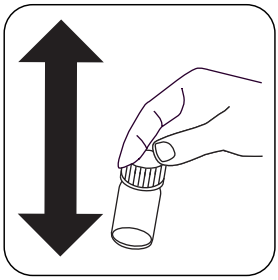
Añadir **10 mL de muestra** en la cubeta con la muestra.



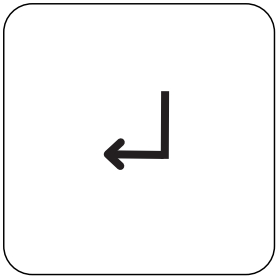
Añadir **un sobre de polvos de VARIO Ammonium Salicylate F10** en cada cubeta.



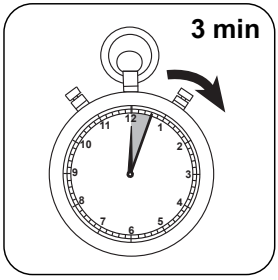
Cerrar la(s) cubeta(s).



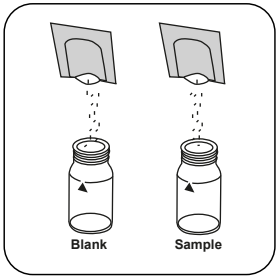
Disolver el contenido agitando.



Pulsar la tecla **ENTER**.

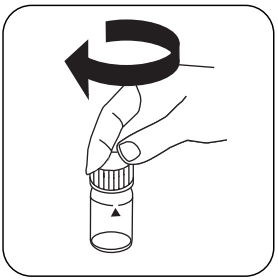


Esperar **3 minutos como periodo de reacción**.

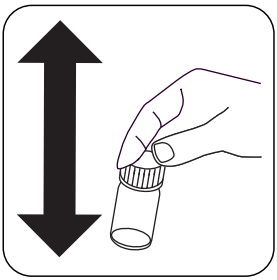


Añadir **un sobre de polvos de Vario Ammonium Cyanurate F10** en cada cubeta.

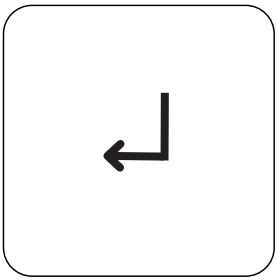
ES



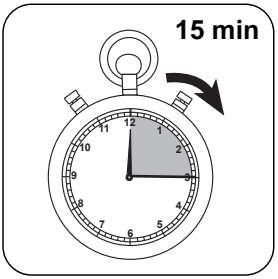
Cerrar la(s) cubeta(s).



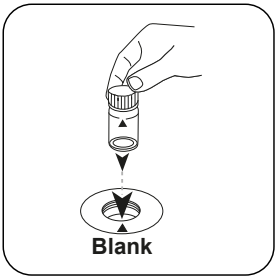
Disolver el contenido agitando.



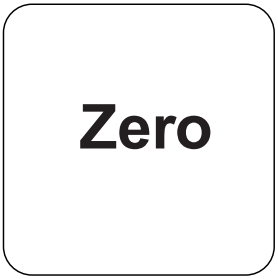
Pulsar la tecla **ENTER**.



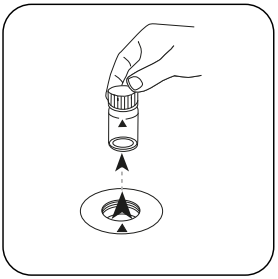
Esperar **15 minutos como periodo de reacción**.



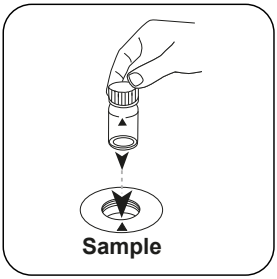
Poner la **cubeta en blanco** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!



Pulsar la tecla **ZERO**.



Extraer la cubeta del compartimiento de medición.



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

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

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

Evaluación

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

Unidad	Conversión	Factor de conversión
mg/l	N	1
mg/l	NH_4	1.288
mg/l	NH_3	1.22

Método químico

Salicilato

Apéndice

Interferencia

Interferencias persistentes

- El sulfuro intensifica la coloración.

Interferencias extraibles

- El hierro perturba totalmente la determinación. Solucionar la perturbación debido al hierro del modo siguiente.
  a) Determinación del hierro en la muestra acuosa mediante el test de hierro total.
  b) La concentración de hierro analizada se añade al agua desionizada del ensayo en blanco.
- Una perturbación producida por glicina o hidracina es infrecuente, produciendo una intensificación de la muestra acuosa. El enturbiamiento y las muestras coloreas producen resultados más elevados. Las muestras que produzcan perturbaciones grandes se deberán destilar antes.

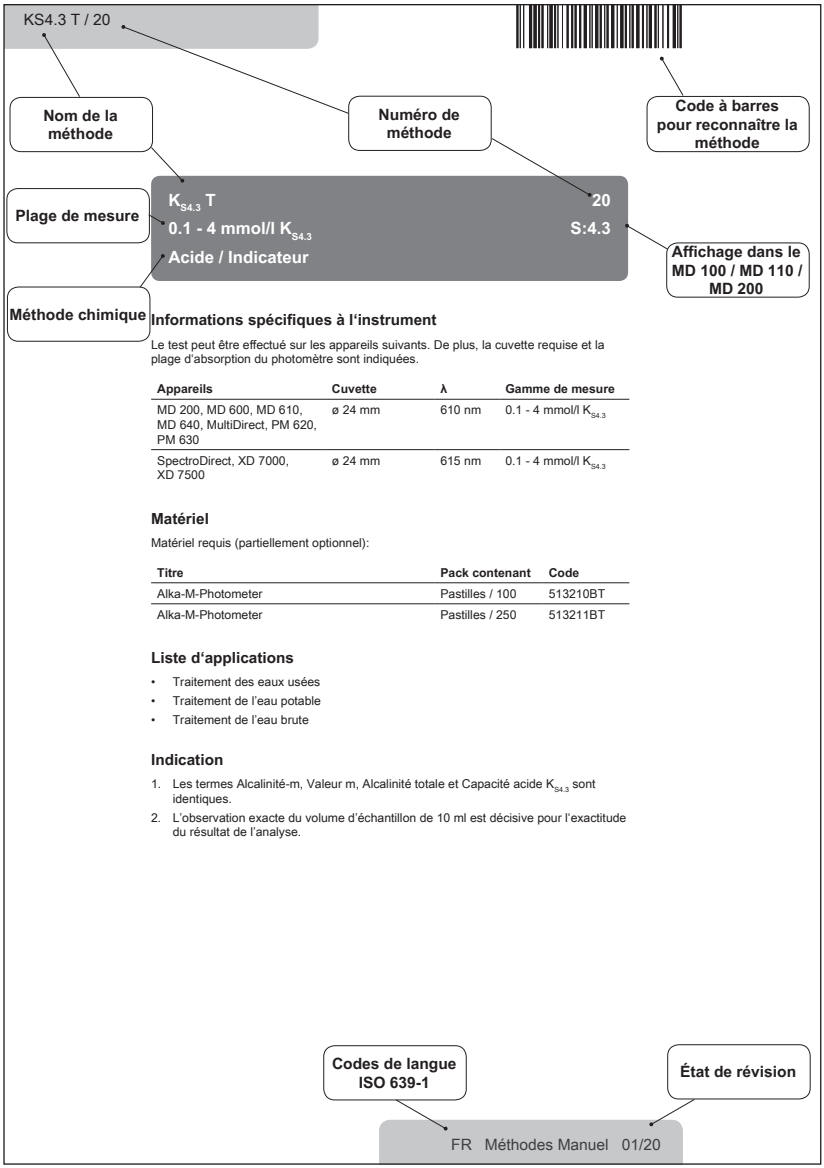
Interferencia	de / [mg/L]
Ca^{2+}	1000 ($CaCO_3$)
Mg^{2+}	6000 ($CaCO_3$)
NO_3^-	100
NO_2^-	12
PO_4^{3-}	100
SO_4^{2-}	300

Validación del método

Límite de detección	0.02 mg/L
Límite de determinación	0.07 mg/L
Límite del rango de medición	0.08 mg/L
Sensibilidad	0.42 mg/L / Abs
Intervalo de confianza	0.014 mg/L
Desviación estándar	0.006 mg/L
Coeficiente de variación	1.45 %

Derivado de

DIN 38406-E5-1
ISO 7150-1



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

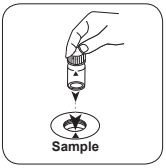
Réalisation de la quantification Capacité acide $K_{S4.3}$ avec pastille

Sélectionnez la méthode sur l'appareil.

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

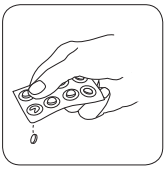
Remplissez une cuvette de 24 mm de **10 ml d'échantillon**.

Fermez la(les) cuvette(s).

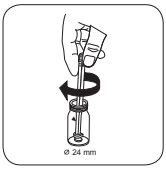


Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.

• • •



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



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

Fermez la(les) cuvette(s).

Ammonium T M60

0.02 - 1 mg/L N A

Indophénol Bleu

FR

Matériel

Matériel requis (partiellement optionnel):

Réactifs	Pack contenant	Code
Ammoniac N° 1	Pastilles / 100	512580BT
Ammoniac N° 1	Pastilles / 250	512581BT
Ammoniac N° 2	Pastilles / 100	512590BT
Ammoniac N° 2	Pastilles / 250	512591BT
Kit ammoniac N° 1/N° 2#	100 chacun	517611BT
Kit ammoniac N° 1/N° 2#	250 chacun	517612BT
Poudre de conditionnement ammonium	Poudre / 26 g	460170

Préparation

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

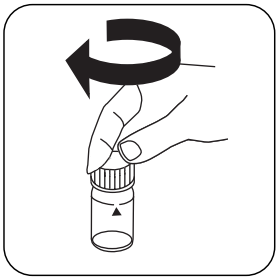
Indication

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

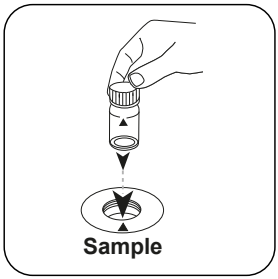
Réalisation de la quantification Ammonium avec pastille

Sélectionnez la méthode sur l'appareil.

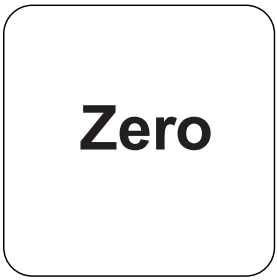
Remplissez une cuvette de 24 mm de **10 mL d'échantillon**.



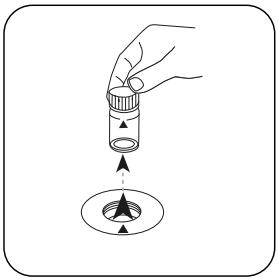
Fermez la(les) cuvette(s).



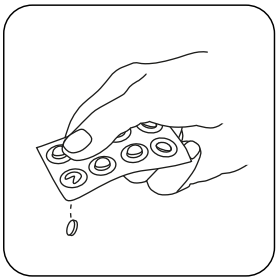
Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.



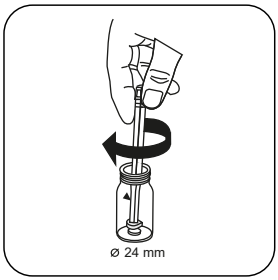
Appuyez sur la touche **ZERO**.



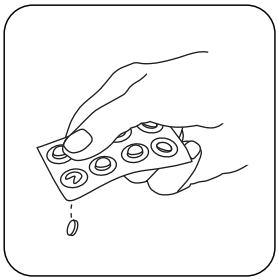
Retirez la cuvette de la chambre de mesure.



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

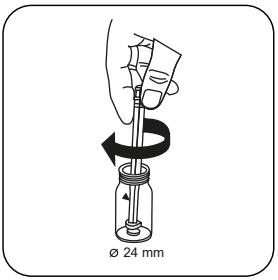


Écrasez la(les) pastille(s) en la(les) tournant un peu.

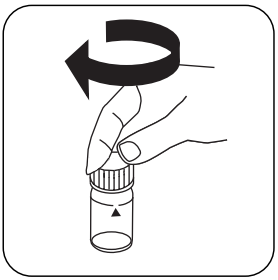


Ajoutez une **pastille de AMMONIA No. 2**.

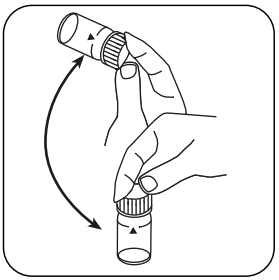
FR



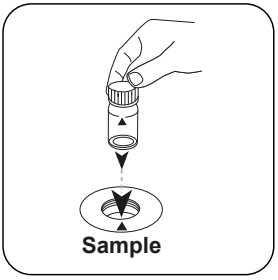
Écrasez la(les) pastille(s) en la(les) tournant un peu.



Fermez la(les) cuvette(s).

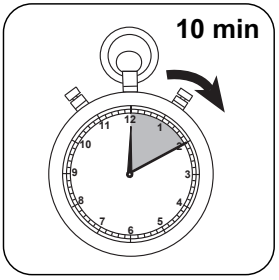


Dissolvez la(les) pastille(s) en mettant le tube plusieurs fois à l'envers.



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

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



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

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

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

Analyses

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

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

Méthode chimique

Indophénol Bleu

Appendice

Interférences

Interférences persistantes

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

Bibliographie

Photometrische Analyseverfahren, Schwedt, Wissenschaftliche Verlagsgesellschaft mbH, Stuttgart 1989

Selon

Méthode APHA 4500-NH3 F

[1] # agitateur inclus

Ammonium PP M62

0.01 - 0.8 mg/L N A

Salicylate

FR

Matériel

Matériel requis (partiellement optionnel):

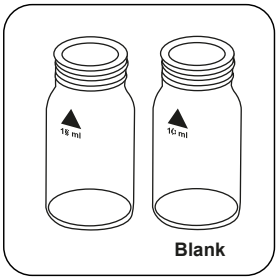
Réactifs	Pack contenant	Code
VARIO azote ammoniacal, kit F10	1 Kit	535500

Préparation

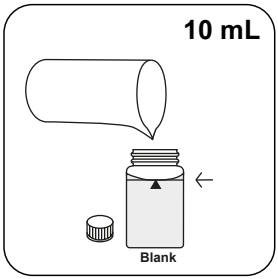
1. Les échantillons d'eau extrêmement basique ou acide devraient être ajustés sur un pH de 7 en ajoutant 0,5 mol/l (1N) d'acide sulfurique ou 1 mol/l (1N) de soude caustique.

Réalisation de la quantification Ammonium avec sachet de poudre Vario

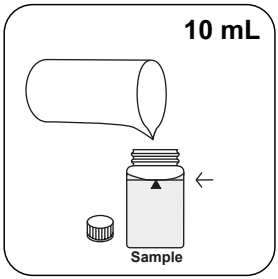
Sélectionnez la méthode sur l'appareil.



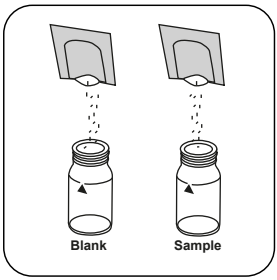
Préparez deux cuvettes propres de 24 mm. L'une des deux cuvettes sera la cuvette du blanc. Étiquetez-la.



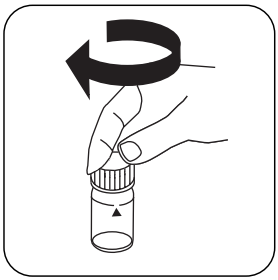
Versez **10 mL d'eau déminéralisée** dans la cuvette du blanc.



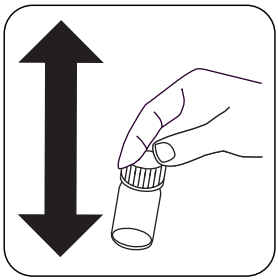
Versez **10 mL d'échantillon** dans la cuvette réservée à l'échantillon.



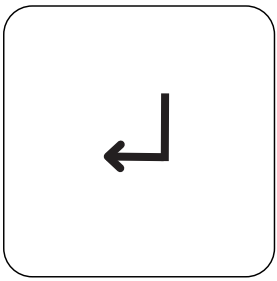
Dans chaque cuvette, versez **un sachet de poudre VARIO Ammonium Salicylate F10**.



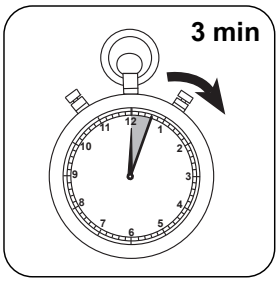
Fermez la(les) cuvette(s).



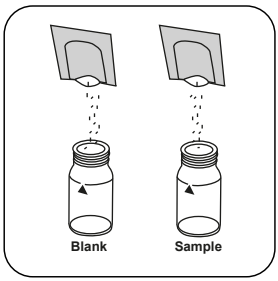
Dissolvez le contenu en agitant.



Appuyez sur la touche **ENTER**.

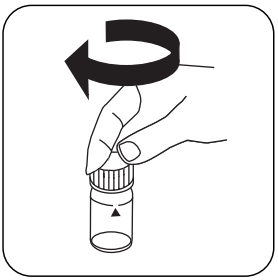


Attendez la fin du **temps de réaction de 3 minute(s)** .

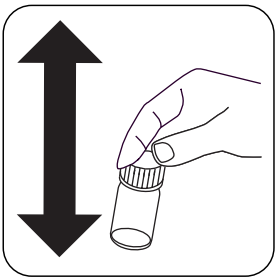


Dans chaque cuvette, versez **un sachet de poudre Vario Ammonium Cyanurate F10**.

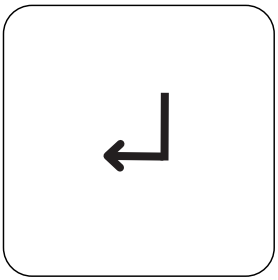
FR



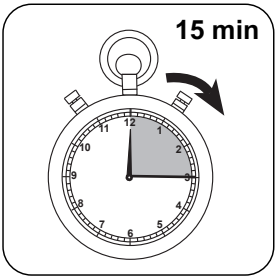
Fermez la(les) cuvette(s).



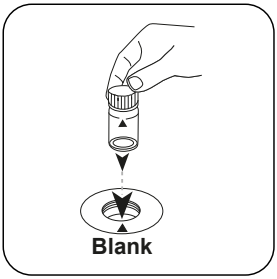
Dissolvez le contenu en agitant.



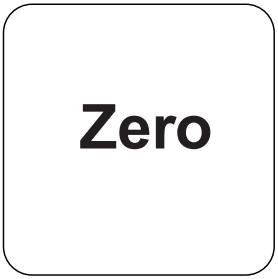
Appuyez sur la touche **ENTER**.



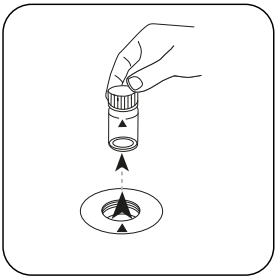
Attendez la fin du **temps de réaction de 15 minute(s)** .



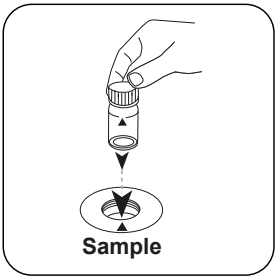
Placez la **cuvette du blanc** dans la chambre de mesure. Attention à la positionner correctement.



Appuyez sur la touche **ZERO**.



Retirez la cuvette de la chambre de mesure.



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

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

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

Analyses

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

Unité	Formes de citation	Facteur de conversion
mg/l	N	1
mg/l	NH_4	1.288
mg/l	NH_3	1.22

Méthode chimique

Salicylate

Appendice

Interférences

Interférences persistantes

- Le sulfure intensifie la coloration.

Interférences exclues

- Le fer perturbe la quantification quelle que soit la quantité. Éliminez la perturbation causée par le fer comme suit :
  a) Quantification du fer dans l'échantillon avec un test de fer total.
  b) Dans le blanc échantillon, remplacez l'eau déminéralisée par un étalon de fer de la concentration déterminée.
- Une perturbation causée par le glycine et l'hydrazine est rare et se traduit par des couleurs plus intenses dans l'échantillon traité. Les turbidités et la couleur de l'échantillon causent une augmentation des valeurs mesurées. Les échantillons sujets à de grandes perturbations, devront être distillés.

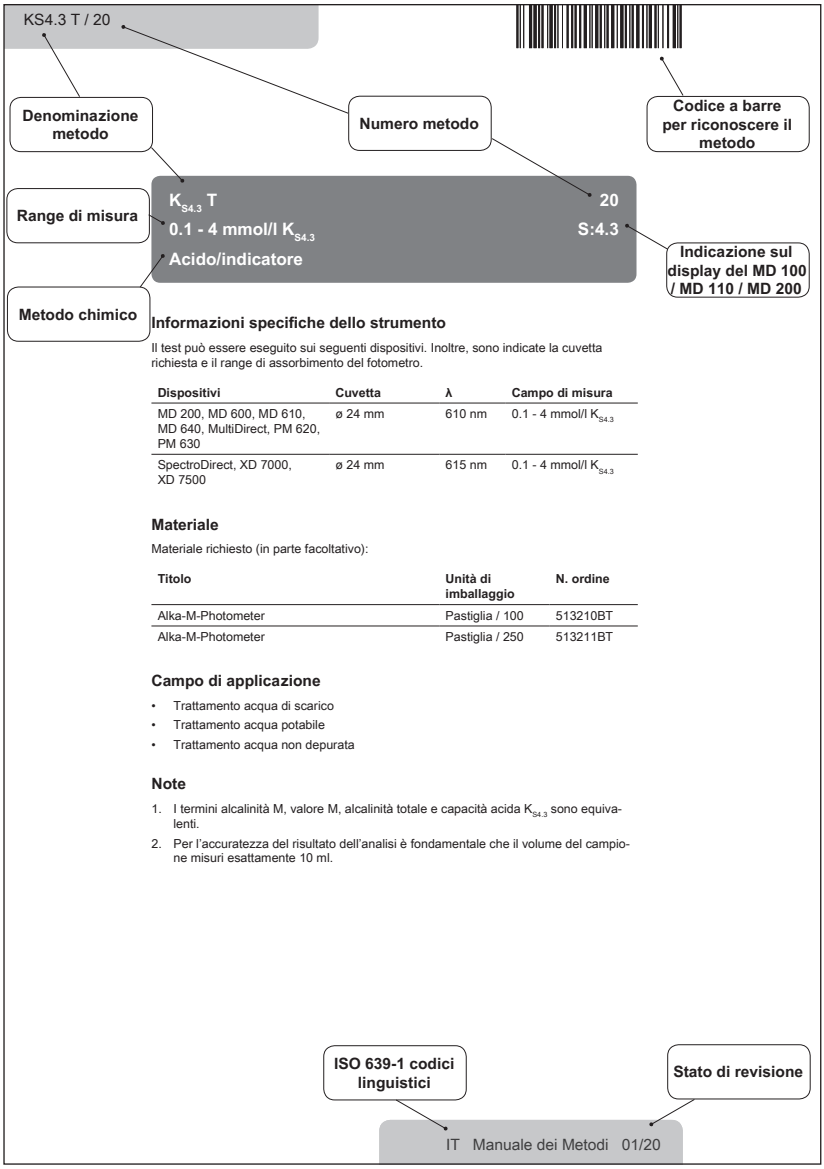
Interférences	de / [mg/L]
Ca^{2+}	1000 ($CaCO_3$)
Mg^{2+}	6000 ($CaCO_3$)
NO_3^-	100
NO_2^-	12
PO_4^{3-}	100
SO_4^{2-}	300

Méthode Validation

Limite de détection	0.02 mg/L
Limite de détermination	0.07 mg/L
Fin de la gamme de mesure	0.08 mg/L
Sensibilité	0.42 mg/L / Abs
Intervalle de confiance	0.014 mg/L
Déviation standard	0.006 mg/L
Coefficient de variation	1.45 %

Dérivé de

DIN 38406-E5-1
EN 7150-1



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.

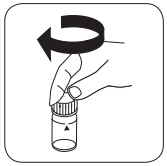
Svolgimento della misurazione

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

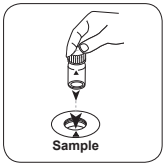
Selezionare il metodo nel dispositivo.

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**.



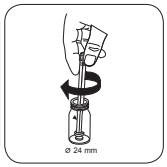
Chiudere la/e cuvetta/e.



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.

Ammonio T M60

0.02 - 1 mg/L N A

Blu di indofenolo

IT

Materiale

Materiale richiesto (in parte facoltativo):

Reagenti	Unità di imballaggio	N. ordine
Ammonio No. 1	Pastiglia / 100	512580BT
Ammonio No. 1	Pastiglia / 250	512581BT
Ammonio No. 2	Pastiglia / 100	512590BT
Ammonio No. 2	Pastiglia / 250	512591BT
Set Ammonia No. 1/no. 2#	ciascuna 100	517611BT
Set Ammonia No. 1/no. 2#	ciascuna 250	517612BT
Polvere condizionante di ammonio	Polvere / 26 g	460170

Preparazione

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

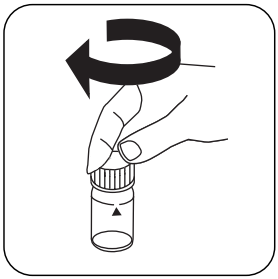
Note

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

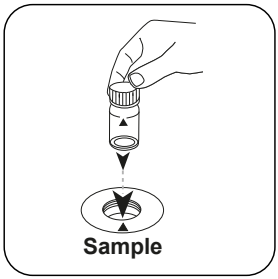
Esecuzione della rilevazione Ammonio con pastiglia

Selezionare il metodo nel dispositivo.

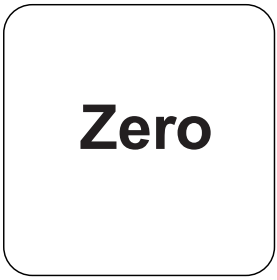
Riempire una cuvetta da 24 mm con **10 mL di campione**.



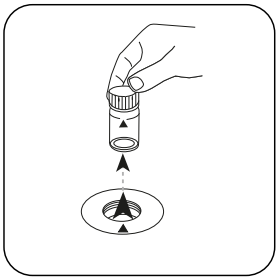
Chiudere la/e cuvetta/e.



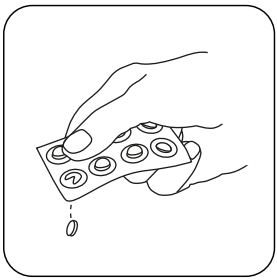
Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



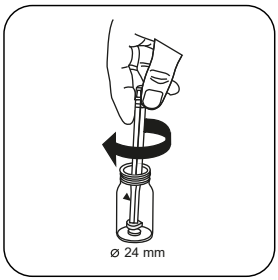
Premere il tasto **ZERO**.



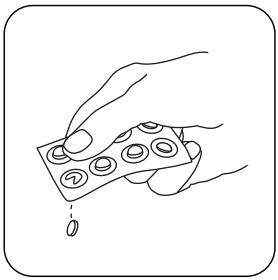
Prelevare la cuvetta dal vano di misurazione.



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

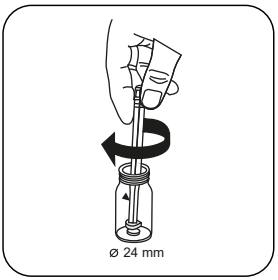


Frantumare la/e pastiglia/e con una leggera rotazione.

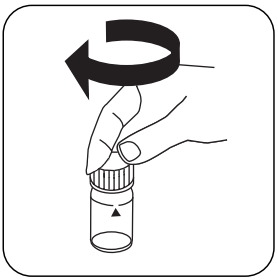


Aggiungere **una pastiglia AMMONIA No. 2**.

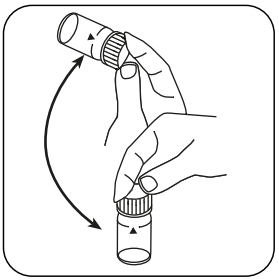
IT



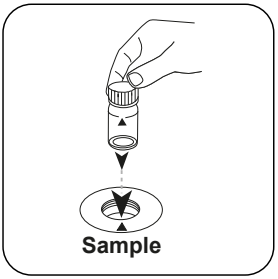
Frantumare la/e pastiglia/e con una leggera rotazione.



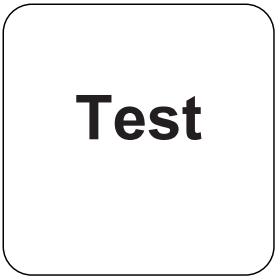
Chiudere la/e cuvetta/e.



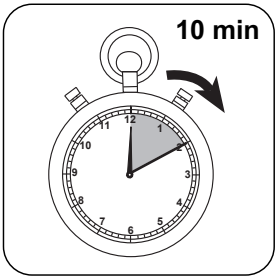
Far sciogliere la/e pastiglia/e agitando.



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



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



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

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

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

Valutazione

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

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

Metodo chimico

Blu di indofenolo

Appendice

Interferenze

Interferenze permanenti

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

Riferimenti bibliografici

Photometrische Analyseverfahren, Schwedt, Wissenschaftliche Verlagsgesellschaft mbH, Stoccarda 1989

Secondo

APHA Method 4500-NH3 F

[1] *Bacchetta compresa

Ammonio PP M62

0.01 - 0.8 mg/L N A

Salicilato

Materiale

Materiale richiesto (in parte facoltativo):

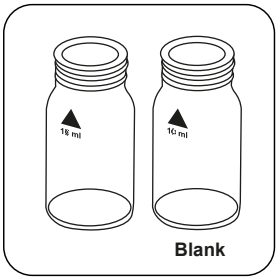
Reagenti	Unità di imballaggio	N. ordine
Azoto ammoniacale VARIO, set F10	1 set	535500

Preparazione

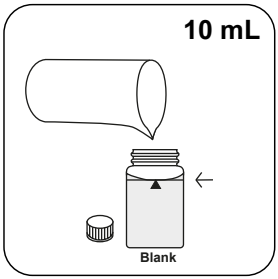
1. I campioni di acqua estremamente alcalini o acidi dovrebbero essere regolati su un valore di pH pari a 7 con 0,5 mol/l (1N) di acido solforico o 1 mol/l (1N) di liscivia.

Esecuzione della rilevazione Ammonio con polvere in bustine Vario

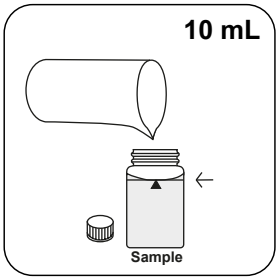
Selezionare il metodo nel dispositivo.



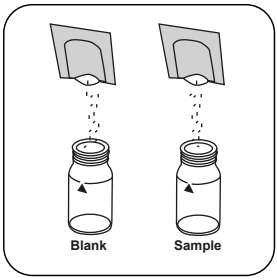
Preparare due cuvette pulite da 24 mm. Contrassegnare una cuvetta come cuvetta zero.



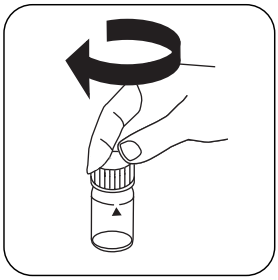
Immettere **10 mL di acqua demineralizzata** nella cuvetta zero.



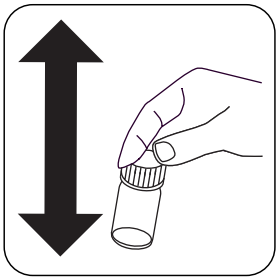
Immettere **10 mL di campione** nella cuvetta del campione.



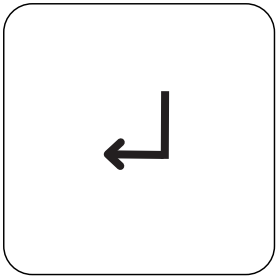
Immettere **una bustina di polvere VARIO Ammonium Salicylate F10** in ogni cuvetta.



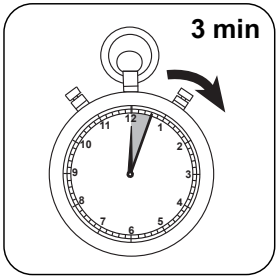
Chiudere la/e cuvetta/e.



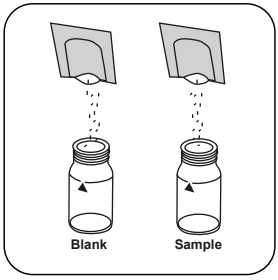
Far sciogliere il contenuto agitando.



Premere il tasto **ENTER**.

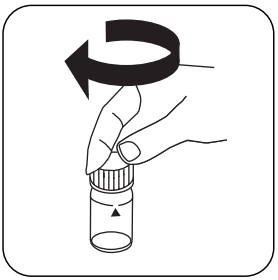


Attendere un **tempo di reazione di 3 minuto/i** .

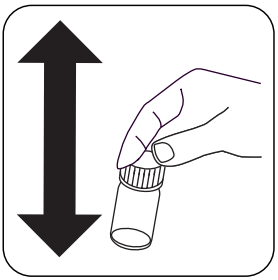


Immettere **una bustina di polvere Vario Ammonium Cyanurate F10** in ogni cuvetta.

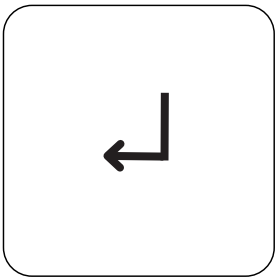
IT



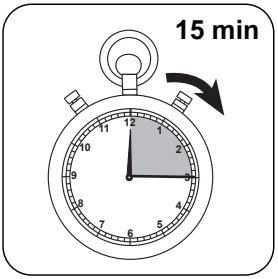
Chiudere la/e cuvetta/e.



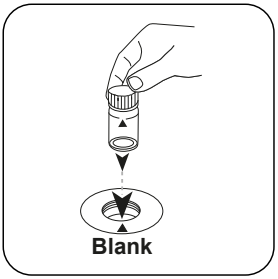
Far sciogliere il contenuto agitando.



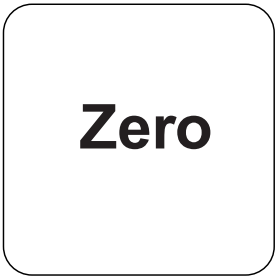
Premere il tasto **ENTER**.



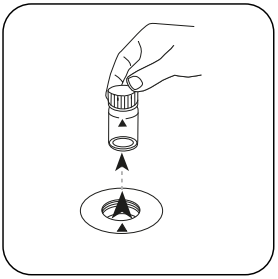
Attendere un **tempo di reazione di 15 minuto/i** .



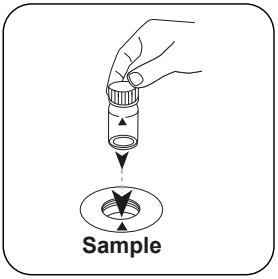
Posizionare la **cuvetta zero** nel vano di misurazione. Fare attenzione al posizionamento.



Premere il tasto **ZERO**.



Prelevare la cuvetta dal vano di misurazione.



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

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

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

Valutazione

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

Unità di misura	Forma di citazione	Fattore di conversione
mg/l	N	1
mg/l	NH_4	1.288
mg/l	NH_3	1.22

Metodo chimico

Salicilato

Appendice

Interferenze

Interferenze permanenti

- Il solfuro intensifica la colorazione.

Interferenze escludibili

- Il ferro interferisce con la rilevazione in qualunque quantità. L'interferenza da parte del ferro può essere eliminata nel modo seguente.
  a) Rilevazione del ferro nel campione con un test del ferro totale.
  b) Nel campione standard viene utilizzata, invece dell'acqua demineralizzata, una soluzione standard di ferro alla concentrazione rilevata.
- Interferenze da parte di glicina e idrazina sono piuttosto rare e provocano una colorazione più intensa nel campione trattato. Le torbidità e il colore del campione provocano valori di misura troppo elevati. Per i campioni soggetti a interferenze evidenti si rende necessaria una distillazione.

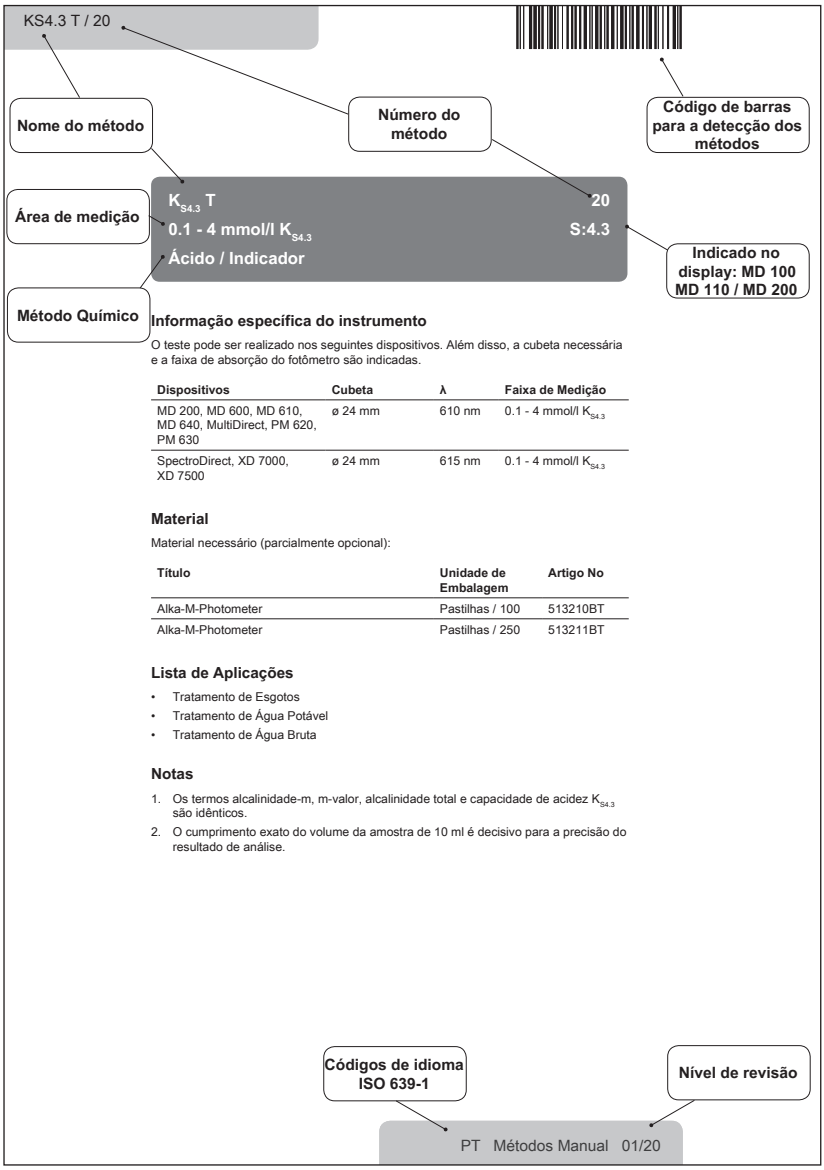
Interferenze	da / [mg/L]
Ca^{2+}	1000 ($CaCO_3$)
Mg^{2+}	6000 ($CaCO_3$)
NO_3^-	100
NO_2^-	12
PO_4^{3-}	100
SO_4^{2-}	300

Validazione metodo

Limite di rilevabilità	0.02 mg/L
Limite di quantificazione	0.07 mg/L
Estremità campo di misura	0.08 mg/L
Sensibilità	0.42 mg/L / Abs
Intervallo di confidenza	0.014 mg/L
Deviazione standard della procedura	0.006 mg/L
Coefficiente di variazione della procedura	1.45 %

Derivato di

DIN 38406-E5-1
ISO 7150-1


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

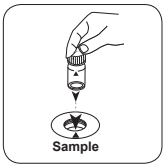
Realização da determinação Capacidade de acidez $K_{S4.3}$ com pastilha

Escolher o método no equipamento.

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

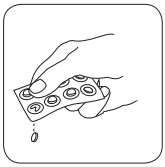
Encher a célula de 24 mm com **10 ml de amostra** .

Fechar a(s) célula(s).

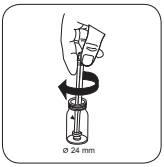


Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.

• • •



Pastilha ALKA-M-PHOTOMETER.



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

Fechar a(s) célula(s).

Amónio T M60

0.02 - 1 mg/L N A

Indophenole Blue

PT

Material

Material necessário (parcialmente opcional):

Reagentes	Unidade de Embalagem	Código do Produto
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

Preparação

1. Amostras de água do mar:
   O pó de condicionamento de amónio é necessário para amostras de água do mar ou de água salobra, para evitar precipitações (turvações) durante o teste.
   Encher a célula com amostra até à marca de 10 ml e adicionar dois colher de pó de condicionamento de amónio. Fechar a célula com a tampa da mesma e girar até o pó se dissolver. De seguida, prossiga conforme descrito.

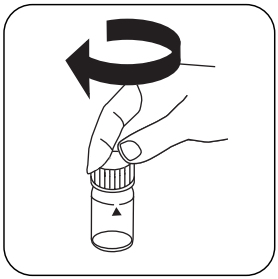
Notas

1. A pastilha AMMONIA No. 1 dissolve-se totalmente apenas depois da adição da pastilha AMMONIA No. 2.
2. A temperatura da amostra é importante para o tempo de formação da cor. No caso de temperaturas abaixo de 20 °C, o tempo de reação é de 15 minutos.

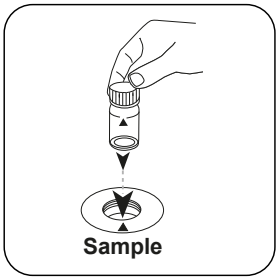
Realização da determinação Amónio com pastilha

Escolher o método no equipamento.

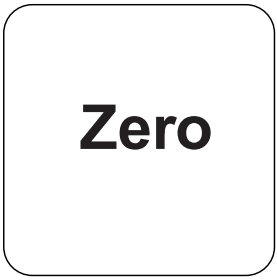
Encher a célula de 24 mm com **10 mL de amostra** .



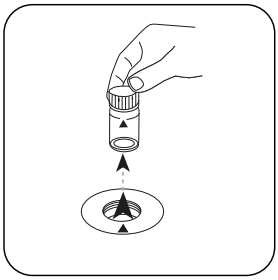
Fechar a(s) célula(s).



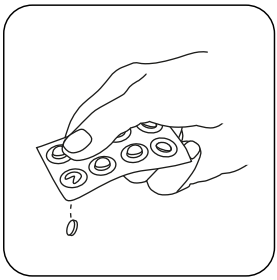
Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.



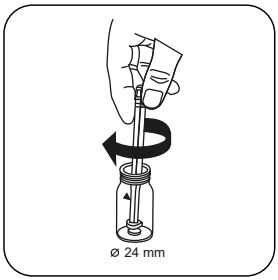
Premir a tecla **ZERO**.



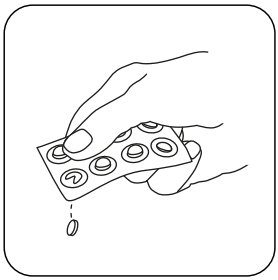
Retirar a célula do compartimento de medição.



Pastilha AMMONIA No. 1.

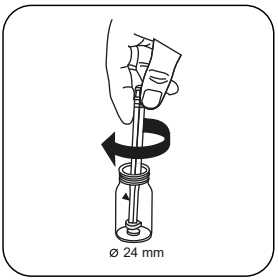


Esmagar a(s) pastilha(s) rodando ligeiramente.

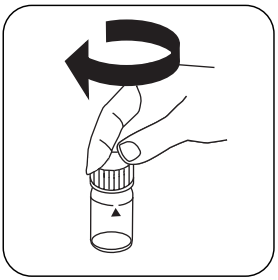


Pastilha AMMONIA No. 2.

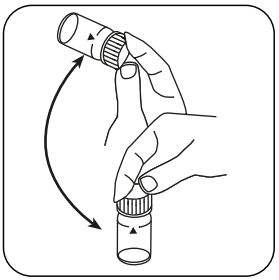
PT



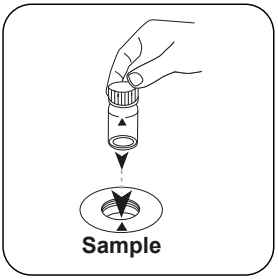
Esmagar a(s) pastilha(s) rodando ligeiramente.



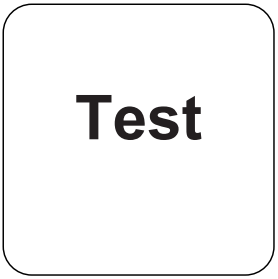
Fechar a(s) célula(s).



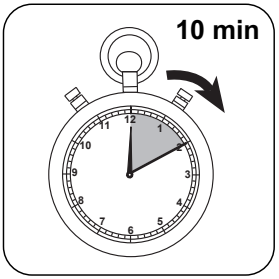
Dissolver a(s) pastilha(s) girando.



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



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



Aguardar **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 Amónio.

Análises

A tabela a seguir identifica os valores de saída que podem ser convertidos em outras formas de citação.

Unidade	Forma de citação	Fator de conversão
mg/l	N	1
mg/l	NH_4	1.2878
mg/l	NH_3	1.2158

Método Químico

Indophenole Blue

Apêndice

Texto de Interferências

Interferências Pesistentes

- Sulfuretos, cianetos, rodanida, aminas alifáticas e anilina interferem em grandes concentrações.

Bibliografia

Processo de análise fotométrico, Schwedt, Wissenschaftliche Verlagsgesellschaft mbH, Stuttgart 1989

De acordo com

APHA Method 4500-NH3 F

[#]incluindo vareta de agitação

Amónio PP M62

0.01 - 0.8 mg/L N A

Salicylate

PT

Material

Material necessário (parcialmente opcional):

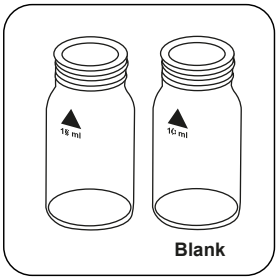
Reagentes	Unidade de Embalagem	Código do Produto
VARIO Amónio Nitrogénio, Jogo F10	1 Conjunto	535500

Preparação

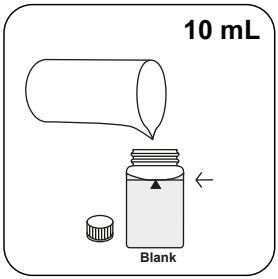
1. As amostras de água extremamente alcalinas ou ácidas deviam ser ajustadas com 0,5 mol/l (1N) de ácido sulfúrico ou 1 mol/l (1N) de soda cáustica para um valor pH de 7.

Realização da determinação Amónio com pacote de pó Vario

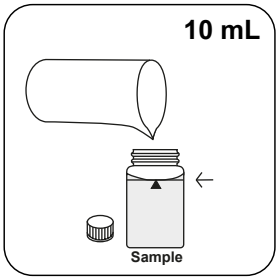
Escolher o método no equipamento.



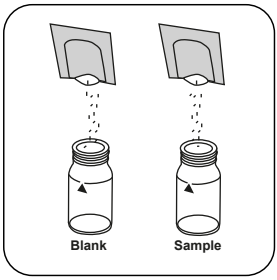
Preparar duas células de 24 mm limpas. Identificar uma célula como célula zero.



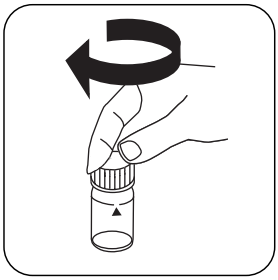
Adicionar **10 mL de água desmineralizada** à célula zero.



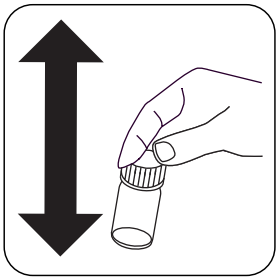
Adicionar **10 mL de amostra** à célula de amostra.



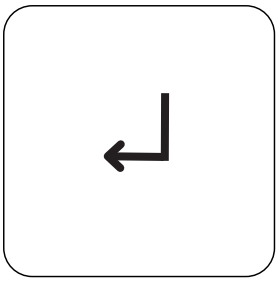
Introduzir em cada célula **um pacote de pó VARIO Ammonium Salicylate F10**.



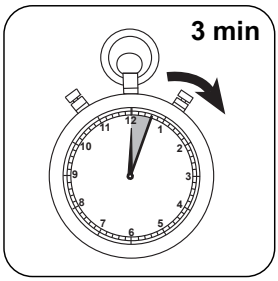
Fechar a(s) célula(s).



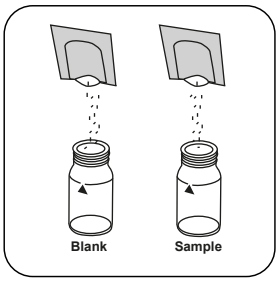
Dissolver o conteúdo agitando.



Premir a tecla **ENTER**.

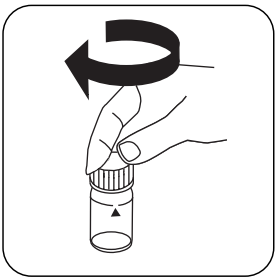


Aguardar **3 minuto(s) de tempo de reação**.

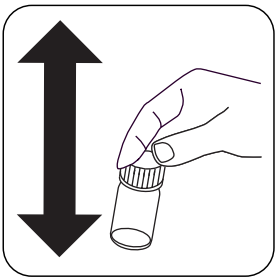


Introduzir em cada célula **um pacote de pó Vario Ammonium Cyanurate F10**.

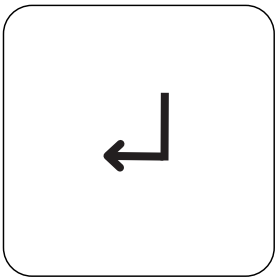
PT



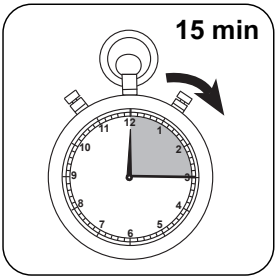
Fechar a(s) célula(s).



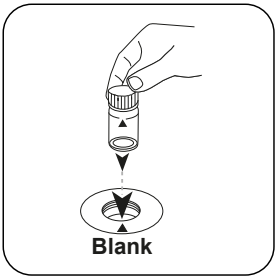
Dissolver o conteúdo agitando.



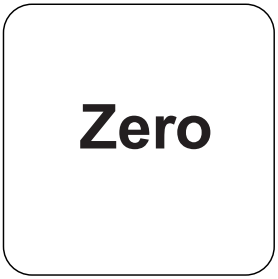
Premir a tecla **ENTER**.



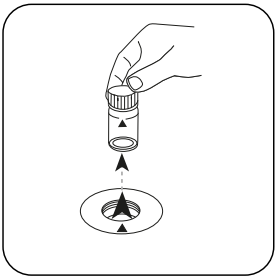
Aguardar **15 minuto(s) de tempo de reação**.



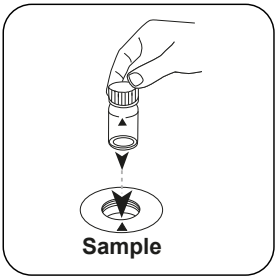
Colocar a **célula zero** no compartimento de medição. Observar o posicionamento.



Premir a tecla **ZERO**.



Retirar a célula do compartimento de medição.



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

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

No visor aparece o resultado em mg/L Amónio.

Análises

A tabela a seguir identifica os valores de saída que podem ser convertidos em outras formas de citação.

Unidade	Forma de citação	Fator de conversão
mg/l	N	1
mg/l	NH_4	1.288
mg/l	NH_3	1.22

Método Químico

Salicylate

Apêndice

Texto de Interferências

Interferências Pesistentes

- O sulfureto intensifica a coloração.

Interferências Removíveis

- O ferro interfere a determinação em todas as quantidades. A interferência por ferro é eliminada do seguinte modo.
  a) Determinação de ferro na amostra com um teste de ferro total.
  b) Na amostra zero é utilizado um padrão de ferro da concentração calculada, em vez da água desmineralizada.
- Uma interferência por glicina e hidrazina é muito rara e causa cores mais intensas na amostra preparada. As turvações e as cores de amostras resultam em valores de medição demasiado elevados. As amostras que observam interferências visíveis requerem uma destilação.

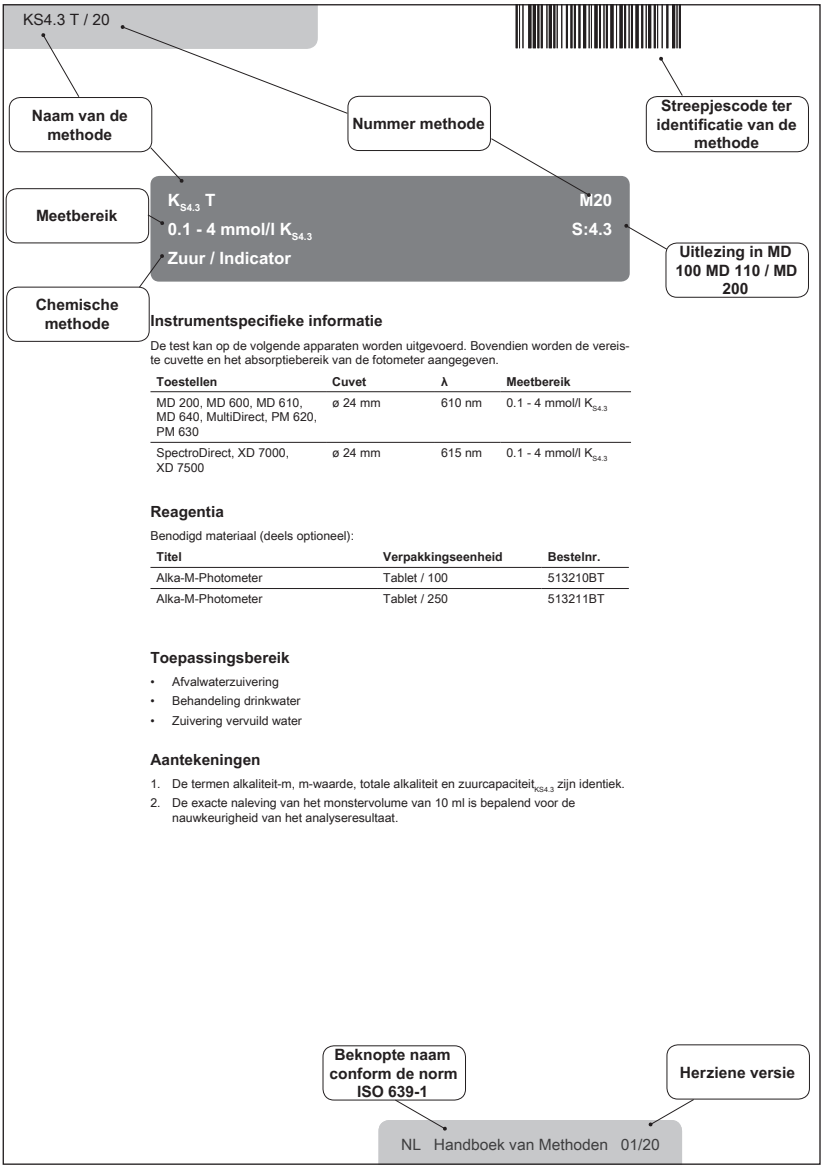
Interferências	a partir de / [mg/L]
Ca^{2+}	1000 ($CaCO_3$)
Mg^{2+}	6000 ($CaCO_3$)
NO_3^-	100
NO_2^-	12
PO_4^{3-}	100
SO_4^{2-}	300

Validação de método

Limite de Detecção	0.02 mg/L
Limite de Determinação	0.07 mg/L
Fim da Faixa de Medição	0.08 mg/L
Sensibilidade	0.42 mg/L / Abs
Faixa de Confiança	0.014 mg/L
Desvio Padrão	0.006 mg/L
Coeficiente de Variação	1.45 %

Derivado de

DIN 38406-E5-1
ISO 7150-1



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

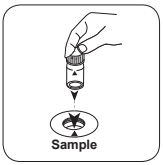
Uitvoering van de bepaling Zuurcapaciteit $K_{S4.3}$ met tablet

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.

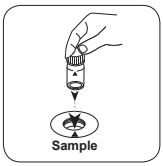
De spoelbakjes afsluiten.



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 $K_{S4.3}$.

Ammonium T M60

0.02 - 1 mg/L N A

Indofenolblauw

NL

Reagentia

Benodigd materiaal (deels optioneel):

Reagentia	Verpakkingseenheid	Bestelnr.
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

Voorbereiding

1. Zeewatermonsters:
   ammoniumconditioneringspoeder is nodig voor zee- of brakwatermonsters om neerslag (troebelheid) tijdens de test te voorkomen.
   Vul het spoekbakje met het monster tot aan 10 ml-merkteken en voeg twee lepel ammoniumconditioneringspoeder toe. Sluit het spoelbakje goed af met de dop en draai het spoelbakje rond tot het poeder is opgelost. Ga dan verder zoals beschreven.

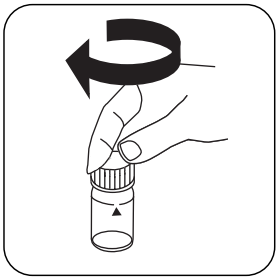
Aantekeningen

1. Het AMMONIA-nr. 1 tablet lost pas volledig op na toevoeging van AMMONIA Nr. 2 tablet.
2. De temperatuur van het monster is belangrijk voor de kleurontwikkelingstijd. Bij temperaturen onder de 20 °C is de reactietijd 15 minuten.

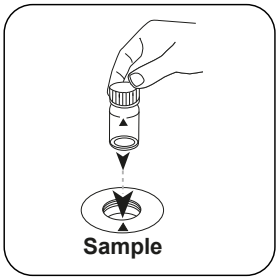
Uitvoering van de bepaling Ammonium met tablet

De methode in het apparaat selecteren.

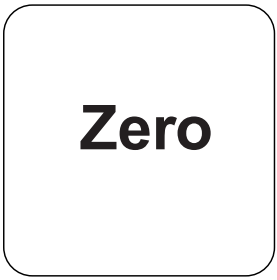
Spoelbakje van 24 mm met **10 mL staal** vullen.



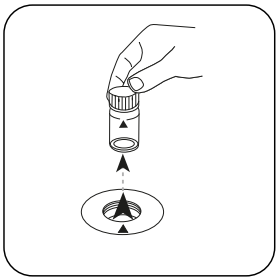
De spoelbakjes afsluiten.



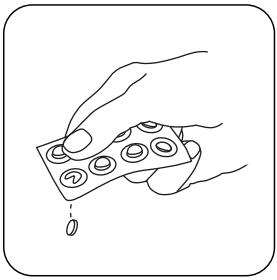
Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.



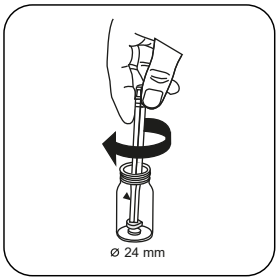
De toets **NUL** indrukken.



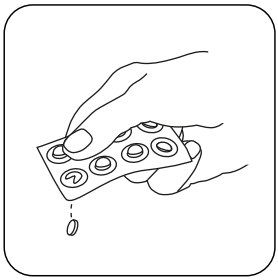
Het spoelbakje uit de meetschacht nemen.



Een AMMONIA Nr. 1 tablet toevoegen.

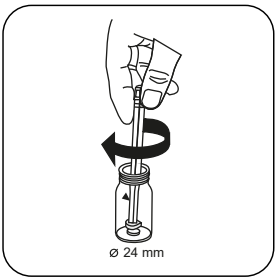


De tabletten onder lichte rotatie verpletteren.

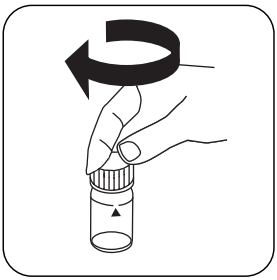


Een AMMONIA Nr. 2 tablet toevoegen.

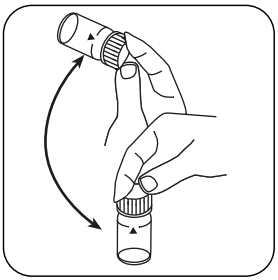
NL



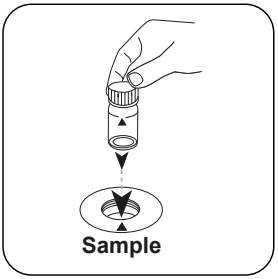
De tabletten onder lichte rotatie verpletteren.



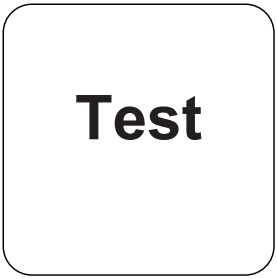
De spoelbakjes afsluiten.



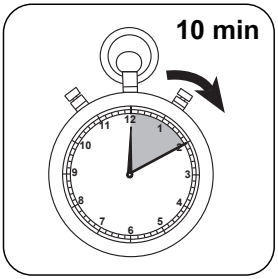
Tabletten oplossen door om te draaien



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



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



De reactietijd van 10 minuten afwachten.

Na afloop van de reactietijd wordt de meting automatisch uitgevoerd.

De display toont het resultaat in mg/L Ammonium.

Evaluatie

De volgende tabel geeft aan dat de uitvoerwaarden kunnen worden geconverteerd naar andere citatievormen.

Eenheid	Dagvaardingsformulier	Omrekeningsfactor
mg/l	N	1
mg/l	NH_4	1.2878
mg/l	NH_3	1.2158

Chemische methode

Indofenolblauw

Aanhangsel

Verstoringen

Permanente verstoringen

- Sulfiden, cyaniden, rhodaniden, alifatische aminen en aniline interfereren in hogere concentraties.

Literatuurverwijzing

Photometrische Analyseverfahren, Schwedt, Wissenschaftliche Verlagsgesellschaft mbH, Stuttgart 1989

Overeenkomstig

APHA-methode 4500-NH3 F

[#] met inbegrip van de mengstaaf

Ammonium PP M62

0.01 - 0.8 mg/L N A

Salicylaat

NL

Reagentia

Benodigd materiaal (deels optioneel):

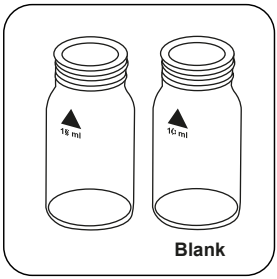
Reagentia	Verpakkingseenheid	Bestelnr.
VARIO Ammonia stikstof, set F10	1 Zin	535500

Voorbereiding

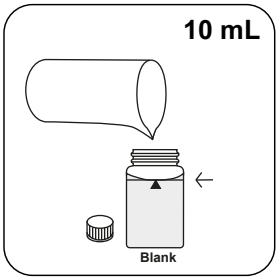
1. Extreem basische of zure watermonsters moeten worden ingesteld op een pH van 7 met 0,5 mol/l (1N) zwavelzuur of 1 mol/l (1N) natriumhydroxideoplossing.

Uitvoering van de bepaling Ammonium met Vario-poederpakje

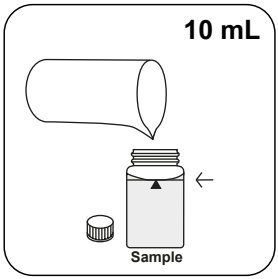
De methode in het apparaat selecteren.



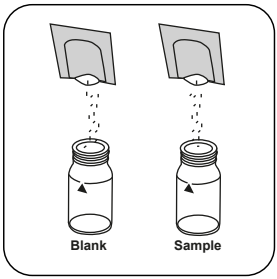
Twee propere spoelbakjes van 24 mm klaarzetten. Een als nulspoelbakje kenmerken.



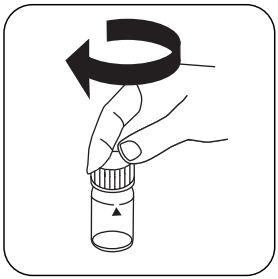
10 mL gedeïoniseerd water in het nulspoelbakje doen.



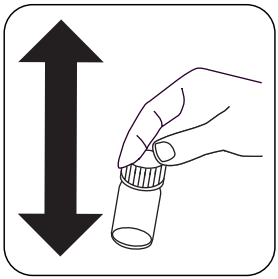
10 mL staal in het staalspoelbakje doen.



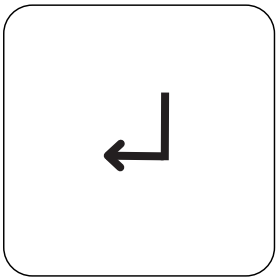
In elk spoelbakje **een Ammonium Salicylate F10 poederpakje** doen.



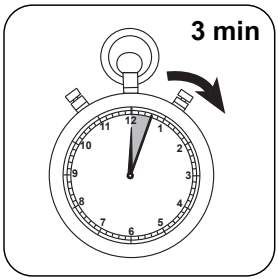
De spoelbakjes afsluiten.



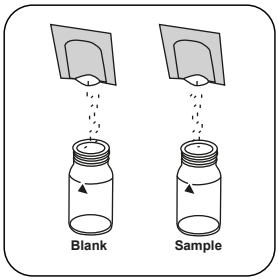
De inhoud oplossen door te schudden.



De toets **ENTER** indrukken.

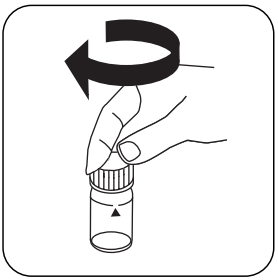


De reactietijd van 3 minuten afwachten.

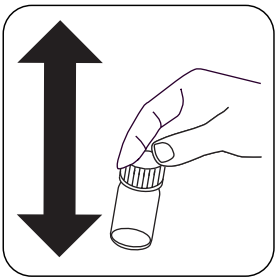


In elk spoelbakje **een Vario Ammonium Cyanurate F10 poederpakje** doen.

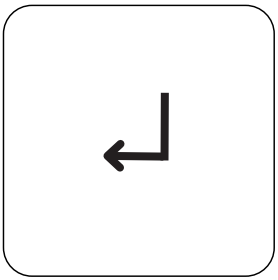
NL



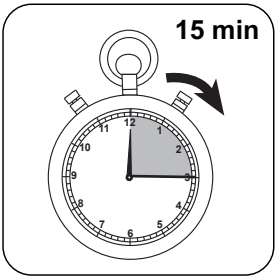
De spoelbakjes afsluiten.



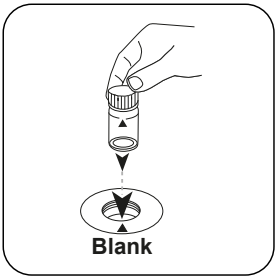
De inhoud oplossen door te schudden.



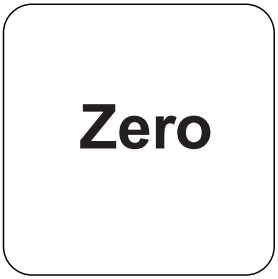
De toets **ENTER** indrukken.



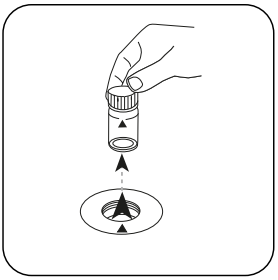
De reactietijd van 15 minuten afwachten.



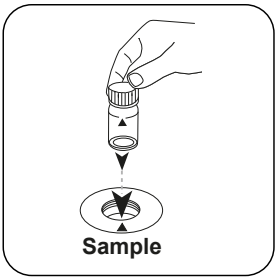
Het **nulspoelbakje** in de meetschacht plaatsen. Op de positionering letten.



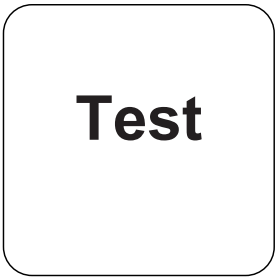
De toets **NUL** indrukken.



Het spoelbakje uit de meetschacht nemen.



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



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

De display toont het resultaat in mg/L Ammonium.

Evaluatie

De volgende tabel geeft aan dat de uitvoerwaarden kunnen worden geconverteerd naar andere citatievormen.

Eenheid	Dagvaardingsformulier	Omrekeningsfactor
mg/l	N	1
mg/l	NH_4	1.288
mg/l	NH_3	1.22

Chemische methode

Salicylaat

Aanhangsel

Verstoringen

Permanente verstoringen

- Sulfide versterkt de kleuring.

Uit te sluiten verstoringen

- IJzer verstoort de bepaling in alle hoeveelheden. De verstoring door ijzer wordt als volgt geëlimineerd.
  a) Bepaling van het ijzer in het monster aan de hand van een totale ijzertest.
  b) In het nulmonster wordt in plaats van gedeïoniseerd water een ijzerstandaard van de bepaalde concentratie gebruikt.
- Een verstoring door glycine en hydrazine is vrij zeldzaam en veroorzaakt intensievere kleuren in het bereide monster. De troebelheid en de kleur van het monster resulteren in te hoge meetwaarden. Voor monsters met duidelijke verstoringen is distillatie vereist.

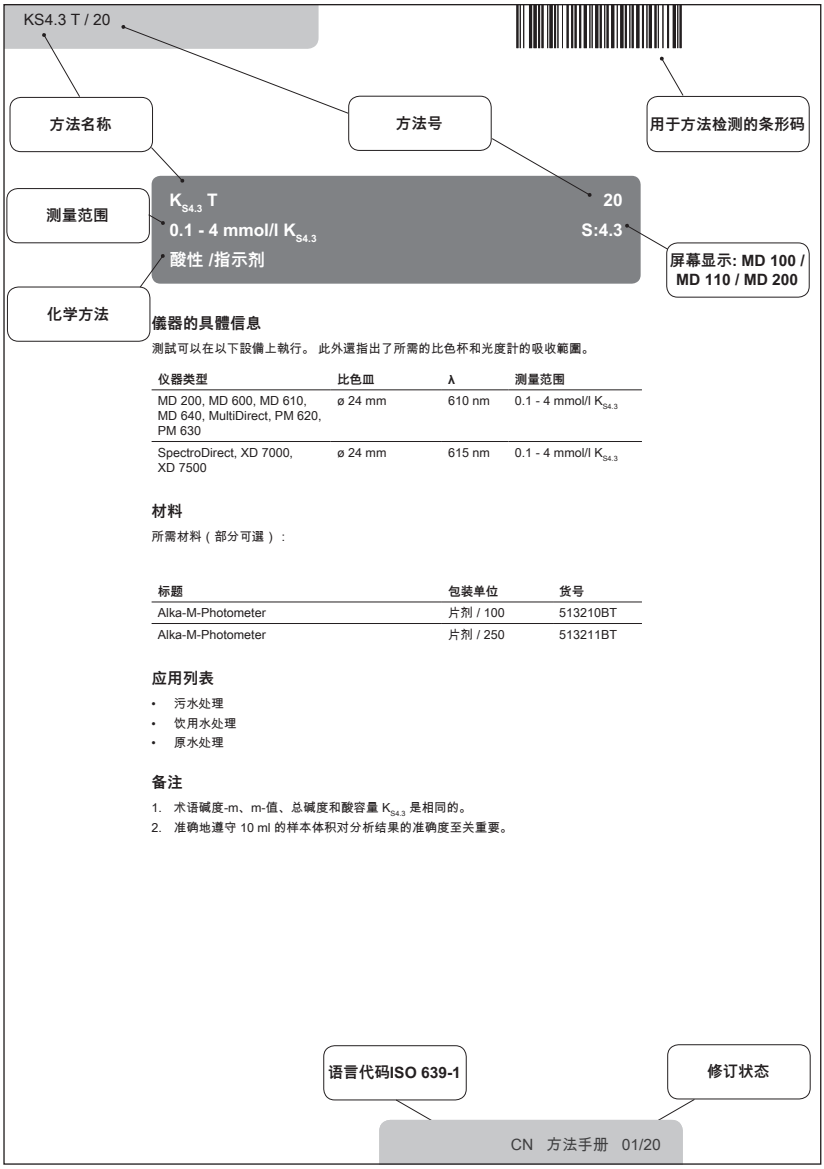
Verstoringen	verstoort vanaf
Ca^{2+}	1000 ($CaCO_3$)
Mg^{2+}	6000 ($CaCO_3$)
NO_3^-	100
NO_2^-	12
PO_4^{3-}	100
SO_4^{2-}	300

Validatie van de methodes

Aantoonbaarheidsgrens	0.02 mg/L
Bepaalbaarheidsgrens	0.07 mg/L
Einde meetbereik	0.08 mg/L
Gevoeligheid	0.42 mg/L / Abs
Betrouwbaarheidsgrenzen	0.014 mg/L
Standaardafwijking procedure	0.006 mg/L
Variatiecoefficient procedure	1.45 %

Afgeleid van

DIN 38406-E5-1
ISO 7150-1



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。

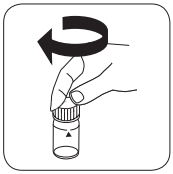
开始测量

进行测定 $K_{S4.3}$ 片剂酸容量

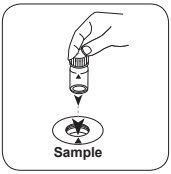
选择设备中的方法。

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。

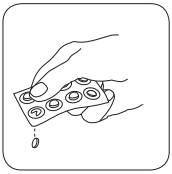


密封比色杯。

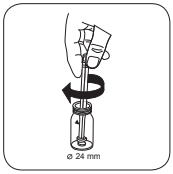


将样本比色杯放入测量轴中。注意定位。

• • •



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 铵 M60

0.02 - 1 mg/L N A

靛酚蓝

材料
所需材料（部分可選）：

ZH

试剂	包装单位	货号
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

准备

1. 海水样本：
   海水或微咸水样本需要铵调节粉末，以防止测试过程中出现沉淀（浑浊）。
   用样本填充比色杯至 10 ml 刻度，并加入两勺铵调节粉末。用比色杯盖盖上比色杯，旋转直至粉末溶解。然后按照说明继续。

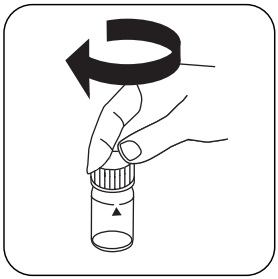
备注

1. AMMONIA No.1 片剂只有在加入 AMMONIA No.2 片剂后才能完全溶解。
2. 样本的温度对于显色时间很重要。20 °C 以下的反应时间是 15 分钟。

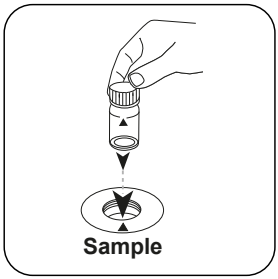
进行测定 铵片剂

选择设备中的方法。

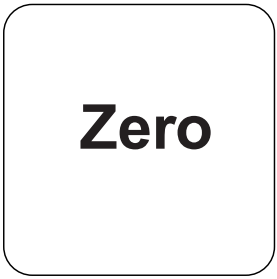
用 **10 mL 样本**填充 24 mm 比色杯。



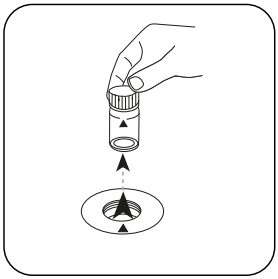
密封比色杯。



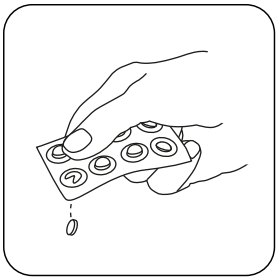
将**样本比色杯**放入测量轴中。注意定位。



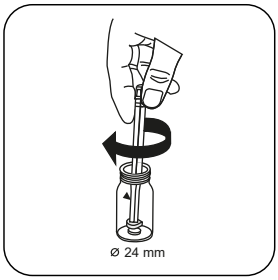
按下 **ZERO** 按钮。



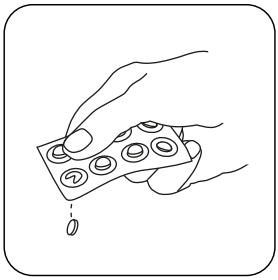
从测量轴上取下比色杯。



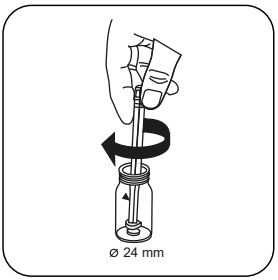
加入 **AMMONIA No. 1 片剂**。



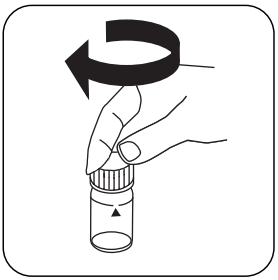
用轻微的扭转压碎片剂。



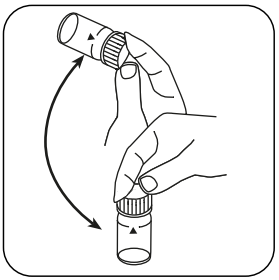
加入 **AMMONIA No. 2 片剂**。



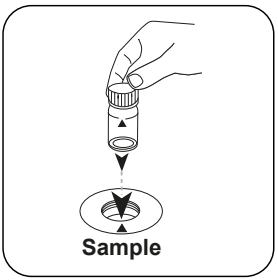
用轻微的扭转压碎片剂。



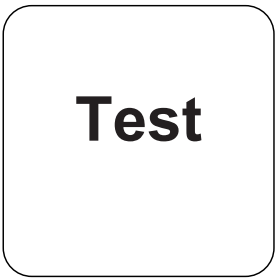
密封比色杯。



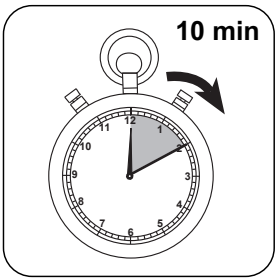
通过旋转溶解片剂。



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 铵。

分析

下表中输出数据也可转换为其他格式表示.

单位	参考表格	因素
mg/l	N	1
mg/l	NH_4	1.2878
mg/l	NH_3	1.2158

化学方法

靛酚蓝

附錄

干扰说明

持续干扰

- 硫化物、氰化物、硫氰酸盐、脂肪族胺和苯胺在较高浓度中干扰。

参考文献

Photometrische Analyseverfahren, Schwedt, Wissenschaftliche Verlagsgesellschaft mbH, Stuttgart 1989

参照

APHA 方法 4500-NH3 F

i含搅拌棒, 10cm

PP 铵 M62

0.01 - 0.8 mg/L N A

水杨酸

材料
所需材料（部分可選）：

ZH

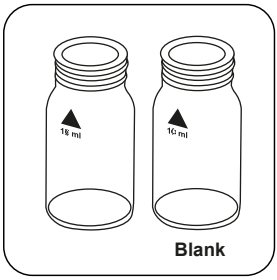
试剂	包装单位	货号
VARIO 氨氮，套件 F10	1 组	535500

准备

1. 用 0.5 mol/l（1N）硫酸或 1 mol/l（1N）氢氧化钠溶液将极端碱性或酸性水样的 pH 值调节至 7。

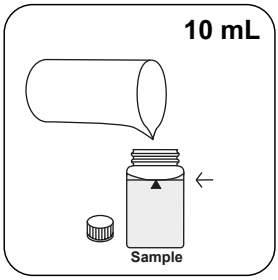
进行测定 Vario 铵粉包

选择设备中的方法。

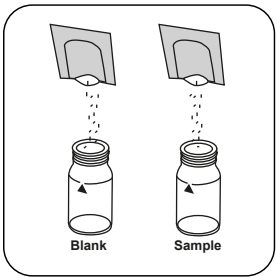


准备两个干净的 24 mm 比色杯。将一个比色杯标记为空白比色杯。

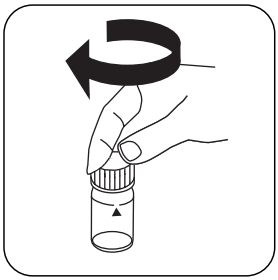
加入 **10 mL 去离子水**到比色杯中。



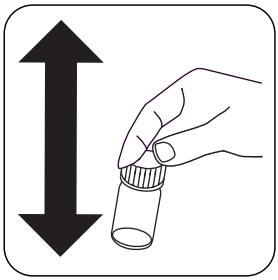
加入 **10 mL 样本**到样本比色杯中。



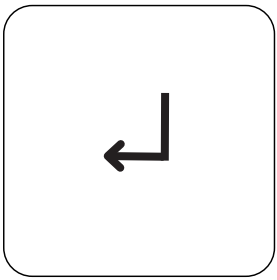
在每个比色杯中加入一个 **VARIO Ammonium Salicylate F10 粉包** 。



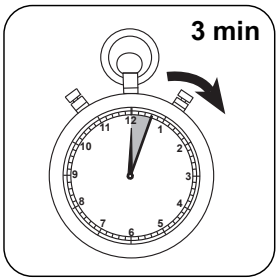
密封比色杯。



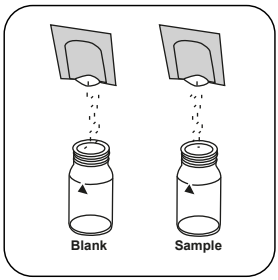
通过摇晃溶解内容物。



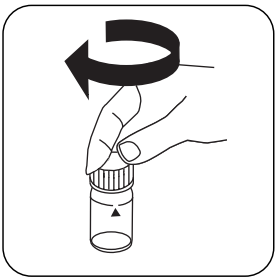
按下 **ENTER** 按钮。



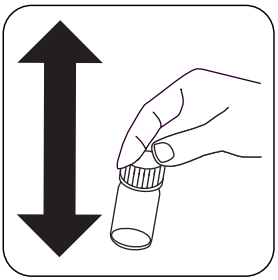
等待 **3 分钟反应时间** 。



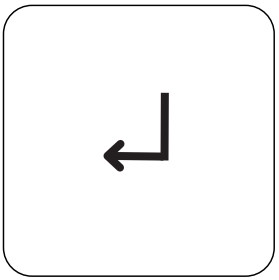
在每个比色杯中加入一个 **Vario Ammonium Cyanurate F10 粉包** 。



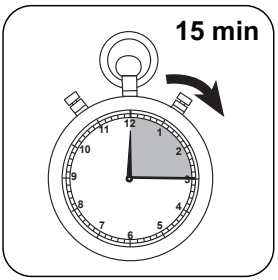
密封比色杯。



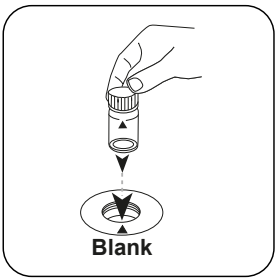
通过摇晃溶解内容物。



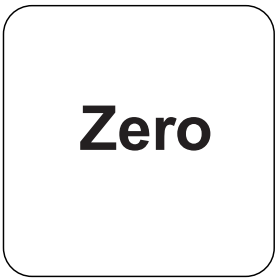
按下 **ENTER** 按钮。



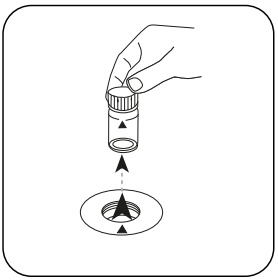
等待 **15 分钟反应时间** 。



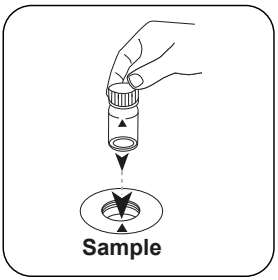
将**空白比色杯**放入测量轴中。注意定位。



按下 **ZERO** 按钮。



从测量轴上取下比色杯。



将**样本比色杯**放入测量轴中。注意定位。

按下 **TEST** (XD: **START**) 按钮。

结果在显示屏上显示为 mg / l 铵。

分析

下表中输出数据也可转换为其他格式表示.

单位	参考表格	因素
mg/l	N	1
mg/l	NH_4	1.288
mg/l	NH_3	1.22

化学方法

水杨酸

附錄

干扰说明

持续干扰

- 硫化物加剧着色。

可消除干扰

- 任何量的铁都会干扰测量。铁的干扰按如下消除。
  a) 用全铁试验测定样本中的铁。
  b) 在空白样本中使用确定浓度的铁标准代替去离子水。
- 甘氨酸和肼的干扰是非常罕见的，并且在准备的样品中引起更强烈的颜色。浑浊和样本颜色导致测量值太高。对于造成严重干扰的样本，需要蒸馏。

干擾	從/ [mg/l]
Ca^{2+}	1000 ($CaCO_3$)
Mg^{2+}	6000 ($CaCO_3$)
NO_3^-	100
NO_2^-	12
PO_4^{3-}	100
SO_4^{2-}	300

方法验证

检出限	0.02 mg/L
测定下限	0.07 mg/L
测量上限	0.08 mg/L
灵敏度	0.42 mg/L / Abs
置信范围	0.014 mg/L
标准偏差	0.006 mg/L
变异系数	1.45 %

源于

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