

# Lovibond® Water Testing

Tintometer® Group



## Manual of Methods

MD 100 • MD 110 • MD 200

### Chlorine Dioxide

**(EN) Manual of Methods**

Page 4

**(ES) Manual de Métodos**

Página 32

**(IT) Manuale dei Metodi**

Pagina 60

**(NL) Handboek Methoden**

Zijde 88

**(DE) Methodenhandbuch**

Seite 18

**(FR) Méthodes Manuel**

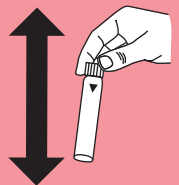
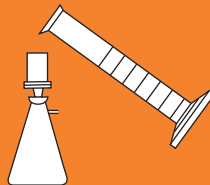
Page 46

**(PT) Métodos Manual**

Página 74

**(ZH) 方法手册**

Page 102





KS4.3 T / 20

Method name

Method number

Bar code for the detection of the methods

$K_{S4.3 T}$ 
20

0.1 - 4 mmol/l  $K_{S4.3}$ 
S:4.3

Acid / Indicator

Measuring range

Chemical Method

Display in the MD 100 / MD 110 / MD 200

### Instrument specific information

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

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

### Material

Required material (partly optional):

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

### Application List

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

### Notes

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

Language codes ISO 639-1

Revision status

EN Handbook of Methods 01/20

Performing test procedure

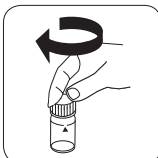
### Implementation of the provision Acid capacity $K_{S_{4.3}}$ with Tablet

Select the method on the device

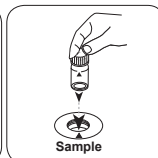
For this method, no ZERO measurements are to be carried out with the following devices: XD 7000, XD 7500



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

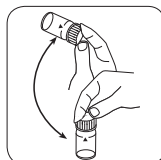


Close vial(s).

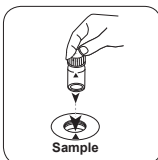


Place **sample vial** in the sample chamber. • Pay attention to the positioning.

• • •



Dissolve tablet(s) by inverting.



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



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

The result in Acid Capacity  $K_{S_{4.3}}$  appears on the display.



Chlorine dioxide T

M120

0.02 - 11 mg/L ClO<sub>2</sub>

CLO2

DPD / Glycine

## Material

EN

Required material (partly optional):

Reagents	Packaging Unit	Part Number
DPD No.1	Tablet / 100	511050BT
DPD No. 1	Tablet / 250	511051BT
DPD No. 1	Tablet / 500	511052BT
DPD No. 3	Tablet / 100	511080BT
DPD No. 3	Tablet / 250	511081BT
DPD No. 3	Tablet / 500	511082BT
Glycine <sup>9)</sup>	Tablet / 100	512170BT
Glycine <sup>9)</sup>	Tablet / 250	512171BT
DPD No. 3 High Calcium <sup>9)</sup>	Tablet / 100	515730BT
DPD No. 3 High Calcium <sup>9)</sup>	Tablet / 250	515731BT
DPD No. 3 High Calcium <sup>9)</sup>	Tablet / 500	515732BT
DPD No. 1 High Calcium <sup>9)</sup>	Tablet / 100	515740BT
DPD No. 1 High Calcium <sup>9)</sup>	Tablet / 250	515741BT
DPD No. 1 High Calcium <sup>9)</sup>	Tablet / 500	515742BT
Set DPD No. 1/No. 3 100 Pc. #	100 each	517711BT
Set DPD No. 1/No. 3 250 Pc. #	250 each	517712BT
Set DPD No. 1/Glycine 100 Stck. #	100 each	517731BT
Set DPD No. 1/Glycine 250 Stck. #	250 each	517732BT
Set DPD No. 1/No. 3 High Calcium 100 Pc. #	100 each	517781BT
Set DPD No. 1/No. 3 High Calcium 250 Pc. #	250 each	517782BT
DPD No. 3 Evo	Tablet / 100	511420BT
DPD No. 3 Evo	Tablet / 250	511421BT
DPD No. 3 Evo	Tablet / 500	511422BT



## Sampling

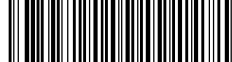
1. When preparing the sample, outgassing, e.g. through the pipette or shaking, must be avoided.
2. The analysis must take place immediately after taking the sample.

## Preparation

1. Cleaning of vials:  
As many household cleaners (e.g. dishwasher detergent) contain reducing substances, this can lead to lower results with the determination of Chlorine dioxide. To avoid measurement errors, the glassware used should be free of chlorine consumption. To achieve this, all glassware should be placed in a sodium hypochlorite solution (0.1 g/L) for one hour and then rinsed thoroughly with deionised water.
2. Strong alkaline or acidic water samples must be adjusted between pH 6 and pH 7 before the analysis (use 0.5 mol/l Sulphuric acid or 1 mol/l Sodium hydroxide).

## Notes

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



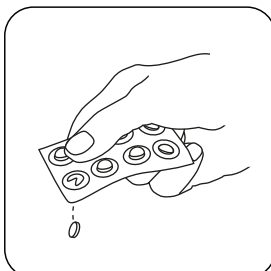
## Determination of Chlorine Dioxide, in presence of chlorine with tablet

Select the method on the device.

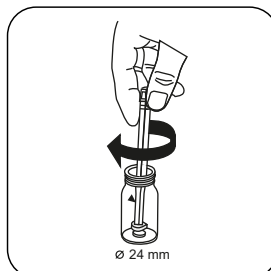
In addition, choose the test: in presence of Chlorine



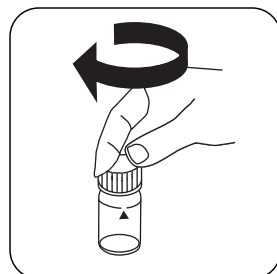
Fill 24 mm vial with **10 mL sample**.



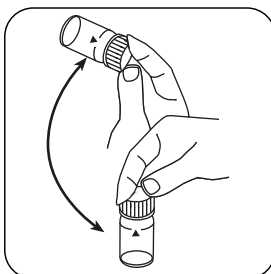
Add **GLYCINE tablet**.



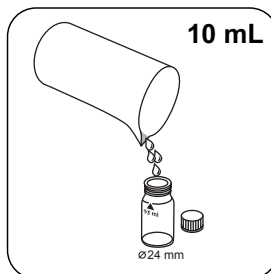
Crush tablet(s) by rotating slightly.



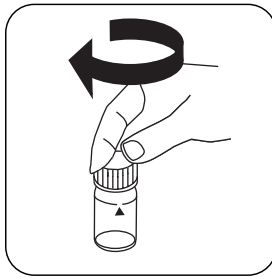
Close vial(s).



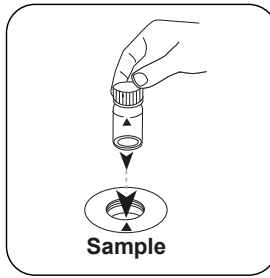
Dissolve tablet(s) by inverting.



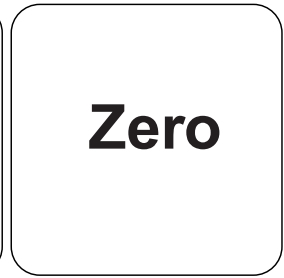
Fill a **second vial** with **10 mL sample**.



Close vial(s).

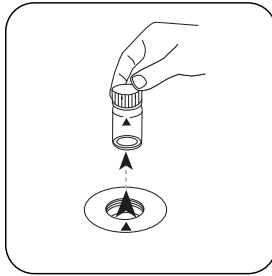


Place **sample vial** in the sample chamber. Pay attention to the positioning.

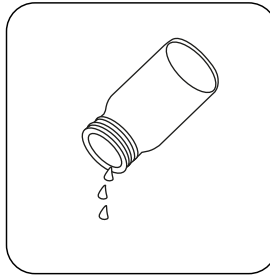


Press the **ZERO** button.

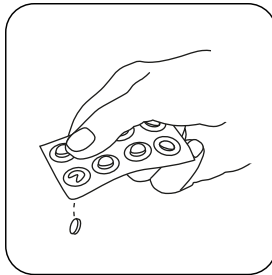
EN



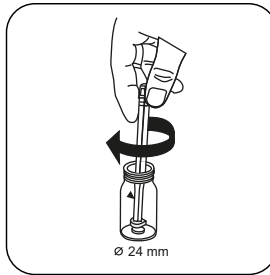
Remove the vial from the sample chamber.



Empty vial.



Add **DPD No. 1 tablet** .

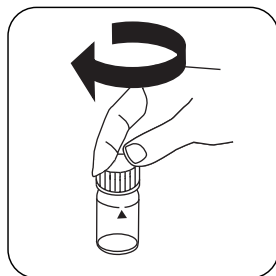
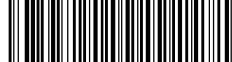


Crush tablet(s) by rotating slightly.

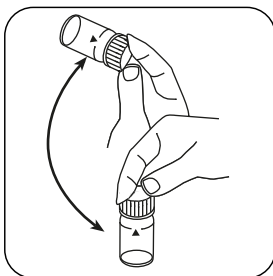


Fill prepared vial with prepared **glycine solution**.

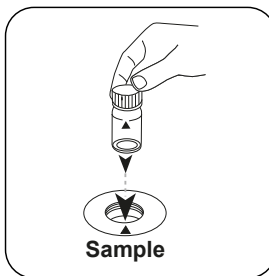




Close vial(s).



Dissolve tablet(s) by inverting.



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

# Test

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

The result in mg/L Chlorine Dioxide 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	ClO <sub>2</sub>	1
mg/l	Cl <sub>2</sub> frei	0.525
mg/l	Cl <sub>2</sub> geb.	0.525
mg/l	ges. Cl <sub>2</sub>	0.525

EN

## Chemical Method

DPD / Glycine

## Appendix

### Interferences

#### Persistent Interferences

1. All oxidising agents in the samples lead to higher results.

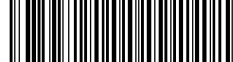
#### Removeable Interferences

1. Concentrations above 19 mg/L chlorine dioxide can lead to results within the measuring range of up to 0 mg/L. In this case, the water sample must be diluted with water that is free from chlorine dioxide. 10 ml of the diluted sample should be mixed with the reagent and the measurement taken again.

#### Derived from

DIN 38408, Section 5

<sup>a)</sup> alternative reagent, used instead of DPD No.1/No.3 in case of turbidity in the water sample caused by high concentration of calcium and/or high conductivity | <sup>b)</sup> additionally required for determination of bromine, chlorine dioxide and ozone in the presence of chlorine | <sup>c)</sup> including stirring rod, 10 cm



Chlorine dioxide PP

M122

0.04 - 3.8 mg/L ClO<sub>2</sub>

CLO2

DPD

EN

## Material

Required material (partly optional):

Reagents	Packaging Unit	Part Number
Chlorine Free DPD F10	Powder / 100 pc.	530100
Chlorine Free DPD F10	Powder / 1000 pc.	530103
Glycine <sup>9</sup>	Tablet / 100	512170BT
Glycine <sup>9</sup>	Tablet / 250	512171BT
VARIO Glycine Reagent 10 %, 29 ml	29 mL	532210

## Sampling

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

## Preparation

1. Cleaning of vials:  
As many household cleaners (e.g. dishwasher detergent) contain reducing substances, this can lead to lower results with the determination of Chlorine dioxide. To avoid measurement errors, the glassware used should be free of chlorine consumption. To achieve this, all glassware should be placed in a sodium hypochlorite solution (0.1 g/L) for one hour and then rinsed thoroughly with deionised water.
2. Strong alkaline or acidic water samples must be adjusted between pH 6 and pH 7 before the analysis (use 0.5 mol/l Sulphuric acid or 1 mol/l Sodium hydroxide).

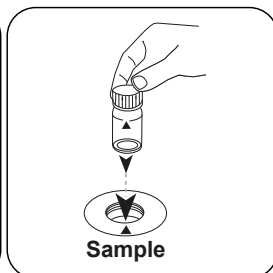
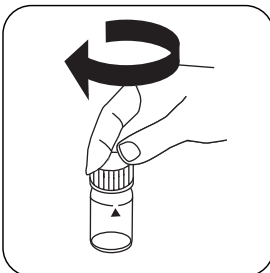
## Determination of Chlorine Dioxide, in absence of chlorine with powder packs

Select the method on the device.

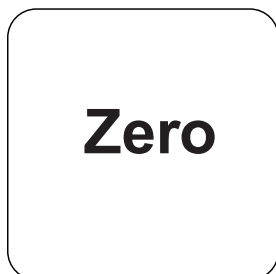
In addition, choose the test: without Chlorine



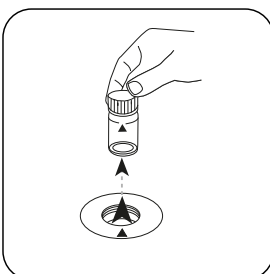
Fill 24 mm vial with **10 mL sample**. Close vial(s).



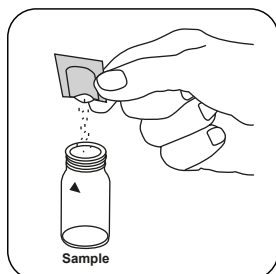
Place **sample vial** in the sample chamber. Pay attention to the positioning.



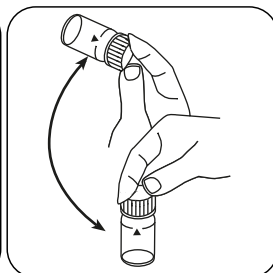
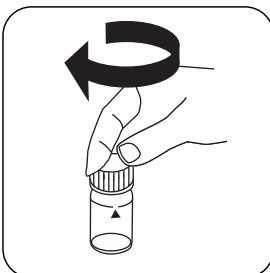
Press the **ZERO** button.



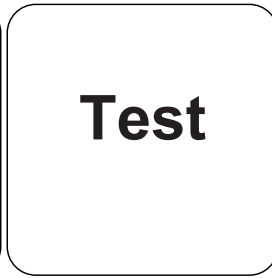
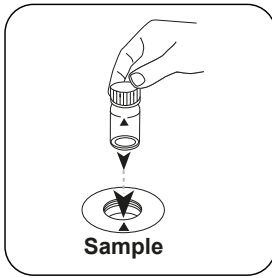
Remove the vial from the sample chamber.



Add **Chlorine FREE-DPD / F10 powder pack**. Close vial(s).



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



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

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

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

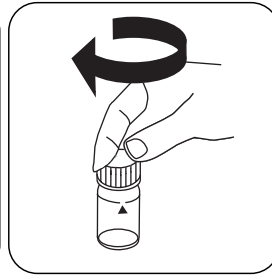
### Determination of Chlorine Dioxide, in presence of chlorine with powder packs

Select the method on the device.

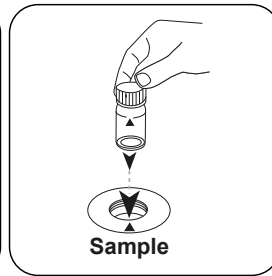
In addition, choose the test: in presence of Chlorine



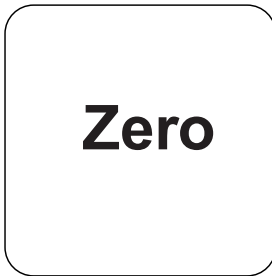
Fill 24 mm vial with **10 mL sample**.



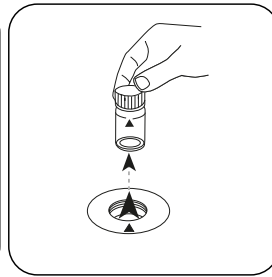
Close vial(s).



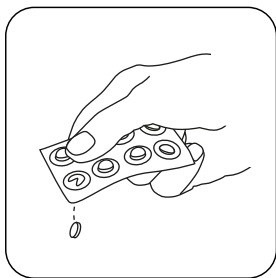
Place **sample vial** in the sample chamber. Pay attention to the positioning.



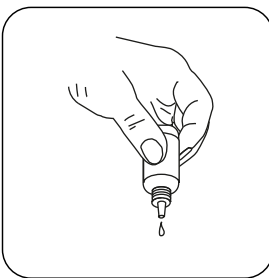
Press the **ZERO** button.



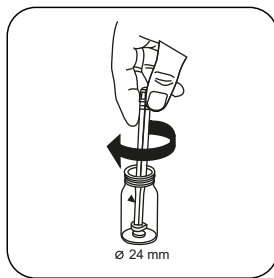
Remove the vial from the sample chamber.



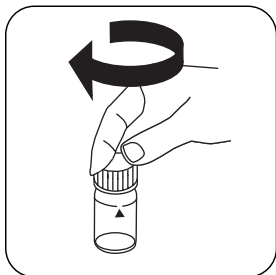
Add **GLYCINE tablet**.



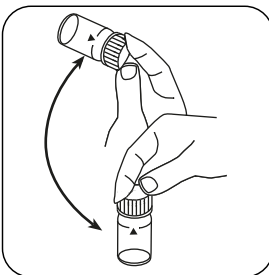
or add 4 drops **GLYCINE Reagent**.



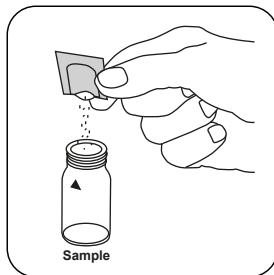
Crush tablet(s) by rotating slightly.



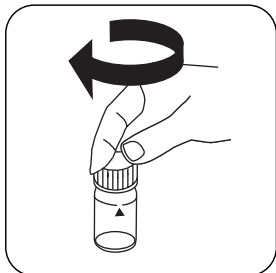
Close vial(s).



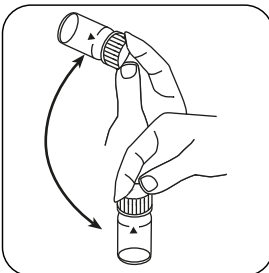
Dissolve tablet(s) by inverting.



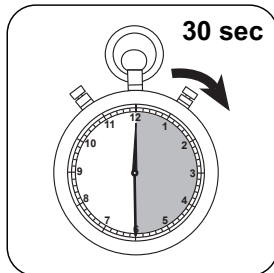
Add **Chlorine-Free-DPD/ F10 powder pack**.



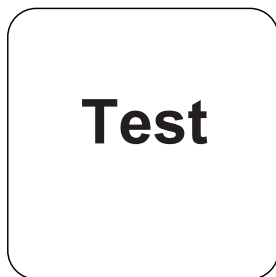
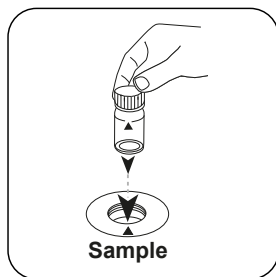
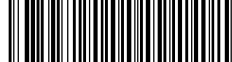
Close vial(s).



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



Wait for **30 second(s) reaction time**.



EN

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

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

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



## Chemical Method

DPD

## Appendix

### Interferences

#### Persistent Interferences

1. All oxidising agents in the samples lead to higher results.

#### Removeable Interferences

1. Concentrations above 3.8 mg/L chlorine dioxide can lead to results within the measuring range of up to 0 mg/L. In this case, the water sample must be diluted with water that is free from chlorine dioxide. 10 ml of the diluted sample should be mixed with the reagent and the measurement taken again (plausibility test).


#### Derived from

DIN 38408, Section 5

<sup>9</sup> additionally required for determination of bromine, chlorine dioxide and ozone in the presence of chlorine

EN



KS4.3 T / 20


Methoden Name

Methodennummer

Barcode zur Methodenerkennung

Messbereich

20

S:4.3

Chemische Methode

Säure / Indikator

Displayanzeige im MD 100 MD 110 / MD 200

**Instrumentenspezifische Informationen**

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

Geräte	Küvette	$\lambda$	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 Analyseergebnisses entscheidend.

Sprachkürzel nach ISO 639-1

Revisionsstand

DE Methodenhandbuch 01/20

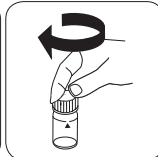
Durchführung der  
Messung**Durchführung der Bestimmung Säurekapazität  $K_{s4,3}$  mit Tablette**

Die Methode im Gerät auswählen.

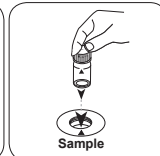
Für diese Methode muss bei folgenden Geräten keine ZERO-Messung durchgeführt werden: XD 7000, XD 7500



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

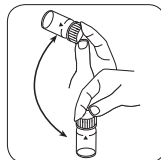


Küvette(n) verschließen.

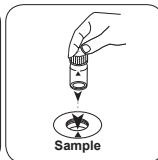


Die **Probenküvette** in den Messschacht stellen. Positionierung beachten.

• • •



Tablette(n) durch Umschwenken lösen.



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



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

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



Chlordioxid T

M120

0,02 - 11 mg/L ClO<sub>2</sub>

CLO2

DPD / Glycin

## Material

DE

Benötigtes Material (zum Teil optional):

Reagenzien	Form/Menge	Bestell-Nr.
DPD No.1	Tablette / 100	511050BT
DPD No. 1	Tablette / 250	511051BT
DPD No. 1	Tablette / 500	511052BT
DPD No. 3	Tablette / 100	511080BT
DPD No. 3	Tablette / 250	511081BT
DPD No. 3	Tablette / 500	511082BT
Glycine <sup>9)</sup>	Tablette / 100	512170BT
Glycine <sup>9)</sup>	Tablette / 250	512171BT
DPD No. 3 High Calcium <sup>9)</sup>	Tablette / 100	515730BT
DPD No. 3 High Calcium <sup>9)</sup>	Tablette / 250	515731BT
DPD No. 3 High Calcium <sup>9)</sup>	Tablette / 500	515732BT
DPD No. 1 High Calcium <sup>9)</sup>	Tablette / 100	515740BT
DPD No. 1 High Calcium <sup>9)</sup>	Tablette / 250	515741BT
DPD No. 1 High Calcium <sup>9)</sup>	Tablette / 500	515742BT
Set DPD No. 1/No. 3 <sup>#</sup>	je 100	517711BT
Set DPD No. 1/No. 3 <sup>#</sup>	je 250	517712BT
Set DPD No. 1/Glycine <sup>#</sup>	je 100	517731BT
Set DPD No. 1/Glycine <sup>#</sup>	je 250	517732BT
Set DPD No. 1/No. 3 High Calcium <sup>#</sup>	je 100	517781BT
Set DPD No. 1/No. 3 High Calcium <sup>#</sup>	je 250	517782BT
DPD No. 3 Evo	Tablette / 100	511420BT
DPD No. 3 Evo	Tablette / 250	511421BT
DPD No. 3 Evo	Tablette / 500	511422BT



## Probenahme

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

## Vorbereitung

1. Reinigung der Küvetten:  
Da viele Haushaltsreiniger (z.B. Geschirrspülmittel) reduzierende Stoffe enthalten, kann es bei der Bestimmung von Chlordioxid zu Minderbefunden kommen. Um diesen Messfehler auszuschließen, sollten die Glasgeräte chlorzehrungsfrei sein. Dazu werden die Glasgeräte für eine Stunde unter Natriumhypochloritlösung (0,1 g/L) aufbewahrt und danach gründlich mit VE-Wasser (Vollentsalztes Wasser) gespült.
2. Stark alkalische oder saure Wässer müssen vor der Analyse in einen pH-Bereich zwischen 6 und 7 gebracht werden (mit 0,5 mol/l Schwefelsäure bzw. 1 mol/l Natronlauge).

DE

## Anmerkungen

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

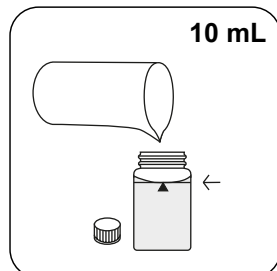


DE

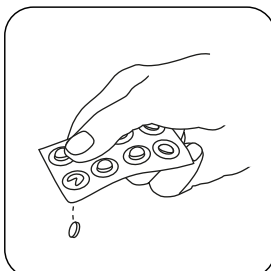
## Durchführung der Bestimmung Chlordioxid, neben Chlor, mit Tablette

Die Methode im Gerät auswählen.

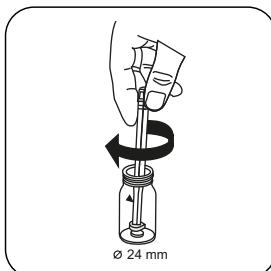
Wählen Sie zudem die Bestimmung: neben Chlor



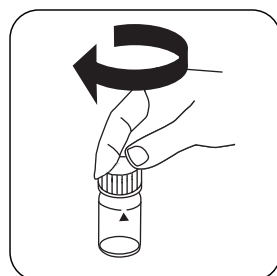
24-mm-Küvette mit **10 mL Probe** füllen.



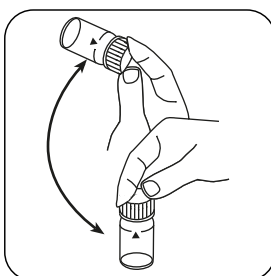
Eine **GLYCINE** **Tablette** zugeben.



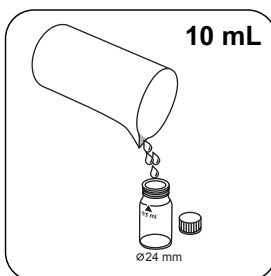
Tablette(n) unter leichter Drehung zerdrücken.



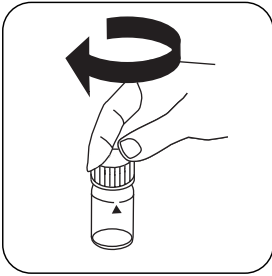
Küvette(n) verschließen.



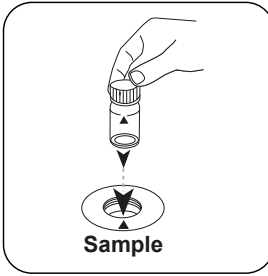
Tablette(n) durch Umschwenken lösen.



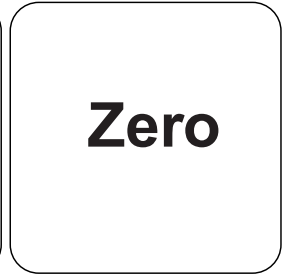
Eine **zweite Küvette** mit **10 mL Probe** füllen.



Küvette(n) verschließen.

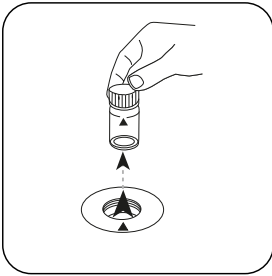


Die **Probeküvette** in den Messschacht stellen. Positionierung beachten.



Taste **ZERO** drücken.

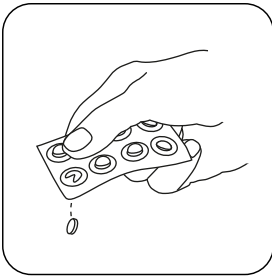
DE



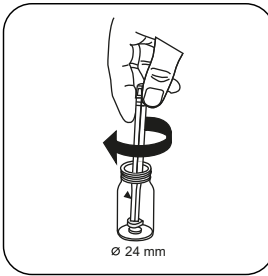
Küvette aus dem Messschacht nehmen.



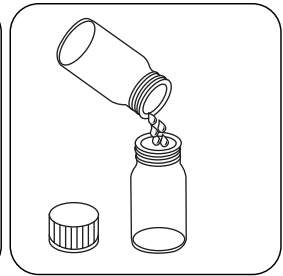
Küvette entleeren.



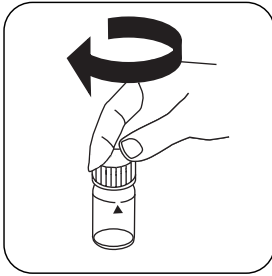
Eine **DPD No. 1** Tablette zugeben.



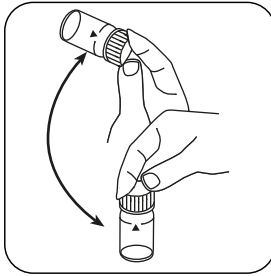
Tablette(n) unter leichter Drehung zerdrücken.



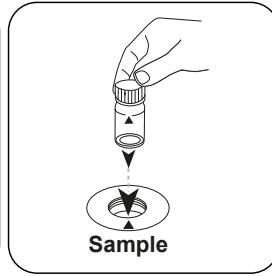
Die vorbereitete **Glycini**lösung in die vorbereitete Küvette füllen.



Küvette(n) verschließen.



Tablette(n) durch Umschwenken lösen.



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

# Test

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

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

## Auswertung

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

Einheit	Zitierform	Umrechnungsfaktor
mg/l	ClO <sub>2</sub>	1
mg/l	Cl <sub>2</sub> frei	0.525
mg/l	Cl <sub>2</sub> geb.	0.525
mg/l	ges. Cl <sub>2</sub>	0.525

DE

## Chemische Methode

DPD / Glycin

## Appendix

## Störungen

### Permanente Störungen

1. Alle in den Proben vorhandenen Oxidationsmittel führen zu Mehrbefunden.

### Ausschließbare Störungen

1. Konzentrationen über 19 mg/L Chlordioxid können zu Ergebnissen innerhalb des Messbereiches bis hin zu 0 mg/L führen. In diesem Fall ist die Wasserprobe mit Chlordioxidfreiem Wasser zu verdünnen. 10 ml der verdünnten Probe werden mit Reagenz versetzt und die Messung wiederholt.

### Abgeleitet von

DIN 38408, Teil 5

<sup>a)</sup> Hilfsreagenz, alternativ zur DPD No. 1 / No. 3 bei Eintrübungen der Probe durch hohen Calciumionengehalt und/oder hohe Leitfähigkeit | <sup>b)</sup> Hilfsreagenz, wird zusätzlich für die Bestimmung Brom, Chlordioxid bzw. Ozon benötigt bei Anwesenheit von Chlor | \* inklusive Rührstab





Chlordioxid PP

M122

0,04 - 3,8 mg/L ClO<sub>2</sub>

CLO2

DPD

## Material

DE

Benötigtes Material (zum Teil optional):

Reagenzien	Form/Menge	Bestell-Nr.
Chlorine Free DPD F10	Pulver / 100 St.	530100
Chlorine Free DPD F10	Pulver / 1000 St.	530103
Glycine <sup>9)</sup>	Tablette / 100	512170BT
Glycine <sup>9)</sup>	Tablette / 250	512171BT
VARIO Glycin Reagenz 10%, 29 ml	29 mL	532210

## Probenahme

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

## Vorbereitung

1. Reinigung der Küvetten:  
Da viele Haushaltsreiniger (z.B. Geschirrspülmittel) reduzierende Stoffe enthalten, kann es bei der Bestimmung von Chlordioxid zu Minderbefunden kommen. Um diesen Messfehler auszuschließen, sollten die Glasgeräte chlorzehrungsfrei sein. Dazu werden die Glasgeräte für eine Stunde unter Natriumhypochloritlösung (0,1 g/L) aufbewahrt und danach gründlich mit VE-Wasser (Vollentsalztes Wasser) gespült.
2. Stark alkalische oder saure Wässer müssen vor der Analyse in einen pH-Bereich zwischen 6 und 7 gebracht werden (mit 0,5 mol/l Schwefelsäure bzw. 1 mol/l Natronlauge).

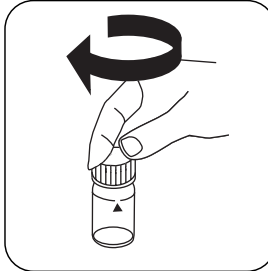
## Durchführung der Bestimmung Chlordioxid, in Abwesenheit von Chlor, mit Pulverpackchen

Die Methode im Gerät auswählen.

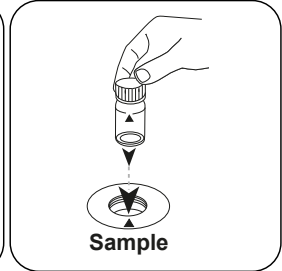
Wählen Sie zudem die Bestimmung: ohne Chlor



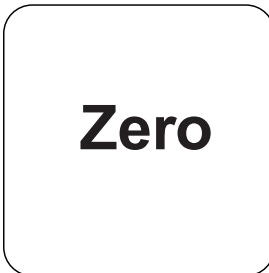
24-mm-Küvette mit **10 mL Probe** füllen.



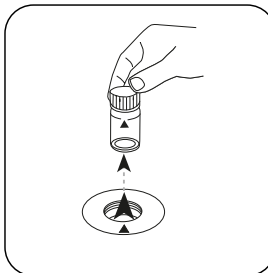
Küvette(n) verschließen.



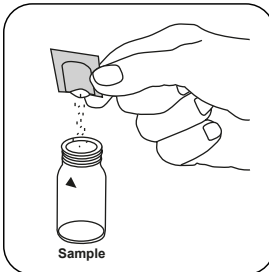
Die **Probenküvette** in den Messschacht stellen. Positionierung beachten.



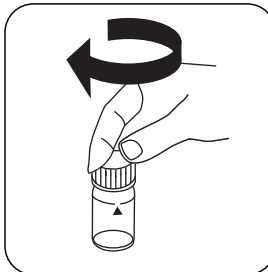
Taste **ZERO** drücken.



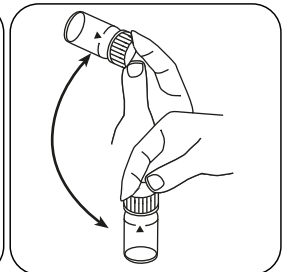
Küvette aus dem Messschacht nehmen.



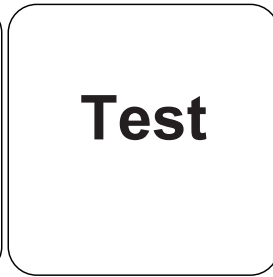
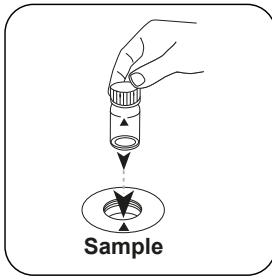
Ein **Chlorine FREE-DPD / F10 Pulverpackchen** zugeben.



Küvette(n) verschließen.



Inhalt durch Umschwenken mischen (20 Sek.).



DE

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

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

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

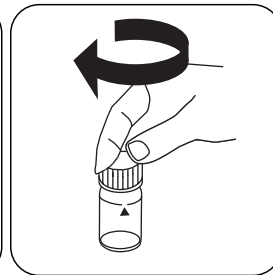
### Durchführung der Bestimmung Chlordioxid, in Anwesenheit von Chlor, mit Pulverpackchen

Die Methode im Gerät auswählen.

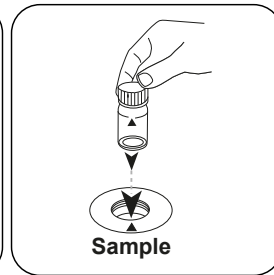
Wählen Sie zudem die Bestimmung: neben Chlor



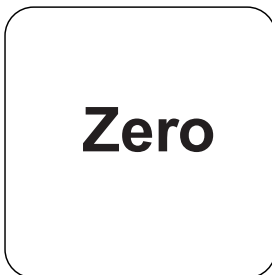
24-mm-Küvette mit **10 mL Probe** füllen.



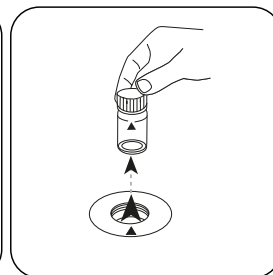
Küvette(n) verschließen.



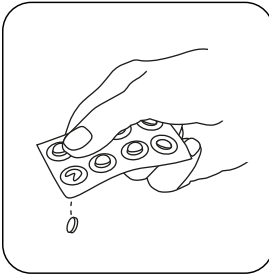
Die **Probenküvette** in den Messschacht stellen. Positionierung beachten.



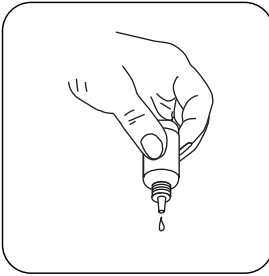
Taste **ZERO** drücken.



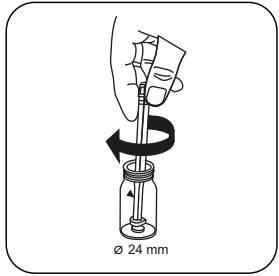
Küvette aus dem Messschacht nehmen.



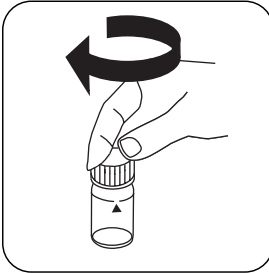
Eine **GLYCINE** Tablette zugeben.



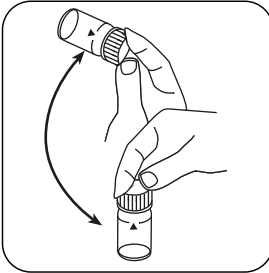
oder 4 Tropfen GLYCINE Reagenz zugeben.



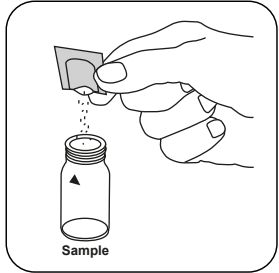
Tablette(n) unter leichter Drehung zerdrücken.



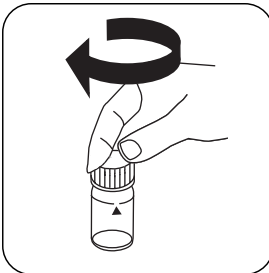
Küvette(n) verschließen.



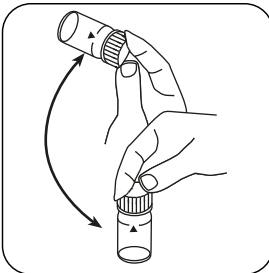
Tablette(n) durch Umschwenken lösen.



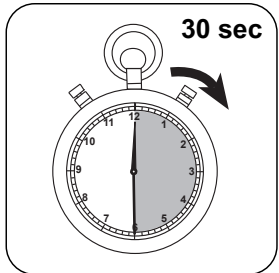
Ein **Chlorine-Free-DPD/ F10 Pulverpäckchen** zugeben.



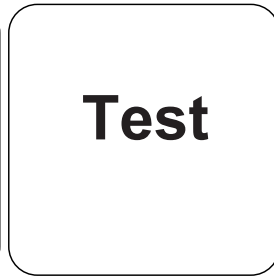
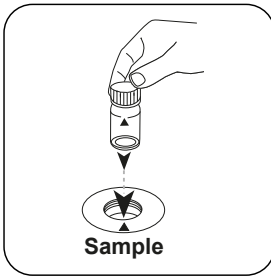
Küvette(n) verschließen.



Inhalt durch Umschwenken mischen (20 Sek.).



**30 Sekunden Reaktionszeit** abwarten.



DE

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

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

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



## Chemische Methode

DPD

## Appendix

### Störungen

#### Permanente Störungen

1. Alle in den Proben vorhandenen Oxidationsmittel führen zu Mehrbefunden.

#### Ausschließbare Störungen


1. Konzentrationen über 3,8 mg/L Chlordioxid können zu Ergebnissen innerhalb des Messbereiches bis hin zu 0 mg/L führen. In diesem Fall ist die Wasserprobe mit chlordioxidfreiem Wasser zu verdünnen. 10 ml der verdünnten Probe werden mit Reagenz versetzt und die Messung wiederholt (Plausibilitätstest).

#### Abgeleitet von

DIN 38408, Teil 5

<sup>9</sup> Hilfsreagenz, wird zusätzlich für die Bestimmung Brom, Chlordioxid bzw. Ozon benötigt bei Anwesenheit von Chlor

DE

KS4.3 T / 20


Nombre del método

Número de método

Código de barras para reconocer el método

Rango de medición

20

S:4.3

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	$\lambda$	Rango de medición
MD 200, MD 600, MD 610, MD 640, MultiDirect, PM 620, PM 630	$\varnothing$ 24 mm	610 nm	0.1 - 4 mmol/l $K_{S4.3}$
SpectroDirect, XD 7000, XD 7500	$\varnothing$ 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  $K_{24.3}$  con tableta

Seleccionar el método en el aparato.

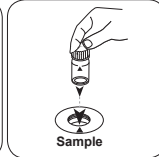
Para este método no es necesario realizar medición CERO en los aparatos siguientes: XD 7000, XD 7500



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

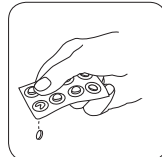


Cerrar la(s) cubeta(s).

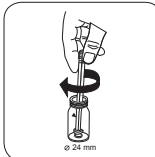


Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!

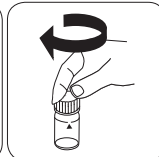
• • •



Añadir **tableta ALKA-M-PHOTOMETER**.

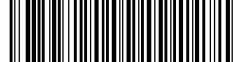


Triturar la(s) tableta(s) girando ligeramente.



Cerrar la(s) cubeta(s).





Dióxido de cloro T

M120

0.02 - 11 mg/L ClO<sub>2</sub>

CLO2

DPD / Glicina

## Material

ES

Material requerido (parcialmente opcional):

Reactivos	Unidad de embalaje	No. de referencia
DPD n°1	Tabletas / 100	511050BT
DPD n° 1	Tabletas / 250	511051BT
DPD n° 1	Tabletas / 500	511052BT
DPD n° 3	Tabletas / 100	511080BT
DPD n° 3	Tabletas / 250	511081BT
DPD n° 3	Tabletas / 500	511082BT
Glicina <sup>§</sup>	Tabletas / 100	512170BT
Glicina <sup>§</sup>	Tabletas / 250	512171BT
DPD n° 3 High Calcium <sup>e)</sup>	Tabletas / 100	515730BT
DPD n° 3 High Calcium <sup>e)</sup>	Tabletas / 250	515731BT
DPD n° 3 High Calcium <sup>e)</sup>	Tabletas / 500	515732BT
DPD n° 1 High Calcium <sup>e)</sup>	Tabletas / 100	515740BT
DPD n° 1 High Calcium <sup>e)</sup>	Tabletas / 250	515741BT
DPD n° 1 High Calcium <sup>e)</sup>	Tabletas / 500	515742BT
Juego DPD n° 1/n° 3 <sup>#</sup>	100 cada	517711BT
Juego DPD n° 1/n° 3 <sup>#</sup>	250 cada	517712BT
Juego DPD n° 1/glicina <sup>#</sup>	100 cada	517731BT
Juego DPD n° 1/glicina <sup>#</sup>	250 cada	517732BT
Juego DPD n° 1/n° 3 High Calcium <sup>#</sup>	100 cada	517781BT
Juego DPD n° 1/n° 3 High Calcium <sup>#</sup>	250 cada	517782BT
DPD n° 3 Evo	Tabletas / 100	511420BT
DPD n° 3 Evo	Tabletas / 250	511421BT
DPD n° 3 Evo	Tabletas / 500	511422BT



## Muestreo

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

## Preparación

1. Limpieza de las cubetas:  
Muchos productos de limpieza (p. ej., detergentes de lavavajillas) poseen componentes reductores, que pueden reducir los resultados en la determinación del Dióxido de cloro. Para evitar estas alteraciones, los aparatos de vidrio deben estar exentos de componentes corrosivos al cloro. Para ello, deberá sumergir los aparatos de vidrio durante una hora en una solución de hipoclorito sódico (0,1 g/L), enjuagándolos minuciosamente a continuación con agua desionizada.
2. Las muestras acuosas muy ácidas o muy básicas se deberán neutralizar a un valor de pH entre 6 y 7 antes de realizar el análisis (con 0,5 mol/l de ácido sulfúrico o 1 mol/l de hidróxido sódico).

## Notas

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



ES

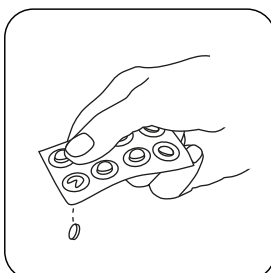
## Ejecución de la determinación Dióxido de cloro con tableta, en presencia de cloro

Seleccionar el método en el aparato.

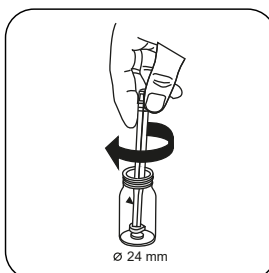
Seleccione además la determinación: junto a cloro



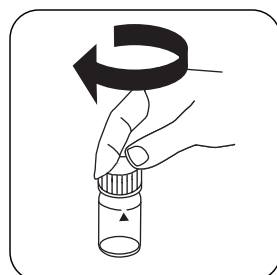
Llenar la cubeta de 24 mm con **10 mL de muestra**.



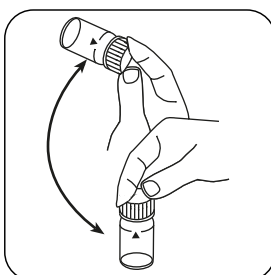
Añadir **tableta GLYCINE**.



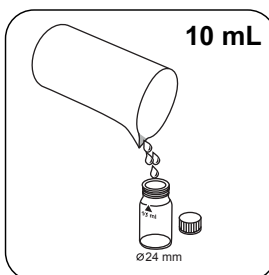
Triturar la(s) tableta(s) girando ligeramente.



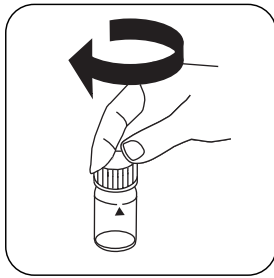
Cerrar la(s) cubeta(s).



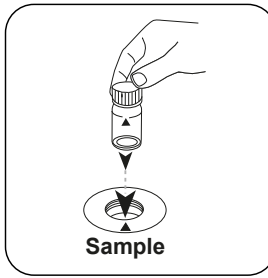
Disolver la(s) tableta(s) girando.



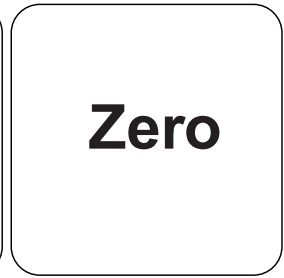
Llenar una **segunda cubeta** con **10 mL de muestra**.



Cerrar la(s) cubeta(s).

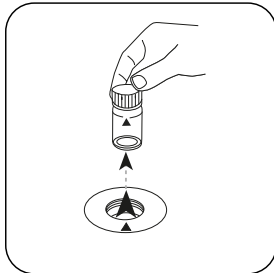


Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!

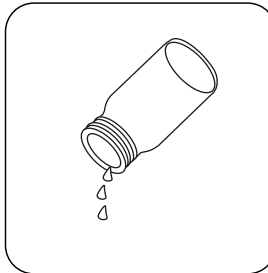


Pulsar la tecla **ZERO**.

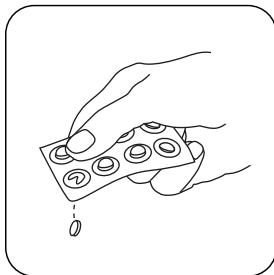
ES



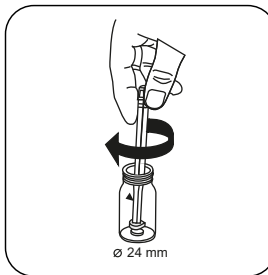
Extraer la cubeta del compartimiento de medición.



Vaciar la cubeta.



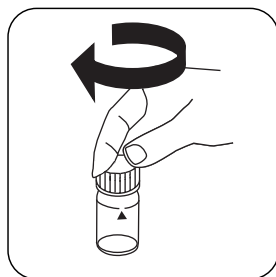
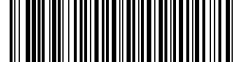
Añadir **tableta DPD No. 1**.



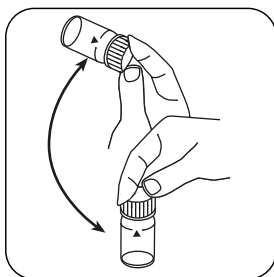
Triturar la(s) tableta(s) girando ligeramente.



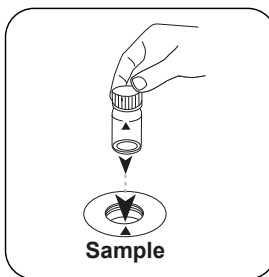
Llenar la **solución de glicina** preparada en la cubeta preparada.



Cerrar la(s) cubeta(s).



Disolver la(s) tableta(s) girando.



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

**Test**

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

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

ES

## 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	ClO <sub>2</sub>	1
mg/l	Cl <sub>2</sub> frei	0.525
mg/l	Cl <sub>2</sub> geb.	0.525
mg/l	ges. Cl <sub>2</sub>	0.525

ES

## Método químico

DPD / Glicina

## Apéndice

### Interferencia

#### Interferencias persistentes

1. Todos los elementos oxidantes existentes en la muestra producen un resultado más elevado.

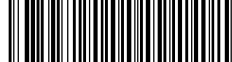
#### Interferencias extraíbles

1. Las concentraciones de dióxido de cloro mayores a 19 mg/L pueden conducir a resultados de dentro del campo de medición hasta 0 mg/L. En este caso, se deberá diluir la muestra acuosa con agua libre de dióxido de cloro. Se mezclan 10 ml de muestra diluida con reactivo y se repite la medición.

#### Derivado de

DIN 38408, parte 5

<sup>o</sup> Reactivo auxiliar, alternativo a DPD No. 1/3 en enturbiamientos de la prueba debido a concentraciones elevadas de calcio y/o elevada conductividad | <sup>o</sup> Reactivo auxiliar, necesario adicionalmente para la determinación de bromo, dióxido de cloro y ozono en presencia de cloro



Dióxido de cloro PP

M122

0.04 - 3.8 mg/L ClO<sub>2</sub>

CLO2

DPD

ES

## Material

Material requerido (parcialmente opcional):

Reactivos	Unidad de embalaje	No. de referencia
Cloro libre DPD F10	Polvos / 100 Cantidad	530100
Cloro libre DPD F10	Polvos / 1000 Cantidad	530103
Glicina <sup>9</sup>	Tabletas / 100	512170BT
Glicina <sup>9</sup>	Tabletas / 250	512171BT
Reactivo de glicina VARIO 10 %, 29 ml	29 mL	532210

## Muestreo

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

## Preparación

1. Limpieza de las cubetas:  
Muchos productos de limpieza (p. ej., detergentes de lavavajillas) poseen componentes reductores, que pueden reducir los resultados en la determinación del Dióxido de cloro. Para evitar estas alteraciones, los aparatos de vidrio deben estar exentos de componentes corrosivos al cloro. Para ello, deberá sumergir los aparatos de vidrio durante una hora en una solución de hipoclorito sódico (0,1 g/L), enjuagándolos minuciosamente a continuación con agua desionizada.
2. Las muestras acuosas muy ácidas o muy básicas se deberán neutralizar a un valor de pH entre 6 y 7 antes de realizar el análisis (con 0,5 mol/l de ácido sulfúrico o 1 mol/l de hidróxido sódico).

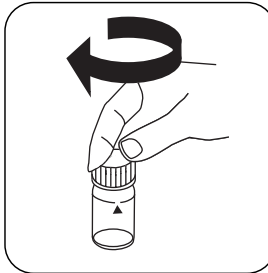
## Ejecución de la determinación Dióxido de cloro con reactivo Powder Pack, en ausencia de cloro

Seleccionar el método en el aparato.

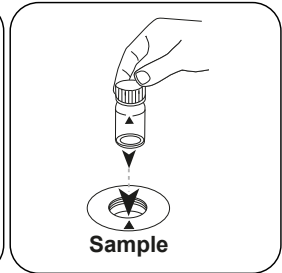
Seleccione además la determinación: en ausencia de cloro



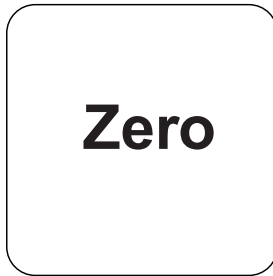
Llenar la cubeta de 24 mm con **10 mL de muestra** .



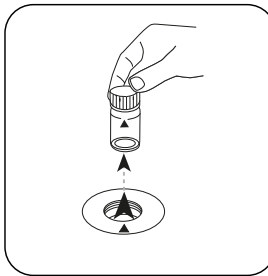
Cerrar la(s) cubeta(s).



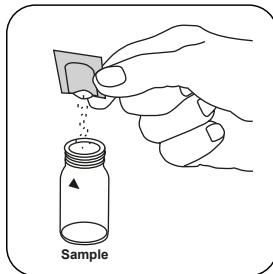
Poner la **cubeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!



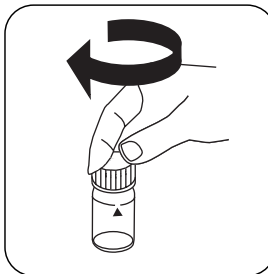
Pulsar la tecla **ZERO**.



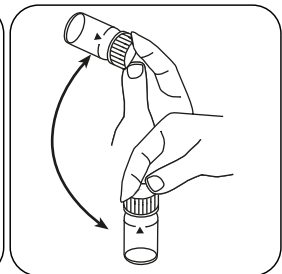
Extraer la cubeta del compartimiento de medición.



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

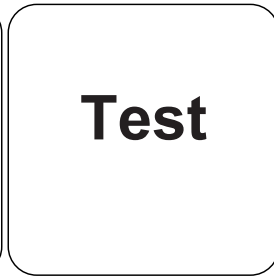
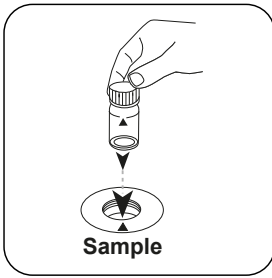


Cerrar la(s) cubeta(s).



Mezclar el contenido girando (20 sec.).





ES

Poner la **cupeta 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 Dióxido de cloro.

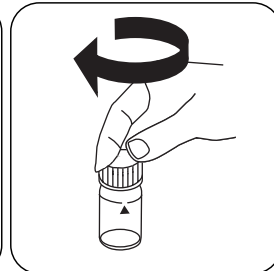
### Ejecución de la determinación Dióxido de cloro con reactivo Powder Pack, en presencia de cloro

Seleccionar el método en el aparato.

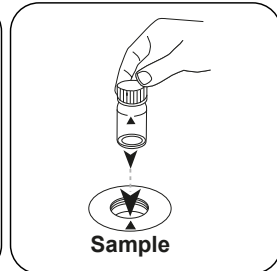
Seleccione además la determinación: junto a cloro



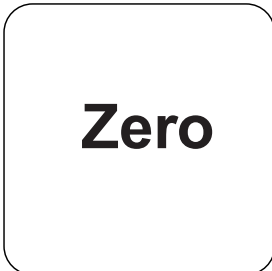
Llenar la cupeta de 24 mm con **10 mL de muestra**.



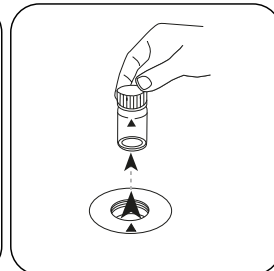
Cerrar la(s) cupeta(s).



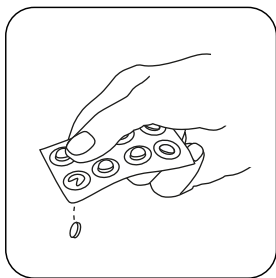
Poner la **cupeta de muestra** en el compartimiento de medición. ¡Debe tenerse en cuenta el posicionamiento!



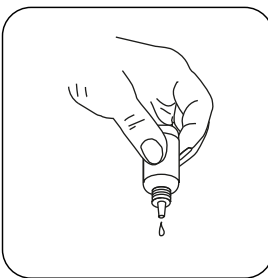
Pulsar la tecla **ZERO**.



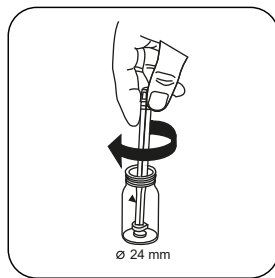
Extraer la cupeta del compartimiento de medición.



Añadir **tableta GLYCINE**.

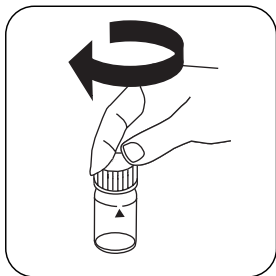


o añadir 4 gotas de  
GLYCINE Reagent.

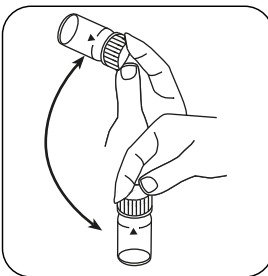


Triturar la(s) tableta(s)  
girando ligeramente.

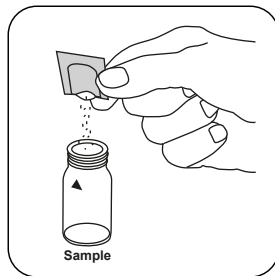
ES



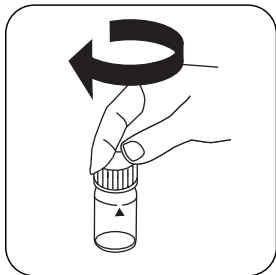
Cerrar la(s) cubeta(s).



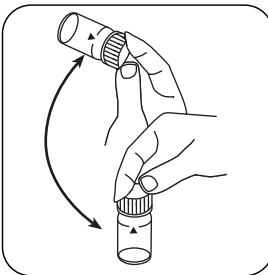
Disolver la(s) tableta(s)  
girando.



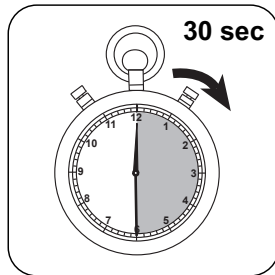
Añadir un **sobre de polvos  
Chlorine-Free-DPD/ F10**.



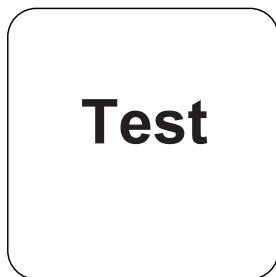
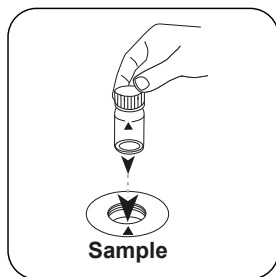
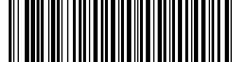
Cerrar la(s) cubeta(s).



Mezclar el contenido  
girando (20 sec.).



Esperar **30 segundos como  
periodo de reacción**.




ES

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 Dióxido de cloro.



## Método químico

DPD

## Apéndice

### Interferencia

ES

#### Interferencias persistentes

1. Todos los elementos oxidantes existentes en la muestra producen un resultado más elevado.

#### Interferencias extraíbles


1. Las concentraciones de dióxido de cloro mayores a 3,8 mg/L pueden conducir a resultados de dentro del campo de medición hasta 0 mg/L. En este caso, se deberá diluir la muestra acuosa con agua libre de dióxido de cloro. Se mezclan 10 ml de muestra diluida con reactivo y se repite la medición (prueba de plausibilidad).

#### Derivado de

DIN 38408, parte 5

<sup>1</sup> Reactivo auxiliar, necesario adicionalmente para la determinación de bromo, dióxido de cloro y ozono en presencia de cloro

KS4.3 T / 20



**Nom de la méthode** → KS4.3 T

**Numéro de méthode** → 20

**Code à barres pour reconnaître la méthode** → [Barcode]

**Plage de mesure** → 0.1 - 4 mmol/l  $K_{S4.3}$

**Méthode chimique** → Acide / Indicateur

**Affichage dans le MD 100 / MD 110 / MD 200** → S:4.3

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

**Matériel**

Matériel requis (partiellement optionnel):

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

**Liste d'applications**

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

**Indication**

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

**Codes de langue ISO 639-1** → FR

**État de révision** → 01/20

FR Méthodes Manuel 01/20

## Procédure du test

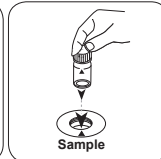
**Réalisation de la quantification Capacité acide  $K_{s4.3}$  avec pastille**

Sélectionnez la méthode sur l'appareil.

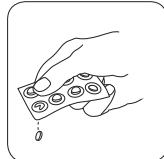
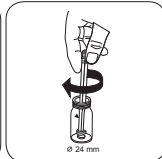
Cette méthode ne nécessite aucune mesure du zéro sur les appareils suivants : XD 7000, XD 7500

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

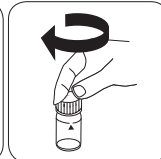
Fermez la(les) cuvette(s).

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

• • •

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

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



Fermez la(les) cuvette(s).



Dioxyde de chlore T

M120

0.02 - 11 mg/L ClO<sub>2</sub>

CLO2

DPD / Glycine

## Matériel

FR

Matériel requis (partiellement optionnel):

Réactifs	Pack contenant	Code
DPD N° 1	Pastilles / 100	511050BT
DPD N° 1	Pastilles / 250	511051BT
DPD N° 1	Pastilles / 500	511052BT
DPD N° 3	Pastilles / 100	511080BT
DPD N° 3	Pastilles / 250	511081BT
DPD N° 3	Pastilles / 500	511082BT
Glycine <sup>h)</sup>	Pastilles / 100	512170BT
Glycine <sup>h)</sup>	Pastilles / 250	512171BT
DPD N° 3 High Calcium <sup>e)</sup>	Pastilles / 100	515730BT
DPD N° 3 High Calcium <sup>e)</sup>	Pastilles / 250	515731BT
DPD N° 3 High Calcium <sup>e)</sup>	Pastilles / 500	515732BT
DPD N° 1 High Calcium <sup>e)</sup>	Pastilles / 100	515740BT
DPD N° 1 High Calcium <sup>e)</sup>	Pastilles / 250	515741BT
DPD N° 1 High Calcium <sup>e)</sup>	Pastilles / 500	515742BT
Kit DPD N° 1/N° 3 <sup>#</sup>	100 chacun	517711BT
Kit DPD N° 1/N° 3 <sup>#</sup>	250 chacun	517712BT
Kit DPD N° 1/Glycine <sup>#</sup>	100 chacun	517731BT
Kit DPD N° 1/Glycine <sup>#</sup>	250 chacun	517732BT
Kit DPD N° 1/N° 3 High Calcium <sup>#</sup>	100 chacun	517781BT
Kit DPD N° 1/N° 3 High Calcium <sup>#</sup>	250 chacun	517782BT
DPD N° 3 Evo	Pastilles / 100	511420BT
DPD N° 3 Evo	Pastilles / 250	511421BT
DPD N° 3 Evo	Pastilles / 500	511422BT



## Échantillonnage

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

## Préparation

1. Nettoyage des cuvettes :  
Beaucoup de produits de nettoyage domestiques (par ex. liquide vaisselle) contenant des agents réducteurs, il est possible que lors de la quantification du Dioxyde de chlore, les résultats soient plus bas. Pour exclure ces erreurs, les instruments en verre utilisés devraient être insensibles aux effets du chlore. Pour ce faire, il convient de laisser les instruments en verre pendant une heure dans une solution d'hypochlorite de sodium (0,1 g/L) et de bien les rincer ensuite à l'eau déminéralisée (eau entièrement dessalée).
2. Avant l'analyse, les eaux fortement alcalines ou acides devraient être ajustées sur un pH compris entre 6 et 7 (avec 0,5 mol/l d'acide sulfurique ou 1 mol/l de soude caustique).

## Indication

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





FR

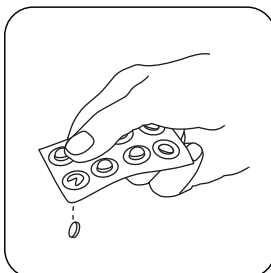
## Réalisation de la quantification Dioxyde de chlore, en présence de chlore avec pastille

Sélectionnez la méthode sur l'appareil.

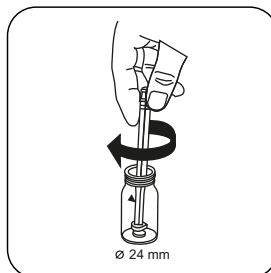
Sélectionnez également la quantification : en présence de chlore



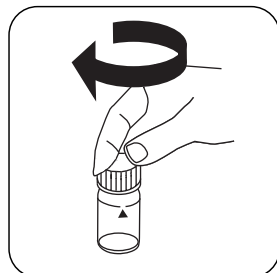
Remplissez une cuvette de 24 mm de **10 mL** d'échantillon.



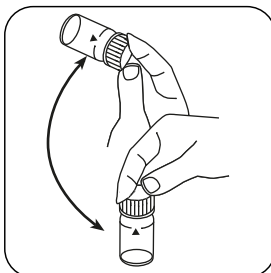
Ajoutez une **pastille de GLYCINE**.



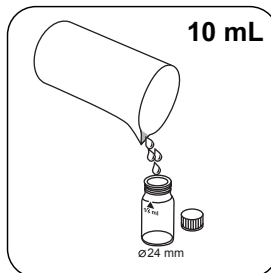
Écrasez la(les) pastille(s) en la(les) tournant un peu.



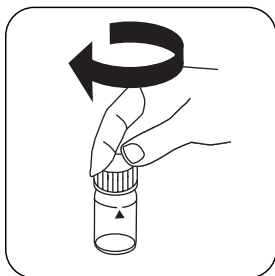
Fermez la(les) cuvette(s).



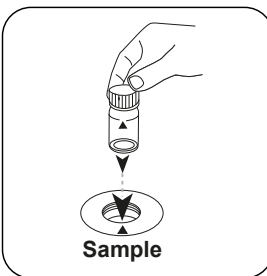
Dissolvez la(les) pastille(s) en mettant le tube plusieurs fois à l'envers.



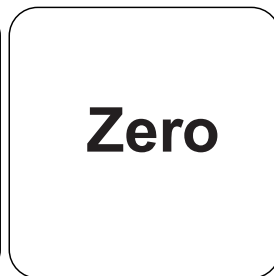
Remplissez une **deuxième** cuvette de **10 mL** d'échantillon.



Fermez la(les) cuvette(s).

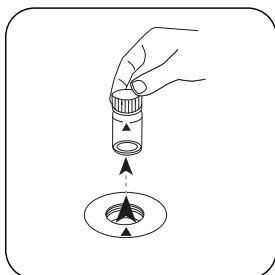


Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.

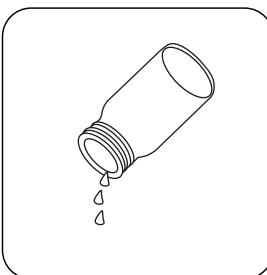


Appuyez sur la touche **ZERO**.

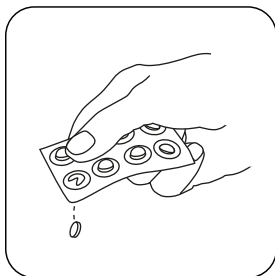
FR



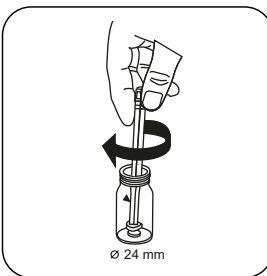
Retirez la cuvette de la chambre de mesure.



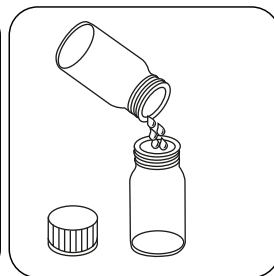
Videz la cuvette.



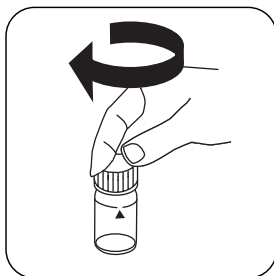
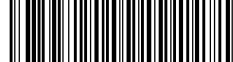
Ajoutez une **pastille de DPD No. 1**.



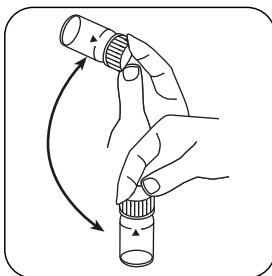
Écrasez la(les) pastille(s) en la(les) tournant un peu.



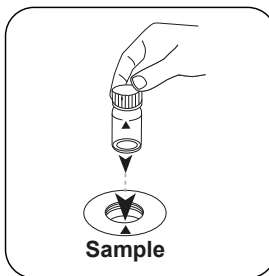
Versez la **solution de Glycine** préparée dans la cuvette préparée.



FR Fermez la(les) cuvette(s).



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



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

# Test

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

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

## 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	ClO <sub>2</sub>	1
mg/l	Cl <sub>2</sub> frei	0.525
mg/l	Cl <sub>2</sub> geb.	0.525
mg/l	ges. Cl <sub>2</sub>	0.525

FR

## Méthode chimique

DPD / Glycine

## Appendice

## Interférences

### Interférences persistantes

1. Les agents oxydants contenus dans les échantillons entraînent tous des résultats plus élevés.

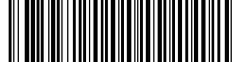
### Interférences exclues

1. Les concentrations de dioxyde de chlore supérieures à 19 mg/L peuvent donner des résultats dans la plage de mesure allant jusqu'à 0 mg/L. Dans ce cas, diluez l'échantillon d'eau en utilisant de l'eau exempte de dioxyde de chlore. Le réactif est ajouté à 10 ml d'échantillon dilué. Ensuite, la mesure est répétée.

### Dérivé de

DIN 38408, 5<sup>e</sup> partie

<sup>a</sup>autre réactif, utilisé à la place de DPD No.1/3 en cas de turbidité dans l'échantillon d'eau due à une concentration élevée de calcium et/ou une conductivité élevée | <sup>b</sup>nécessaire pour la détermination de brome, dioxyde de chlore et ozone en présence de chlore | <sup>c</sup> agitateur inclus



Dioxyde de chlore PP

M122

0.04 - 3.8 mg/L ClO<sub>2</sub>

CLO2

DPD

FR

## Matériel

Matériel requis (partiellement optionnel):

Réactifs	Pack contenant	Code
Chlore libre DPD F10	Poudre / 100 Pièces	530100
Chlore libre DPD F10	Poudre / 1000 Pièces	530103
Glycine <sup>9</sup>	Pastilles / 100	512170BT
Glycine <sup>9</sup>	Pastilles / 250	512171BT
Réactif VARIO Glycine 10 %, 29 ml	29 mL	532210

## Échantillonnage

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

## Préparation

1. Nettoyage des cuvettes :  
Beaucoup de produits de nettoyage domestiques (par ex. liquide vaisselle) contenant des agents réducteurs, il est possible que lors de la quantification du Dioxyde de chlore, les résultats soient plus bas. Pour exclure ces erreurs, les instruments en verre utilisés devraient être insensibles aux effets du chlore. Pour ce faire, il convient de laisser les instruments en verre pendant une heure dans une solution d'hypochlorite de sodium (0,1 g/L) et de bien les rincer ensuite à l'eau déminéralisée (eau entièrement dessalée).
2. Avant l'analyse, les eaux fortement alcalines ou acides devraient être ajustées sur un pH compris entre 6 et 7 (avec 0,5 mol/l d'acide sulfurique ou 1 mol/l de soude caustique).

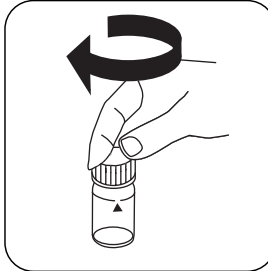
## Réalisation de la quantification Dioxyde de chlore, en l'absence de chlore avec sachets de poudre

Sélectionnez la méthode sur l'appareil.

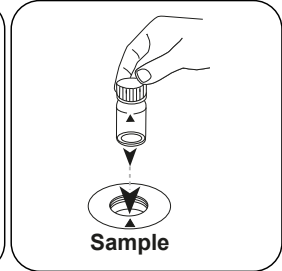
Sélectionnez également la quantification : sans chlore



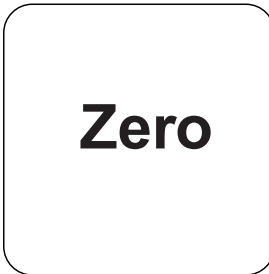
Remplissez une cuvette de 24 mm de **10 mL d'échantillon**.



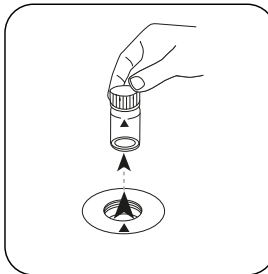
Fermez la(les) cuvette(s).



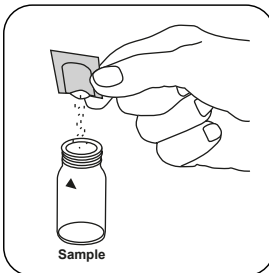
Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.



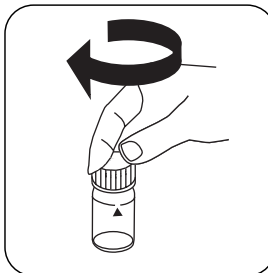
Appuyez sur la touche **ZERO**.



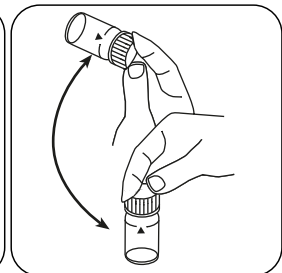
Retirez la cuvette de la chambre de mesure.



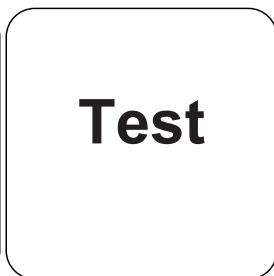
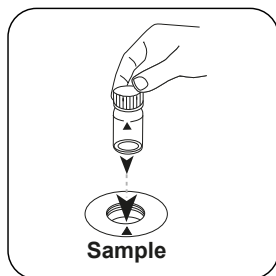
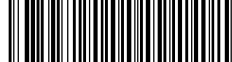
Ajoutez un **sachet de poudre Chlorine FREE-DPD / F10**.



Fermez la(les) cuvette(s).



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



FR

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

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

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

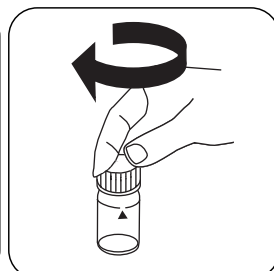
### Réalisation de la quantification Dioxyde de chlore, en présence de chlore avec sachets de poudre

Sélectionnez la méthode sur l'appareil.

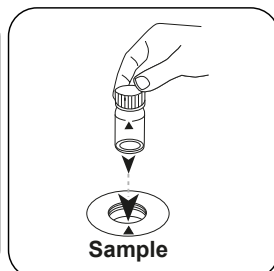
Sélectionnez également la quantification : en présence de chlore



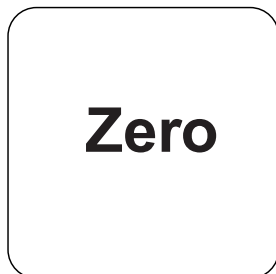
Remplissez une cuvette de 24 mm de **10 mL d'échantillon**.



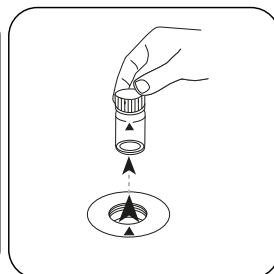
Fermez la(les) cuvette(s).



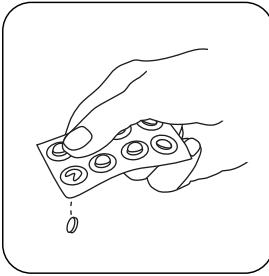
Placez la **cuvette réservée à l'échantillon** dans la chambre de mesure. Attention à la positionner correctement.



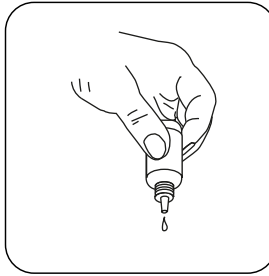
Appuyez sur la touche **ZERO**.



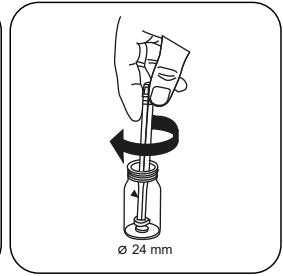
Retirez la cuvette de la chambre de mesure.



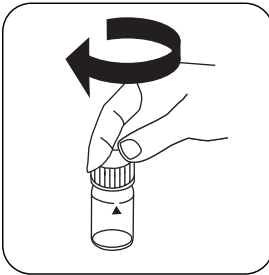
Ajoutez une **pastille de GLYCINE**.



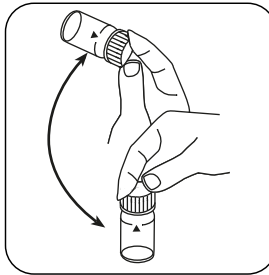
ou ajoutez 4 gouttes de GLYCINE Reagent.



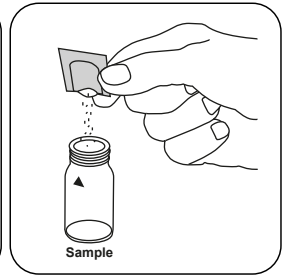
Écrasez la(les) pastille(s) en la(les) tournant un peu.



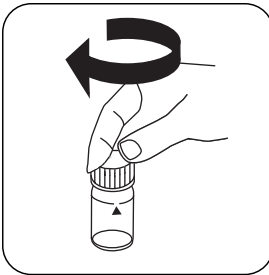
Fermez la(les) cuvette(s).



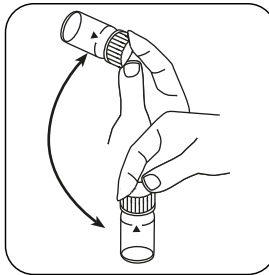
Dissolvez la(les) pastille(s) en mettant le tube plusieurs fois à l'envers.



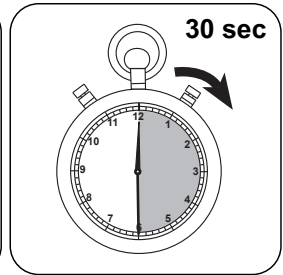
Ajoutez un **sachet de poudre Chlorine-Free-DPD/F10**.



Fermez la(les) cuvette(s).

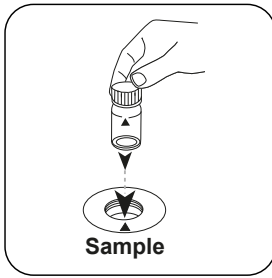


Retourner plusieurs fois pour mélanger le contenu (20 sec.) .



Attendez la fin du **temps de réaction de 30 secondes** .





# Test

FR

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

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

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



## Méthode chimique

DPD

## Appendice

### Interférences

FR

#### Interférences persistantes

1. Les agents oxydants contenus dans les échantillons entraînent tous des résultats plus élevés.

#### Interférences exclues


1. Les concentrations de dioxyde de chlore supérieures à 3,8 mg/L peuvent provoquer des résultats dans la plage de mesure allant jusqu'à 0 mg/L. Dans ce cas, diluez l'échantillon d'eau en utilisant de l'eau exempte de dioxyde de chlore. Le réactif est ajouté à 10 ml d'échantillon dilué. Ensuite, la mesure est répétée (test de plausibilité).

#### Dérivé de

DIN 38408, 5<sup>e</sup> partie

<sup>1</sup>nécessaire pour la détermination de brome, dioxyde de chlore et ozone en présence de chlore

KS4.3 T / 20



**Denominazione metodo**

**Numero metodo**

**Codice a barre per riconoscere il metodo**

**Range di misura**

$K_{S_{4.3} T}$   
0.1 - 4 mmol/l  $K_{S_{4.3}}$

**Acido/indicatore**

20  
S:4.3

**Indicazione sul display del MD 100 / MD 110 / MD 200**

**Metodo chimico**

**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	$\lambda$	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 $K_{S_{4.3}}$
SpectroDirect, XD 7000, XD 7500	ø 24 mm	615 nm	0.1 - 4 mmol/l $K_{S_{4.3}}$

**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  $K_{S_{4.3}}$  sono equivalenti.
2. Per l'accuratezza del risultato dell'analisi è fondamentale che il volume del campione misuri esattamente 10 ml.

**ISO 639-1 codici linguistici**

**Stato di revisione**

IT Manuale dei Metodi 01/20

**Svolgimento della misurazione**

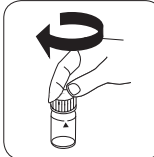
**Esecuzione della rilevazione Capacità acida  $K_{s4.3}$  con pastiglia**

Selezionare il metodo nel dispositivo.

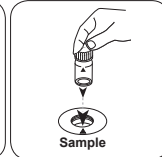
Con i seguenti dispositivi, per questo metodo non è necessario eseguire una misurazione ZERO: XD 7000, XD 7500



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

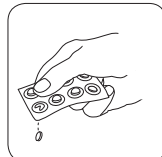


Chiudere la/e cuvetta/e.

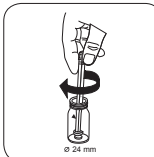


Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.

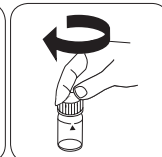
• • •



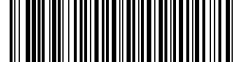
Aggiungere una **pastiglia ALKA-M-PHOTOMETER**.



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



Chiudere la/e cuvetta/e.

**Biossido di cloro T****M120****0.02 - 11 mg/L ClO<sub>2</sub>****CLO2****DPD/glicina****Materiale**

IT

Materiale richiesto (in parte facoltativo):

<b>Reagenti</b>	<b>Unità di imballaggio</b>	<b>N. ordine</b>
DPD No.1	Pastiglia / 100	511050BT
DPD No. 1	Pastiglia / 250	511051BT
DPD No. 1	Pastiglia / 500	511052BT
DPD No. 3	Pastiglia / 100	511080BT
DPD No. 3	Pastiglia / 250	511081BT
DPD No. 3	Pastiglia / 500	511082BT
Glicina <sup>§</sup>	Pastiglia / 100	512170BT
Glicina <sup>§</sup>	Pastiglia / 250	512171BT
DPD No. 3 High Calcium <sup>§</sup>	Pastiglia / 100	515730BT
DPD No. 3 High Calcium <sup>§</sup>	Pastiglia / 250	515731BT
DPD No. 3 High Calcium <sup>§</sup>	Pastiglia / 500	515732BT
DPD No. 1 Alto Calcio <sup>§</sup>	Pastiglia / 100	515740BT
DPD No. 1 Alto Calcio <sup>§</sup>	Pastiglia / 250	515741BT
DPD No. 1 Alto Calcio <sup>§</sup>	Pastiglia / 500	515742BT
Set DPD No. 1/no. 3 <sup>#</sup>	ciascuna 100	517711BT
Set DPD No. 1/no. 3 <sup>#</sup>	ciascuna 250	517712BT
Set DPD No. 1/glicina <sup>#</sup>	ciascuna 100	517731BT
Set DPD No. 1/glicina <sup>#</sup>	ciascuna 250	517732BT
Set DPD No. 1/no. 3 High Calcium <sup>#</sup>	ciascuna 100	517781BT
Set DPD No. 1/no. 3 High Calcium <sup>#</sup>	ciascuna 250	517782BT
DPD No. 3 Evo	Pastiglia / 100	511420BT
DPD No. 3 Evo	Pastiglia / 250	511421BT
DPD No. 3 Evo	Pastiglia / 500	511422BT



## Prelievo del campione

1. Nella preparazione del campione occorre evitare la degassificazione, ad es. utilizzando pipette e agitando.
2. L'analisi deve essere eseguita subito dopo il prelievo del campione.

## Preparazione

1. Pulizia delle cuvette:  
Poiché molti detergenti ad uso domestico (ad es. detersivo per piatti) contengono sostanze riducenti, nella rilevazione del Biossido di cloro si potrebbero ottenere risultati troppo bassi. Per escludere tali errori di misura è necessario che i dispositivi in vetro siano esenti dal consumo di cloro. I dispositivi in vetro inoltre vengono conservati in una soluzione di ipoclorito di sodio (0,1 g/L) per un'ora e successivamente vengono risciacquati abbondantemente con acqua demineralizzata.
2. Le acque fortemente alcaline o acide devono essere portate prima dell'analisi entro un range di pH compreso tra 6 e 7 (con 0,5 mol/l di acido solforico o 1 mol/l di liscivia).

## Note

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



IT

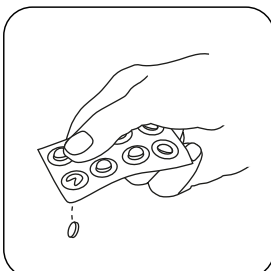
## Esecuzione della rilevazione Biossido di cloro, in presenza di cloro con pastiglia

Selezionare il metodo nel dispositivo.

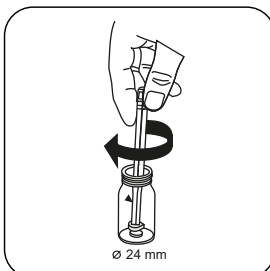
Selezionare inoltre la determinazione: in presenza di Cloro



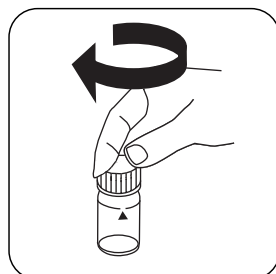
Riempire una cuvetta da 24 mm con **10 mL di campione**.



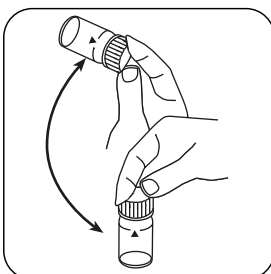
Aggiungere **una pastiglia GLYCINE**.



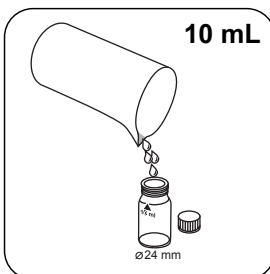
Frantumare la/e pastiglia/e con una leggera rotazione.



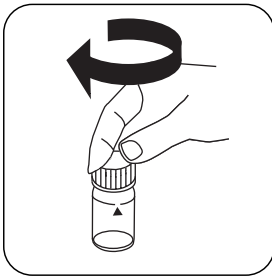
Chiudere la/e cuvetta/e.



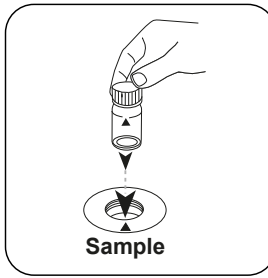
Far sciogliere la/e pastiglia/e agitando.



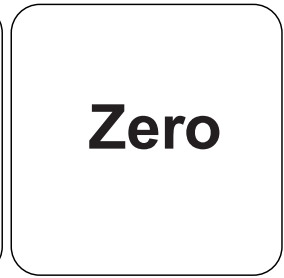
Riempire una **seconda cuvetta** con **10 mL di campione**.



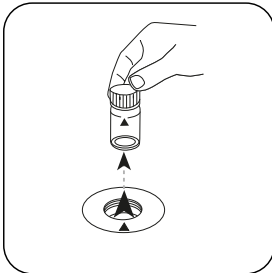
Chiudere la/e cuvetta/e.



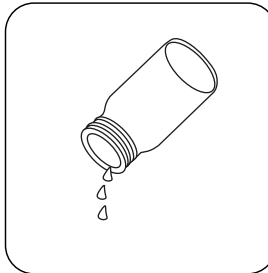
Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



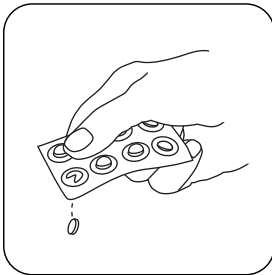
Premere il tasto **ZERO**.



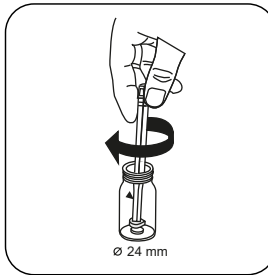
Prelevare la cuvetta dal vano di misurazione.



Svuotare la cuvetta.



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

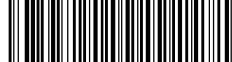


Frantumare la/e pastiglia/e con una leggera rotazione.

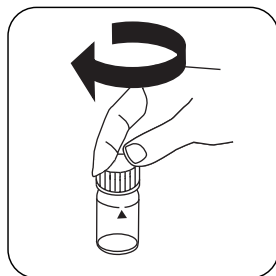


Immettere la **soluzione di glicina** preparata nella cuvetta preparata.

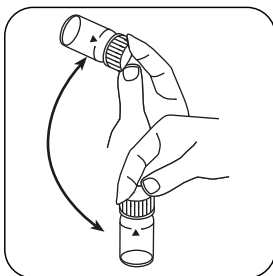




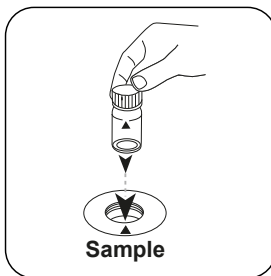
IT



Chiudere la/e cuvetta/e.



Far sciogliere la/e pastiglia/e agitando.



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

# Test

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

Sul display compare il risultato in mg/L di Biossido di cloro.

## 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	ClO <sub>2</sub>	1
mg/l	Cl <sub>2</sub> frei	0.525
mg/l	Cl <sub>2</sub> geb.	0.525
mg/l	ges. Cl <sub>2</sub>	0.525

IT

## Metodo chimico

DPD/glicina

## Appendice

## Interferenze

### Interferenze permanenti

1. Tutti gli ossidanti presenti nei campioni danno risultati troppo elevati.

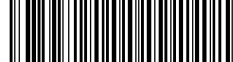
### Interferenze escludibili

1. Le concentrazioni di biossido di cloro maggiori di 19 mg/L possono dare risultati entro il range di misura fino a 0 mg/L. In questo caso il campione di acqua deve essere diluito con acqua priva di biossido di cloro. 10 ml del campione diluito vengono addizionati con il reagente e la misurazione viene ripetuta.

### Derivato di

DIN 38408, parte 5

<sup>a</sup>Reagente ausiliario, in alternativa a DPD n. 1 / no 3 in caso di torbidità del campione a causa di alto contenuto di ioni di calcio e / o alta conduttività | <sup>b</sup>Reagente ausiliario, è inoltre necessario per la determinazione di bromo, biossido di cloro o ozono in presenza di cloro | <sup>p</sup>Bacchetta compresa

**Biossido di cloro PP****M122****0.04 - 3.8 mg/L ClO<sub>2</sub>****CLO2****DPD**

IT

## Materiale

Materiale richiesto (in parte facoltativo):

Reagenti	Unità di imballaggio	N. ordine
Cloro libero DPD F10	Polvere / 100 pz.	530100
Cloro libero DPD F10	Polvere / 1000 pz.	530103
Glicina <sup>9</sup>	Pastiglia / 100	512170BT
Glicina <sup>9</sup>	Pastiglia / 250	512171BT
VARIO Glicina Reagente VARIO 10 %, 29 ml	29 mL	532210

## Prelievo del campione

1. Nella preparazione del campione occorre evitare la degassificazione, ad es. utilizzando pipette e agitando.
2. L'analisi deve essere eseguita subito dopo il prelievo del campione.

## Preparazione

1. Pulizia delle cuvette:  
Poiché molti detersivi ad uso domestico (ad es. detersivo per piatti) contengono sostanze riducenti, nella rilevazione del Biossido di cloro si potrebbero ottenere risultati troppo bassi. Per escludere tali errori di misura è necessario che i dispositivi in vetro siano esenti dal consumo di cloro. I dispositivi in vetro inoltre vengono conservati in una soluzione di ipoclorito di sodio (0,1 g/L) per un'ora e successivamente vengono risciacquati abbondantemente con acqua demineralizzata.
2. Le acque fortemente alcaline o acide devono essere portate prima dell'analisi entro un range di pH compreso tra 6 e 7 (con 0,5 mol/l di acido solforico o 1 mol/l di liscivia).

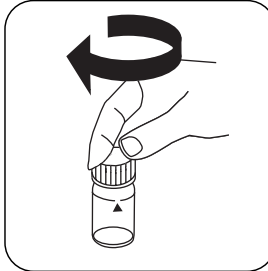
## Esecuzione della rilevazione Biossido di cloro, in assenza di cloro con confezioni in polvere

Selezionare il metodo nel dispositivo.

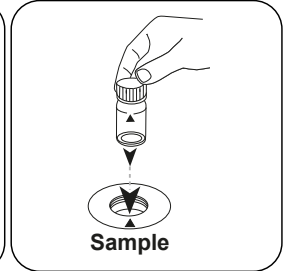
Selezionare inoltre la determinazione: senza Cloro



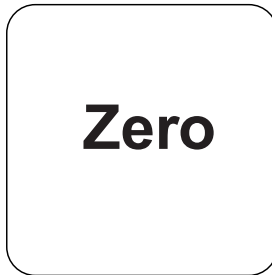
Riempire una cuvetta da 24 mm con **10 mL di campione**.



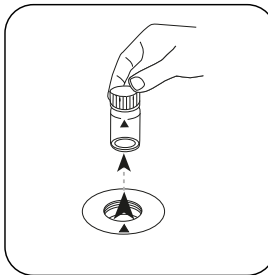
Chiudere la/e cuvetta/e.



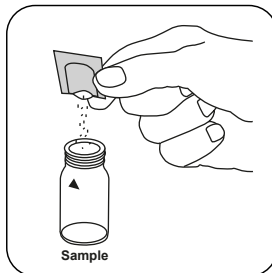
Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



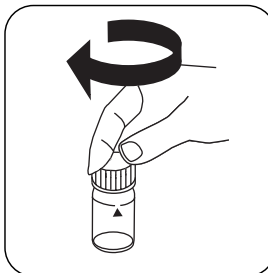
Premere il tasto **ZERO**.



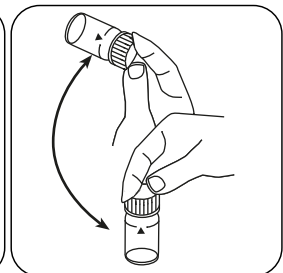
Prelevare la cuvetta dal vano di misurazione.



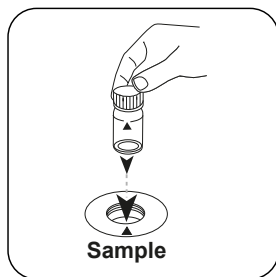
Aggiungere **una bustina di polvere Chlorine FREE-DPD / F10**.



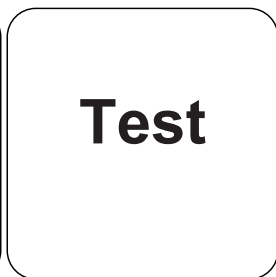
Chiudere la/e cuvetta/e.



Miscelare il contenuto capovolgendo (20 sec.).



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



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

Sul display compare il risultato in mg/L di Biossido di cloro.

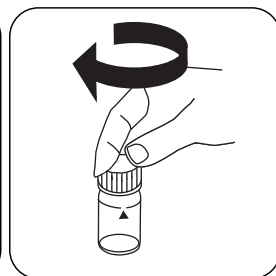
### Esecuzione della rilevazione Biossido di cloro, in presenza di cloro con confezioni in polvere

Selezionare il metodo nel dispositivo.

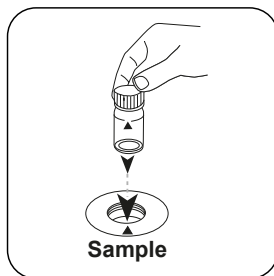
Selezionare inoltre la determinazione: in presenza di Cloro



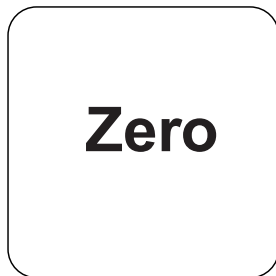
Riempire una cuvetta da 24 mm con **10 mL di campione**.



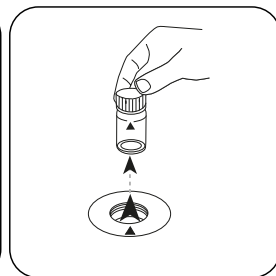
Chiudere la/e cuvetta/e.



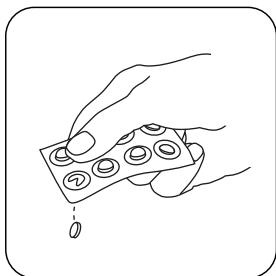
Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.



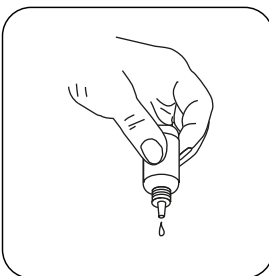
Premere il tasto **ZERO**.



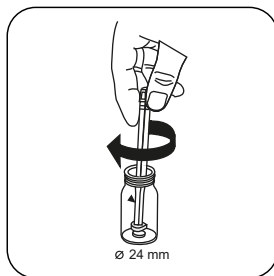
Prelevare la cuvetta dal vano di misurazione.



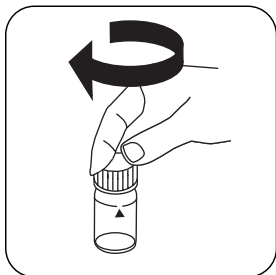
Aggiungere **una pastiglia GLYCINE**.



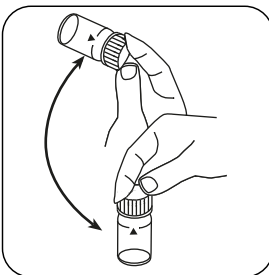
o aggiungere 4 gocce di GLYCINE Reagent.



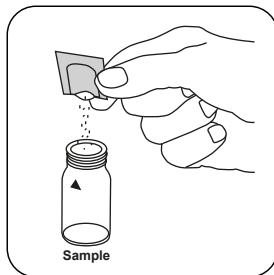
Frantumare la/e pastiglia/e con una leggera rotazione.



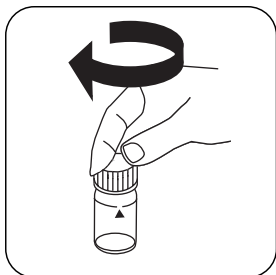
Chiudere la/e cuvetta/e.



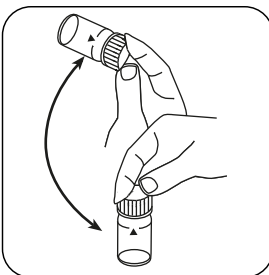
Far sciogliere la/e pastiglia/e agitando.



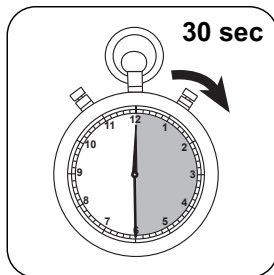
Aggiungere **una bustina di polvere Chlorine-Free-DPD/F10**.



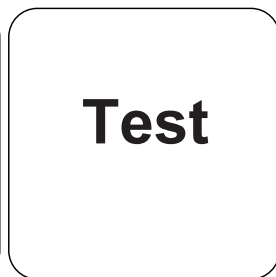
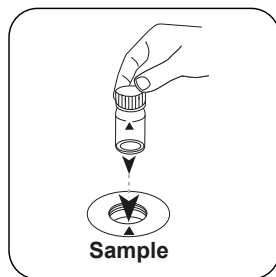
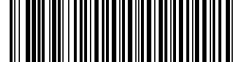
Chiudere la/e cuvetta/e.



Miscelare il contenuto capovolgendo (20 sec.).



Attendere un **tempo di reazione di 30 secondi**.



IT

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

Sul display compare il risultato in mg/L di Biossido di cloro.

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



## Metodo chimico

DPD

## Appendice

### Interferenze

#### Interferenze permanenti

1. Tutti gli ossidanti presenti nei campioni danno risultati troppo elevati.

#### Interferenze escludibili

1. Le concentrazioni di biossido di cloro maggiori di 3,8 mg/L possono dare risultati entro il range di misura fino a 0 mg/L. In questo caso il campione di acqua deve essere diluito con acqua priva di biossido di cloro. 10 ml del campione diluito vengono addizionati con il reagente e la misurazione viene ripetuta (test di plausibilità).

#### Derivato di


DIN 38408, parte 5

<sup>9</sup>Reagente ausiliario, è inoltre necessario per la determinazione di bromo, biossido di cloro o ozono in presenza di cloro

IT



KS4.3 T / 20



**Nome do método**

**Número do método**

**Código de barras para a detecção dos métodos**

**Área de medição**

$K_{S_{4.3}} T$   
0.1 - 4 mmol/l  $K_{S_{4.3}}$   
Ácido / Indicador

20  
S:4.3

**Indicado no display: MD 100 MD 110 / MD 200**

**Método Químico**

**Informação específica do instrumento**

O teste pode ser realizado nos seguintes dispositivos. Além disso, a cubeta necessária e a faixa de absorção do fotómetro são indicadas.

Dispositivos	Cubeta	$\lambda$	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 $K_{S_{4.3}}$
SpectroDirect, XD 7000, XD 7500	ø 24 mm	615 nm	0.1 - 4 mmol/l $K_{S_{4.3}}$

**Material**

Material necessário (parcialmente opcional):

Título	Unidade de Embalagem	Artigo No
Alka-M-Photometer	Pastilhas / 100	513210BT
Alka-M-Photometer	Pastilhas / 250	513211BT

**Lista de Aplicações**

- Tratamento de Esgotos
- Tratamento de Água Potável
- Tratamento de Água Bruta

**Notas**

1. Os termos alcalinidade-m, m-valor, alcalinidade total e capacidade de acidez  $K_{S_{4.3}}$  são idênticos.
2. O cumprimento exato do volume da amostra de 10 ml é decisivo para a precisão do resultado de análise.

**Códigos de idioma ISO 639-1**

**Nível de revisão**

PT Métodos Manual 01/20

Efetuar a medição

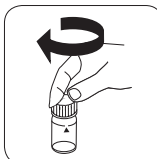
### Realização da determinação Capacidade de acidez $K_{s4.3}$ com pastilha

Escolher o método no equipamento.

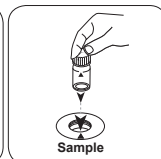
Para este método não tem de ser efetuada uma medição ZERO nos seguintes equipamentos: XD 7000, XD 7500



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

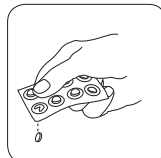


Fechar a(s) célula(s).

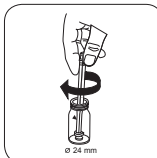


Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.

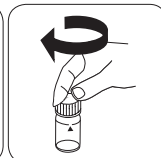
• • •



Pastilha ALKA-M-PHOTO-METER.



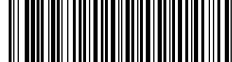
Esmagar a(s) pastilha(s) rodando ligeiramente.



Fechar a(s) célula(s).

PT Métodos Manual 01/20

PT



Dióxido de cloro T

M120

0.02 - 11 mg/L ClO<sub>2</sub>

CLO2

DPD / Glicina

## Material

PT

Material necessário (parcialmente opcional):

Reagentes	Unidade de Embalagem	Código do Produto
DPD N.º. 1	Pastilhas / 100	511050BT
DPD N.º. 1	Pastilhas / 250	511051BT
DPD N.º. 1	Pastilhas / 500	511052BT
DPD N.º. 3	Pastilhas / 100	511080BT
DPD N.º. 3	Pastilhas / 250	511081BT
DPD N.º. 3	Pastilhas / 500	511082BT
Glicina <sup>9)</sup>	Pastilhas / 100	512170BT
Glicina <sup>9)</sup>	Pastilhas / 250	512171BT
DPD N.º. 3 Alto Cálcio <sup>e)</sup>	Pastilhas / 100	515730BT
DPD N.º. 3 Alto Cálcio <sup>e)</sup>	Pastilhas / 250	515731BT
DPD N.º. 3 Alto Cálcio <sup>e)</sup>	Pastilhas / 500	515732BT
DPD N.º. 1 Alto Cálcio <sup>e)</sup>	Pastilhas / 100	515740BT
DPD N.º. 1 Alto Cálcio <sup>e)</sup>	Pastilhas / 250	515741BT
DPD N.º. 1 Alto Cálcio <sup>e)</sup>	Pastilhas / 500	515742BT
Definir N.º DPD 1/Não. 3 <sup>#</sup>	cada 100	517711BT
Definir N.º DPD 1/Não. 3 <sup>#</sup>	cada 250	517712BT
Definir N.º DPD 1/Glicina <sup>#</sup>	cada 100	517731BT
Definir N.º DPD 1/Glicina <sup>#</sup>	cada 250	517732BT
Definir N.º DPD 1/Não. 3 Alto Cálcio <sup>#</sup>	cada 100	517781BT
Definir N.º DPD 1/Não. 3 Alto Cálcio <sup>#</sup>	cada 250	517782BT
DPD N.º. 3 Evo	Pastilhas / 100	511420BT
DPD N.º. 3 Evo	Pastilhas / 250	511421BT
DPD N.º. 3 Evo	Pastilhas / 500	511422BT



## Amostragem

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

## Preparação

1. Limpeza das células:  
Uma vez que muitos produtos de limpeza domésticos (p. ex. lava-louça) contêm substâncias redutoras, na determinação de Dióxido de cloro pode haver demasiadas reduções. Para excluir este erro de medição, os equipamentos de vidro não deviam ter a capacidade de absorção de cloro. Para esse efeito, os equipamentos de vidro são guardados por uma hora sob solução de hipoclorito de sódio (0,1 g/L) e depois devem ser bem enxaguados com água desmineralizada.
2. As águas fortemente alcalinas ou ácidas devem, antes da análise, ser ajustadas para um valor pH entre 6 e 7 (com 0,5 mol/l de ácido sulfúrico ou 1 mol/l soda cáustica).

PT

## Notas

1. Os pastilhas EVO podem ser utilizadas como alternativa à pastilha padrão correspondente (por exemplo, DPD N° 3 EVO em vez da DPD N° 3).



PT

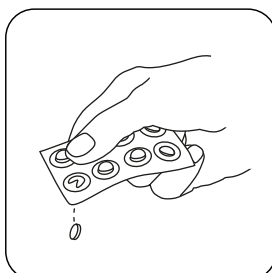
## Realização da determinação Dióxido de Cloro, na presença de cloro com pastilha

Escolher o método no equipamento.

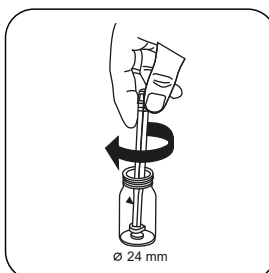
Escolha ainda a determinação: na presença de Cloro



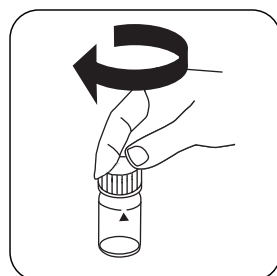
Encher a célula de 24 mm com **10 mL de amostra**.



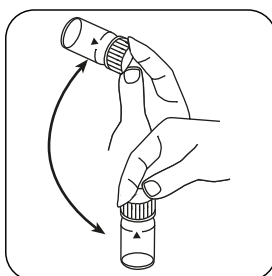
**Pastilha GLYCINE.**



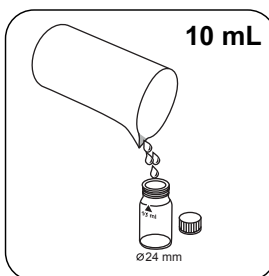
Esmagar a(s) pastilha(s) rodando ligeiramente.



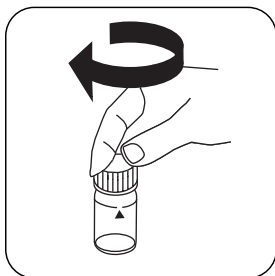
Fechar a(s) célula(s).



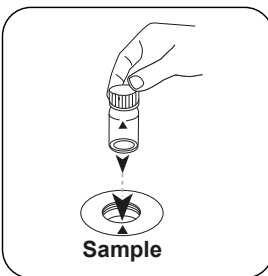
Dissolver a(s) pastilha(s) girando.



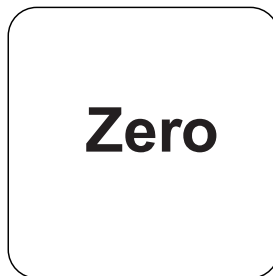
Encher uma **segunda célula** com **10 mL de amostra**.



Fechar a(s) célula(s).

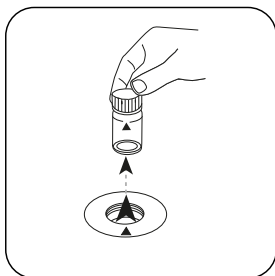


Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.

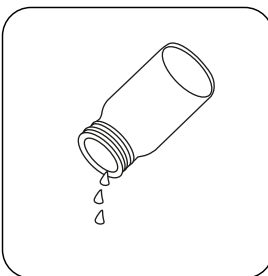


Premir a tecla **ZERO**.

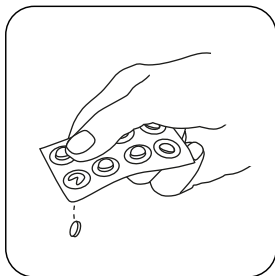
PT



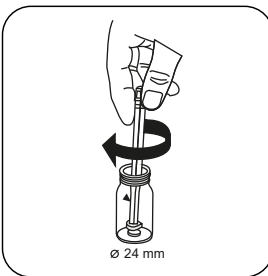
Retirar a célula do compartimento de medição.



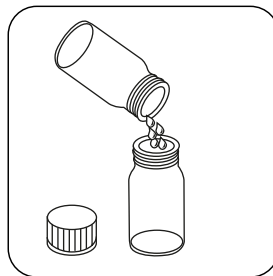
Esvaziar a célula.



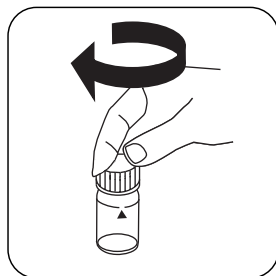
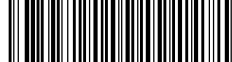
**Pastilha DPD No. 1.**



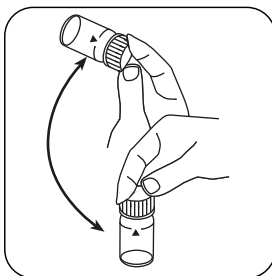
Esmagar a(s) pastilha(s) rodando ligeiramente.



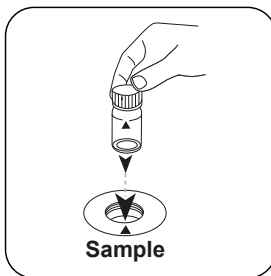
Introduzir a **solução de glicina** preparada na célula preparada.



Fechar a(s) célula(s).



Dissolver a(s) pastilha(s) girando.



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

# Test

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

No visor aparece o resultado em mg/L Dióxido de Cloro.

## 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	ClO <sub>2</sub>	1
mg/l	Cl <sub>2</sub> frei	0.525
mg/l	Cl <sub>2</sub> geb.	0.525
mg/l	ges. Cl <sub>2</sub>	0.525

PT

## Método Químico

DPD / Glicina

## Apêndice

### Texto de Interferências

#### Interferências Persistentes

1. Todos os oxidantes presentes nas amostras levam a resultados demasiado altos.

#### Interferências Removíveis

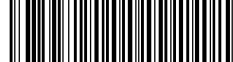
1. Concentrações de dióxido de cloro superiores a 19 mg/L podem causar resultados dentro da área de medição até 0 mg/L. Neste caso, deve diluir a amostra de água em água sem dióxido de cloro. 10 ml da amostra diluída é colocada em reagente e a medição é repetida.

#### Derivado de

DIN 38408, Parte 5

<sup>a</sup>Reagente auxiliar, alternativamente ao DPD no. 1 / não 3 quando a amostra é nublada devido ao alto teor de íons de cálcio e / ou alta condutividade | <sup>b</sup>Reagente auxiliar, é adicionalmente necessário para a determinação de bromo, dióxido de cloro ou ozônio na presença de cloro | <sup>c</sup>Incluindo vareta de agitação





Dióxido de cloro PP

M122

0.04 - 3.8 mg/L ClO<sub>2</sub>

CLO2

DPD

PT

## Material

Material necessário (parcialmente opcional):

Reagentes	Unidade de Embalagem	Código do Produto
Sem cloro DPD F10	Pó / 100 pc.	530100
Sem cloro DPD F10	Pó / 1000 pc.	530103
Glicina <sup>9</sup>	Pastilhas / 100	512170BT
Glicina <sup>9</sup>	Pastilhas / 250	512171BT
VARIO Glycine Reagente 10 %, 29 ml	29 mL	532210

## Amostragem

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

## Preparação

1. Limpeza das células:  
Uma vez que muitos produtos de limpeza domésticos (p. ex. lava-louça) contêm substâncias redutoras, na determinação de Dióxido de cloro pode haver demasiadas reduções. Para excluir este erro de medição, os equipamentos de vidro não deviam ter a capacidade de absorção de cloro. Para esse efeito, os equipamentos de vidro são guardados por uma hora sob solução de hipoclorito de sódio (0,1 g/L) e depois devem ser bem enxaguados com água desmineralizada.
2. As águas fortemente alcalinas ou ácidas devem, antes da análise, ser ajustadas para um valor pH entre 6 e 7 (com 0,5 mol/l de ácido sulfúrico ou 1 mol/l soda cáustica).

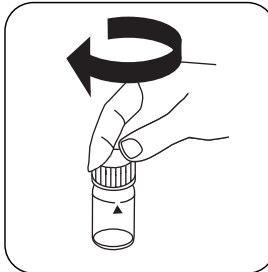
## Realização da determinação Dióxido de Cloro, na ausência de cloro com pacotes de pó

Escolher o método no equipamento.

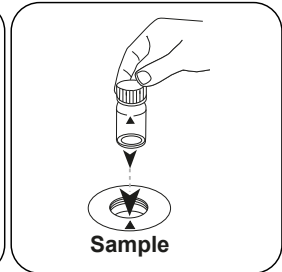
Escolha ainda a determinação: sem Cloro



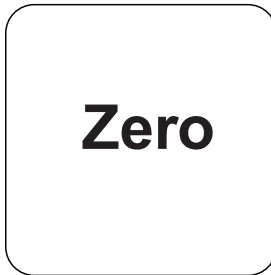
Encher a célula de 24 mm com **10 mL de amostra**.



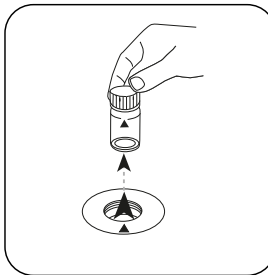
Fechar a(s) célula(s).



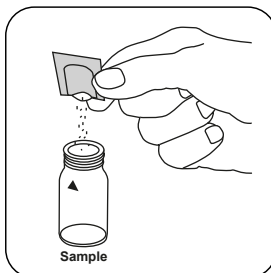
Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.



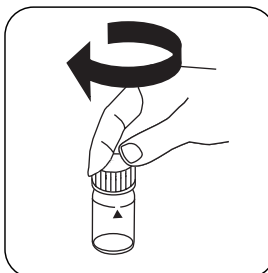
Premir a tecla **ZERO**.



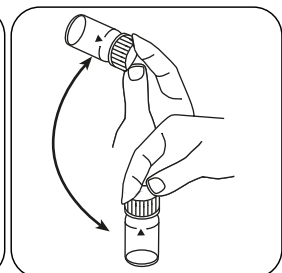
Retirar a célula do compartimento de medição.



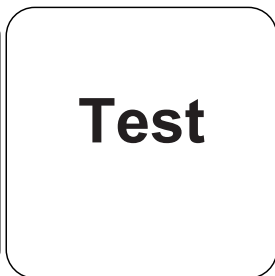
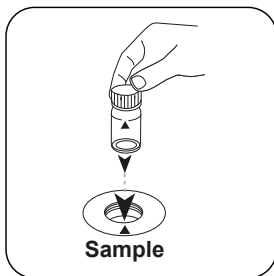
Adicionar um **pacote de pó Chlorine FREE-DPD / F10**



Fechar a(s) célula(s).



Misturar o conteúdo girando (20 sec.).



PT

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

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

No visor aparece o resultado em mg/L Dióxido de Cloro.

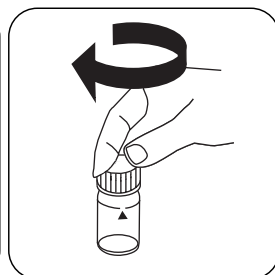
### Realização da determinação Dióxido de Cloro, na presença de cloro com pacotes de pó

Escolher o método no equipamento.

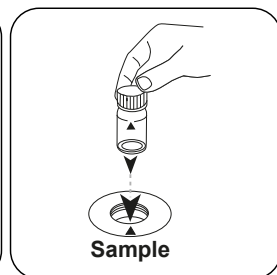
Escolha ainda a determinação: na presença de Cloro



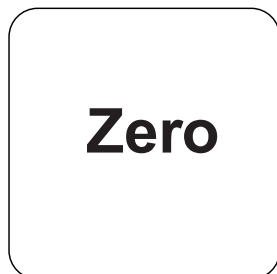
Encher a célula de 24 mm com **10 mL de amostra**.



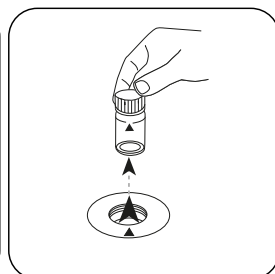
Fechar a(s) célula(s).



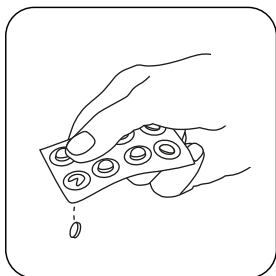
Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.



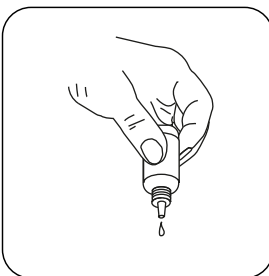
Premir a tecla **ZERO**.



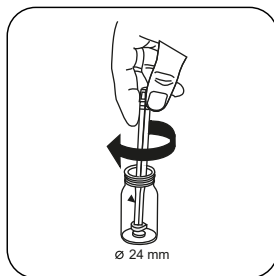
Retirar a célula do compartimento de medição.



**Pastilha GLYCINE.**

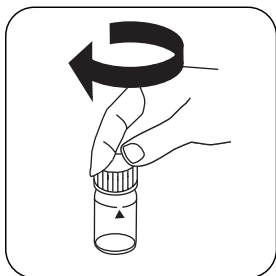


ou adicionar 4 gotas  
GLYCINE Reagent.

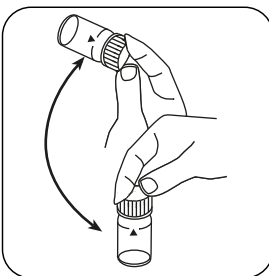


Esmagar a(s) pastilha(s)  
rodando ligeiramente.

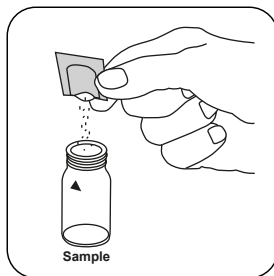
PT



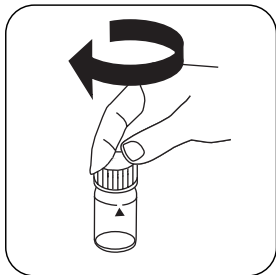
Fechar a(s) célula(s).



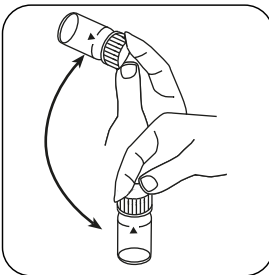
Dissolver a(s) pastilha(s)  
girando.



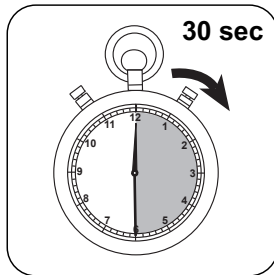
Adicionar um pacote de pó  
**Chlorine-Free-DPD/ F10**.



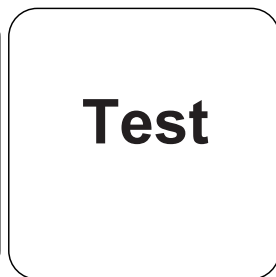
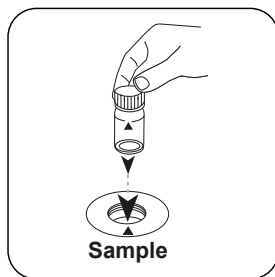
Fechar a(s) célula(s).



Misturar o conteúdo  
girando (20 sec.).



Aguardar **30 segundos de  
tempo de reação.**




PT

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

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

No visor aparece o resultado em mg/L Dióxido de Cloro.



## Método Químico

DPD

## Apêndice

### Texto de Interferências

PT

#### Interferências Persistentes

1. Todos os oxidantes presentes nas amostras levam a resultados demasiado altos.

#### Interferências Removíveis


1. Concentrações de dióxido de cloro superiores a 3,8 mg/L podem causar resultados dentro da área de medição até 0 mg/L. Neste caso, deve diluir a amostra de água em água sem dióxido de cloro. 10 ml da amostra diluída é colocada em reagente e a medição é repetida (teste de plausibilidade).

#### Derivado de

DIN 38408, Parte 5

<sup>9</sup>Reagente auxiliar, é adicionalmente necessário para a determinação de bromo, dióxido de cloro ou ozônio na presença de cloro

KS4.3 T / 20



**Naam van de methode**

**Nummer methode**

**Streepjescode ter identificatie van de methode**

**Meetbereik**

$K_{S_{4.3}} T$  M20  
0.1 - 4 mmol/l  $K_{S_{4.3}}$  S:4.3  
Zuur / Indicator

**Chemische methode**

**Uitlezing in MD**  
100 MD 110 / MD 200

**Instrument specifieke informatie**

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

Toestellen	Cuvet	$\lambda$	Meetbereik
MD 200, MD 600, MD 610, MD 640, MultiDirect, PM 620, PM 630	$\varnothing$ 24 mm	610 nm	0.1 - 4 mmol/l $K_{S_{4.3}}$
SpectroDirect, XD 7000, XD 7500	$\varnothing$ 24 mm	615 nm	0.1 - 4 mmol/l $K_{S_{4.3}}$

**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<sub>S<sub>4.3</sub></sub> zijn identiek.
2. De exacte naleving van het monstervolume van 10 ml is bepalend voor de nauwkeurigheid van het analysesresultaat.

**Beknopte naam conform de norm ISO 639-1**

**Herziene versie**

NL Handboek van Methoden 01/20

**Uitvoering van de meting**

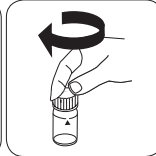
**Uitvoering van de bepaling Zuurcapaciteit  $K_{s4,3}$  met tablet**

De methode in het apparaat selecteren.

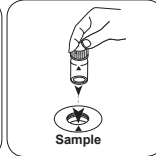
Voor deze methode moet bij de volgende apparaten geen nulmeting worden uitgevoerd:  
XD 7000, XD 7500



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

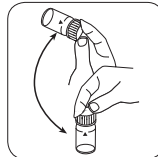


De spoelbakjes afsluiten.

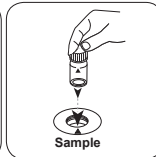


Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.

• • •



Tabletten oplossen door om te draaien



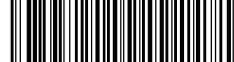
Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.



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

De display toont het resultaat als Zuurcapaciteit  $K_{s4,3}$ .





Chloordioxide T

M120

0.02 - 11 mg/L ClO<sub>2</sub>

CLO2

DPD/Glycine

## Reagentia

NL

Benodigd materiaal (deels optioneel):

Reagentia	Verpakkingseenheid	Bestelnr.
DPD Nr. 1	Tablet / 100	511050BT
DPD Nr. 1	Tablet / 250	511051BT
DPD Nr. 1	Tablet / 500	511052BT
DPD Nr. 3	Tablet / 100	511080BT
DPD Nr. 3	Tablet / 250	511081BT
DPD Nr. 3	Tablet / 500	511082BT
Glycine <sup>9)</sup>	Tablet / 100	512170BT
Glycine <sup>9)</sup>	Tablet / 250	512171BT
DPD Nr. 3 hoog calcium <sup>e)</sup>	Tablet / 100	515730BT
DPD Nr. 3 hoog calcium <sup>e)</sup>	Tablet / 250	515731BT
DPD Nr. 3 hoog calcium <sup>e)</sup>	Tablet / 500	515732BT
DPD Nr. 1 hoog calcium <sup>e)</sup>	Tablet / 100	515740BT
DPD Nr. 1 hoog calcium <sup>e)</sup>	Tablet / 250	515741BT
DPD Nr. 1 hoog calcium <sup>e)</sup>	Tablet / 500	515742BT
Set DPD nr. 1/Nr. 3 <sup>#</sup>	per 100	517711BT
Set DPD nr. 1/Nr. 3 <sup>#</sup>	per 250	517712BT
Set DPD nr. 1/glycine <sup>#</sup>	per 100	517731BT
Set DPD nr. 1/glycine <sup>#</sup>	per 250	517732BT
Set DPD nr. 1/Nr. 3 hoog calcium <sup>#</sup>	per 100	517781BT
Set DPD nr. 1/Nr. 3 hoog calcium <sup>#</sup>	per 250	517782BT
DPD No. 3 Evo	Tablet / 100	511420BT
DPD No. 3 Evo	Tablet / 250	511421BT
DPD No. 3 Evo	Tablet / 500	511422BT



## Bemonstering

1. Tijdens de monstervoorbereiding moet worden vermeden dat wordt uitgestoten, bijvoorbeeld door pipetteren en schudden.
2. De analyse moet onmiddellijk na de bemonstering worden uitgevoerd.

## Vorbereiding

1. Het schoonmaken van de spoelbakjes:  
Aangezien veel huishoudelijke reinigingsmiddelen (bijv. afwasmiddelen) minder schadelijke stoffen bevatten, kan de bepaling van Chloordioxide leiden tot minder goede resultaten. Om deze meefout uit te sluiten, moeten de glasapparaten chloorvrij zijn. Hiertoe wordt het glaswerk gedurende één uur onder natriumhypochlorietoplossing (0,1 g/L) bewaard en vervolgens grondig gespoeld met gedeïoniseerd water.
2. Sterk alkalisch of zuur water moet vóór de analyse in een pH-gebied tussen 6 en 7 (met 0,5 mol/l zwavelzuur of 1 mol/l-natriumhydroxideoplossing) worden gebracht.

## Aantekeningen

1. EVO-tabletten kunnen worden gebruikt als alternatief voor de overeenkomstige standaardtabletten (bv. DPD nr. 3 EVO in plaats van DPD nr. 3).



NL

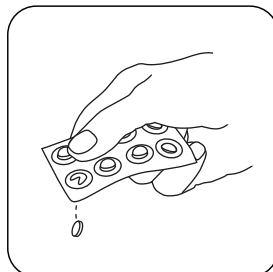
## Uitvoering van de bepaling Chloordioxide, naast chloor, met tablet

De methode in het apparaat selecteren.

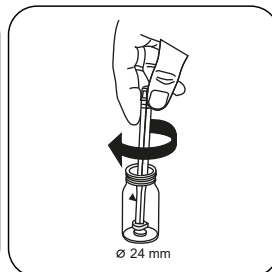
Selecteer bovendien de bepaling: naast chloor



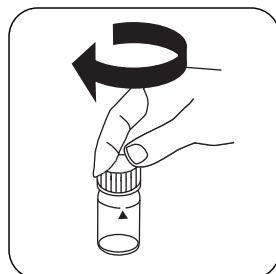
Spoelbakje van 24 mm met **10 mL staal** vullen.



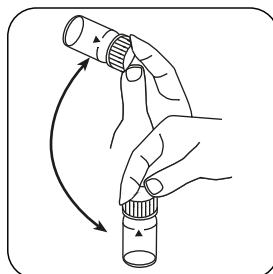
Een **GLYCINE tablet** toevoegen.



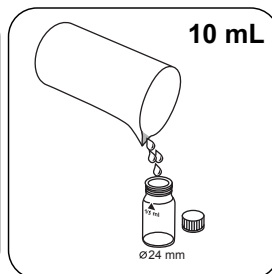
De tabletten onder lichte rotatie verpletteren.



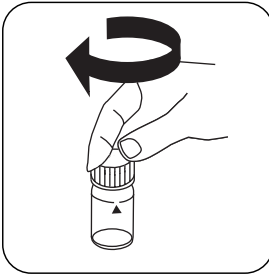
De spoelbakjes afsluiten.



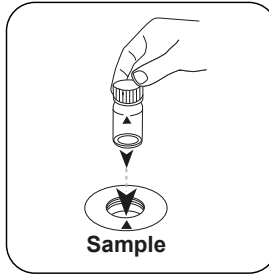
Tabletten oplossen door om te draaien



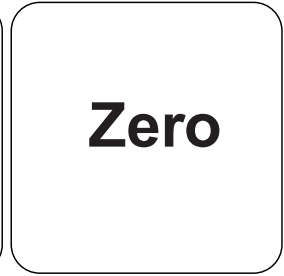
Een **tweede spoelbakje** met **10 mL staal** vullen.



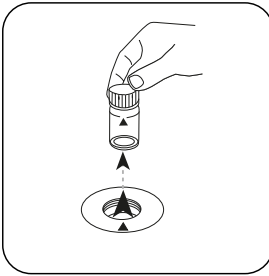
De spoelbakjes afsluiten.



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



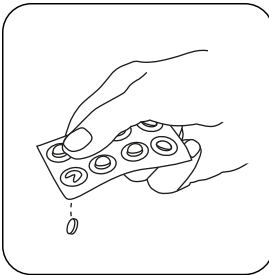
De toets **NUL** indrukken.



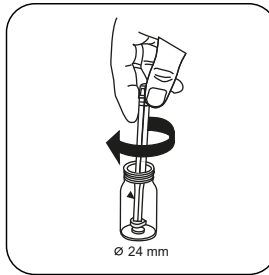
Het spoelbakje uit de meetschacht nemen.



Het spoelbakje ledigen.



**Een DPD Nr. 1 tablet** toevoegen.

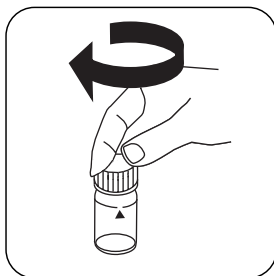
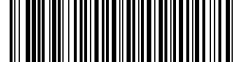


De tabletten onder lichte rotatie verpletteren.

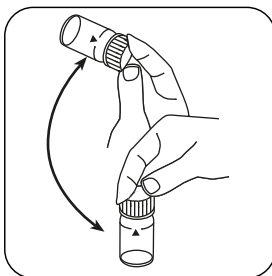


De voorbereide **glycineoplossing** in het voorbereide spoelbakje doen.

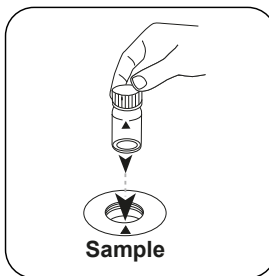
NL



De spoelbakjes afsluiten.



Tabletten oplossen door om te draaien



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

## Test

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

De display toont het resultaat in mg/L Chloordioxide.

## Evaluatie

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

Eenheid	Dagvaardingsformulier	Omrekeningsfactor
mg/l	ClO <sub>2</sub>	1
mg/l	Cl <sub>2</sub> frei	0.525
mg/l	Cl <sub>2</sub> geb.	0.525
mg/l	ges. Cl <sub>2</sub>	0.525

NL

## Chemische methode

DPD/Glycine

## Aanhangsel

## Verstoringen

### Permanente verstoringen

1. Alle oxidatiemiddelen in de monsters leiden tot meerdere resultaten.

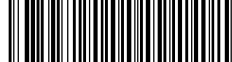
### Uit te sluiten verstoringen

1. Concentraties boven de 19 mg/L chloordioxide kan leiden tot resultaten binnen het meetbereik tot 0 mg/L. Verdun in dit geval het watermonster met chloordioxidevrij water. Voeg reagens toe aan 10 ml van het verdunde monster en herhaal de meting.

### Afgeleid van

DIN 38408, deel 5

<sup>a)</sup> hulpreagens, alternatief voor DPD-nr. 1 / nr. 3 in geval van troebelheid van het monster als gevolg van een hoog calciumionengehalte en/of een hoge geleidbaarheid | <sup>b)</sup> hulpreagens, extra nodig voor de bepaling van broom, chloordioxide of ozon in aanwezigheid van chloor | <sup>\*</sup> met inbegrip van de mengstaaf



Chloordioxide PP

M122

0.04 - 3.8 mg/L ClO<sub>2</sub>

CLO2

DPD

NL

## Reagentia

Benodigd materiaal (deels optioneel):

Reagentia	Verpakkingseenheid	Bestelnr.
Chloor vrij DPD F10	Poeder / 100 St.	530100
Chloor vrij DPD F10	Poeder / 1000 St.	530103
Glycine <sup>9)</sup>	Tablet / 100	512170BT
Glycine <sup>9)</sup>	Tablet / 250	512171BT
VARIO Glycine Reagens 10 %, 29 ml	29 mL	532210

## Bemonstering

1. Tijdens de monstervoorbereiding moet worden vermeden dat wordt uitgestoten, bijvoorbeeld door pipetteren en schudden.
2. De analyse moet onmiddellijk na de bemonstering worden uitgevoerd.

## Vorbereiding

1. Het schoonmaken van de spoelbakjes:  
Aangezien veel huishoudelijke reinigingsmiddelen (bijv. afwasmiddelen) minder schadelijke stoffen bevatten, kan de bepaling van Chloordioxide leiden tot minder goede resultaten. Om deze meefout uit te sluiten, moeten de glasapparaten chloorvrij zijn. Hiertoe wordt het glaswerk gedurende één uur onder natriumhypochlorietoplossing (0,1 g/L) bewaard en vervolgens grondig gespoeld met gedeïoniseerd water.
2. Sterk alkalisch of zuur water moet vóór de analyse in een pH-gebied tussen 6 en 7 (met 0,5 mol/l zwavelzuur of 1 mol/l-natriumhydroxideoplossing) worden gebracht.

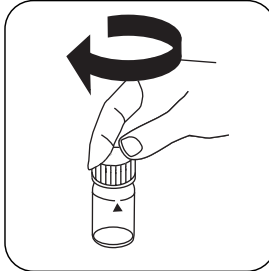
## Uitvoering van de bepaling Chloordioxide, in afwezigheid van chloor, met poederpakjes

De methode in het apparaat selecteren.

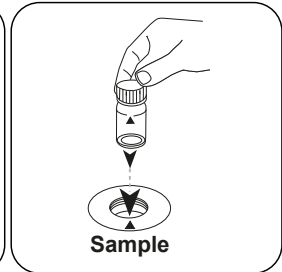
Selecteer bovendien de bepaling: zonder chloor



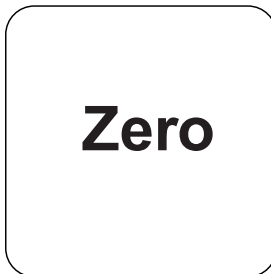
Spoelbakje van 24 mm met **10 mL staal** vullen.



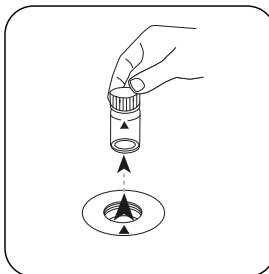
De spoelbakjes afsluiten.



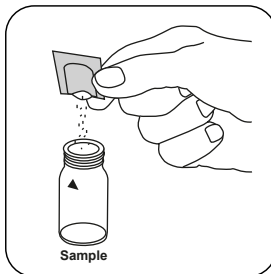
Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letteren.



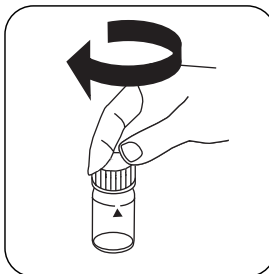
De toets **NUL** indrukken.



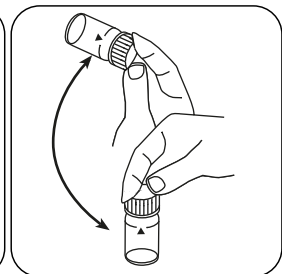
Het spoelbakje uit de meetschacht nemen.



Een **Chloor FREE-DPD / F10 poederpakje** toevoegen.

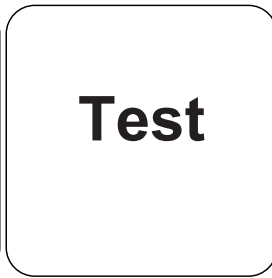
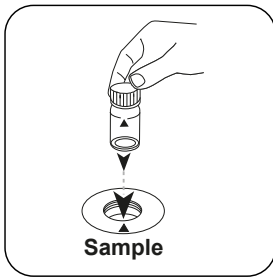


De spoelbakjes afsluiten.



De inhoud mengen door om te draaien (20 sec.).





NL

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

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

De display toont het resultaat in mg/L Chloordioxide.

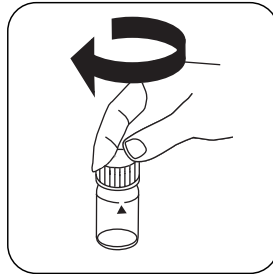
### Uitvoering van de bepaling Chloordioxide, in afwezigheid van chloor, met poederpakjes

De methode in het apparaat selecteren.

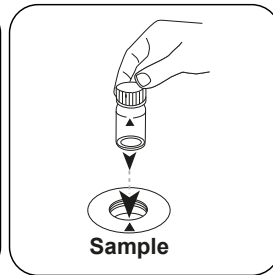
Selecteer bovendien de bepaling: naast chloor



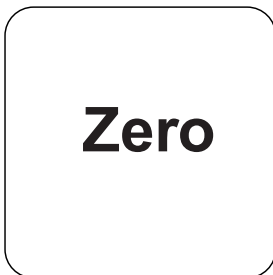
Spoelbakje van 24 mm met **10 mL** staal vullen.



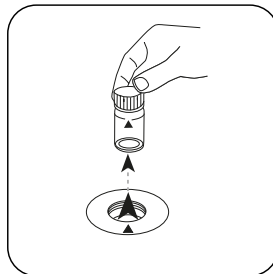
De spoelbakjes afsluiten.



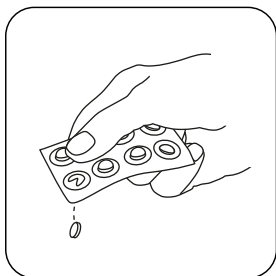
Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.



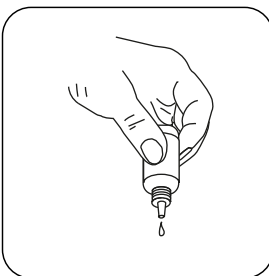
De toets **NUL** indrukken.



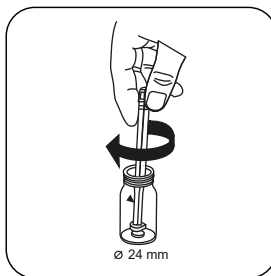
Het spoelbakje uit de meetschacht nemen.



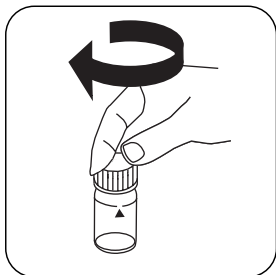
Een **GLYCINE** tablet toevoegen.



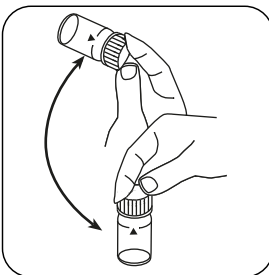
of 4 druppels **GLYCINE** Reagent toevoegen.



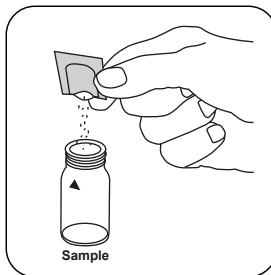
De tabletten onder lichte rotatie verpletteren.



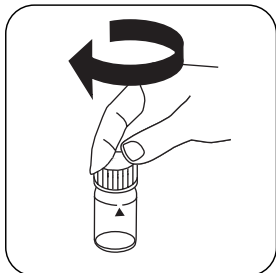
De spoelbakjes afsluiten.



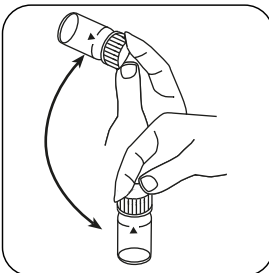
Tabletten oplossen door om te draaien



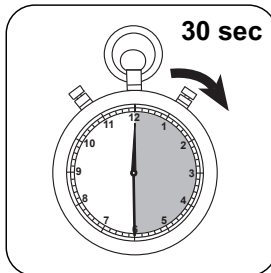
Een **Chloorvrij DPD/ F10 poederpakje** toevoegen.



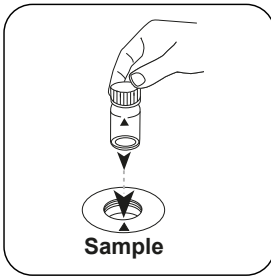
De spoelbakjes afsluiten.



De inhoud mengen door om te draaien (20 sec.).



De reactietijd van **30 seconden** afwachten.



# Test

NL

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

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

De display toont het resultaat in mg/L Chloordioxide.



## Chemische methode

DPD

## Aanhangsel

### Verstoringen

#### Permanente verstoringen

1. Alle oxidatiemiddelen in de monsters leiden tot meerdere resultaten.

#### Uit te sluiten verstoringen


1. Concentraties boven de 3,8 mg/L chloordioxide kan leiden tot resultaten binnen het meetbereik tot 0 mg/L. In dit geval wordt het watermonster verdund met chloordioxidevrij water. Voeg reagens toe aan 10 ml van het verdunde monster en herhaal de meting (plausibiliteitstest).

#### Afgeleid van

DIN 38408, deel 5

<sup>9</sup> hulpreagens, extra nodig voor de bepaling van broom, chloordioxide of ozon in aanwezigheid van chloor

NL

KS4.3 T / 20


方法名称

方法号

用于方法检测的条形码

测量范围

酸性 / 指示剂

化学方法

**仪器的具體信息**

測試可以在以下設備上執行。此外還指出了所需的比色杯和光度計的吸收範圍。

儀器類型	比色皿	$\lambda$	測量範圍
MD 200, MD 600, MD 610, MD 640, MultiDirect, PM 620, PM 630	$\varnothing$ 24 mm	610 nm	0.1 - 4 mmol/l $K_{S4.3}$
SpectroDirect, XD 7000, XD 7500	$\varnothing$ 24 mm	615 nm	0.1 - 4 mmol/l $K_{S4.3}$

**材料**

所需材料 (部分可選) :

標題	包裝單位	貨號
Alka-M-Photometer	片劑 / 100	513210BT
Alka-M-Photometer	片劑 / 250	513211BT

**應用列表**

- 污水處理
- 飲用水處理
- 原水處理

**備註**

1. 術語總度-m、m-值、總碱度和酸容量  $K_{S4.3}$  是相同的。
2. 準確地遵守 10 ml 的樣本體積對分析結果的準確度至關重要。

語言代碼ISO 639-1

修訂狀態

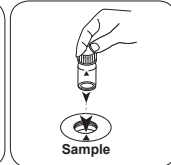
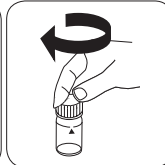
CN 方法手冊 01/20

开始测量

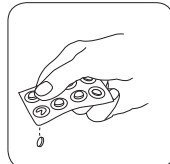
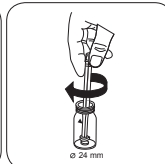
进行测定  $K_{s4.3}$  片剂酸容量

选择设备中的方法。

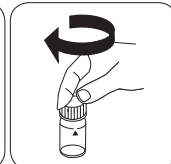
对于这种方法，在以下设备上不能进行 ZERO 测量：XD 7000, XD 7500

用 10 ml 样本填充 24 mm 比密封比色杯。  
色杯。将样本比色杯放入测量轴  
中。注意定位。

• • •

加入 ALKA-M-PHOTOME-  
TER 片剂。

用轻微的扭转压碎片剂。



密封比色杯。

CN 方法手册 01/20

ZH



T 二氧化氯

M120

0.02 - 11 mg/L ClO<sub>2</sub>

CLO2

DPD / 甘氨酸

材料

所需材料 (部分可选) :

ZH

试剂	包装单位	货号
DPD No.1	片剂 / 100	511050BT
DPD No.1	片剂 / 250	511051BT
DPD No.1	片剂 / 500	511052BT
DPD No.3	片剂 / 100	511080BT
DPD No.3	片剂 / 250	511081BT
DPD No.3	片剂 / 500	511082BT
甘氨酸 <sup>9)</sup>	片剂 / 100	512170BT
甘氨酸 <sup>9)</sup>	片剂 / 250	512171BT
DPD No.3 高钙 <sup>e)</sup>	片剂 / 100	515730BT
DPD No.3 高钙 <sup>e)</sup>	片剂 / 250	515731BT
DPD No.3 高钙 <sup>e)</sup>	片剂 / 500	515732BT
DPD No.1 高钙 <sup>e)</sup>	片剂 / 100	515740BT
DPD No.1 高钙 <sup>e)</sup>	片剂 / 250	515741BT
DPD No.1 高钙 <sup>e)</sup>	片剂 / 500	515742BT
套件 DPD No.1/No.3 <sup>#</sup>	各100次	517711BT
套件 DPD No.1/No.3 <sup>#</sup>	各250次	517712BT
套件 DPD No.1/甘氨酸 <sup>#</sup>	各100次	517731BT
套件 DPD No.1/甘氨酸 <sup>#</sup>	各250次	517732BT
套件 DPD No.1/No.3 高钙 <sup>#</sup>	各100次	517781BT
套件 DPD No.1/No.3 高钙 <sup>#</sup>	各250次	517782BT
DPD No.3 Evo	片剂 / 100	511420BT
DPD No.3 Evo	片剂 / 250	511421BT
DPD No.3 Evo	片剂 / 500	511422BT

## 取样

1. 在样本制备中, 通过移液和摇动来避免的排气。
2. 取样后必须立即进行分析。



## 准备

1. 清洗比色杯：  
由于许多家用清洁剂（例如洗碗用洗涤剂）含有还原剂，所以测定的二氧化氯结果可能会不足。为了排除这种测量误差，玻璃器皿应无氯。为此，将玻璃器皿在次氯酸钠溶液（0.1 g/L）下存放 1 小时，然后用去离子水（软化水）彻底冲洗。
2. 在分析前（用 0.5 mol/l 硫酸或 1 mol/l 氢氧化钠溶液）必须将强碱性或酸性水的 pH 范围调节到 6 和 7 之间。

## 备注

1. EVO片剂可以作为相应标准片剂的替代品（如DPD No.3 EVO代替DPD No.3）。

ZH





ZH

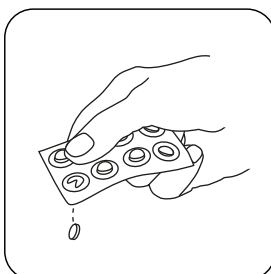
## 进行测定 二氧化氯, 有氯存在, 片剂法

选择设备中的方法。

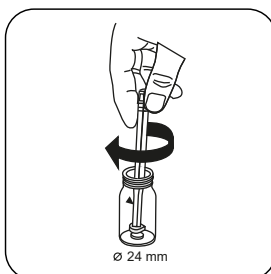
另外选择测定：含氯



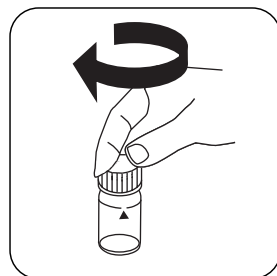
用 10 mL 样本填充 24 mm 比色杯。



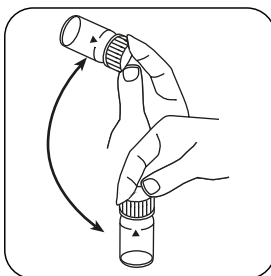
加入 GLYCINE 片剂。



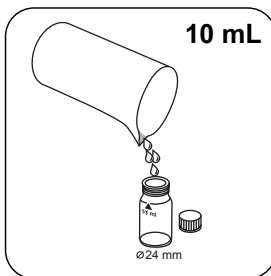
用轻微的扭转压碎片剂。



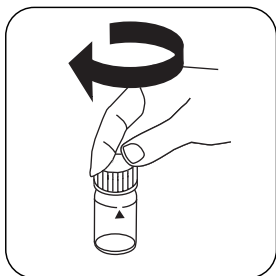
密封比色杯。



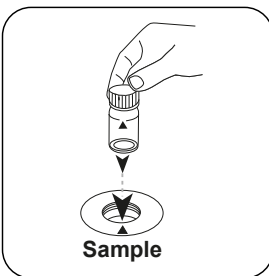
通过旋转溶解片剂。



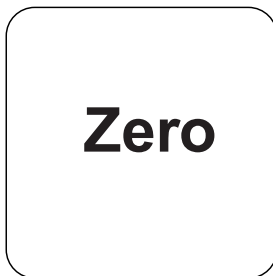
用 10 mL 样本填充第二个比色杯。



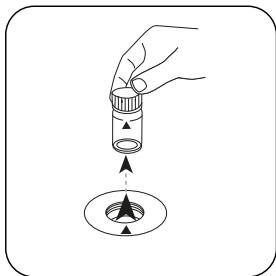
密封比色杯。



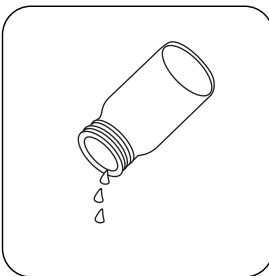
将样本比色杯放入测量轴中。注意定位。



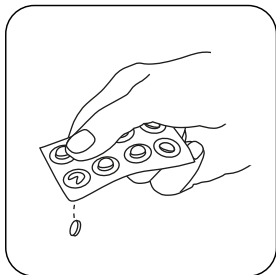
按下 ZERO 按钮。



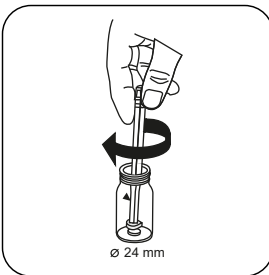
从测量轴上取下比色杯。



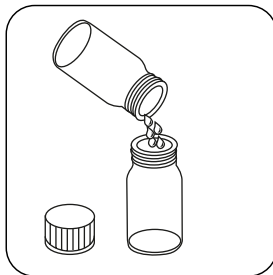
倒空比色杯。



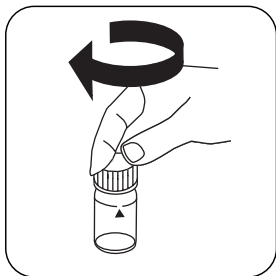
加入 DPD No. 1 片剂。



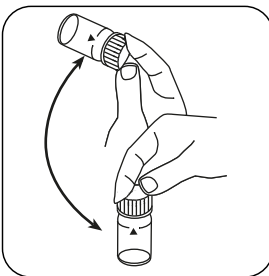
用轻微的扭转压碎片剂。



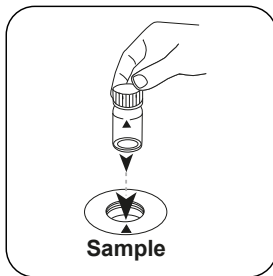
将准备好的甘氨酸加入到准备好的比色杯中。



密封比色杯。



通过旋转溶解片剂。



将样本比色杯放入测量轴中。注意定位。



**Test**

ZH

按下 **TEST** (XD: **START**) 按钮。

结果在显示屏上显示为 mg / l 二氧化氯。

## 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	ClO <sub>2</sub>	1
mg/l	Cl <sub>2</sub> frei	0.525
mg/l	Cl <sub>2</sub> geb.	0.525
mg/l	ges. Cl <sub>2</sub>	0.525

ZH

## 化学方法

DPD / 甘氨酸

## 附錄

## 干扰说明

### 持续干扰

1. 存在于样本中的所有氧化剂都导致多重结果。

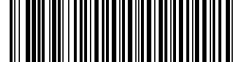
### 可消除干扰

1. 高于 19 mg/L 二氧化氯的浓度可导致测量范围内的结果高达 0 mg/L。在这种情况下应用不含二氧化氯的水稀释水样。将 10 ml 稀释的样本与试剂混合并重复测量。

### 源于

DIN 38408, 第 5 部分

<sup>9)</sup> 替代试剂，取代DPD No.1/No.3试剂，用于由高浓度钙离子和/或高电导率引起的浑浊水样分析 | <sup>9)</sup> 附加试剂，用于含氯水样，进行溴，二氧化氯和臭氧的测定分析 | <sup>9)</sup> 含搅拌棒，10cm



PP 二氧化氯

M122

0.04 - 3.8 mg/L ClO<sub>2</sub>

CLO2

DPD

材料

所需材料 (部分可选) :

ZH

试剂	包装单位	货号
游离氯 DPD F10	粉剂 / 100 片	530100
游离氯 DPD F10	粉剂 / 1000 片	530103
甘氨酸 <sup>9)</sup>	片剂 / 100	512170BT
甘氨酸 <sup>9)</sup>	片剂 / 250	512171BT
VARIO 甘氨酸试剂 10 %, 29 毫升。	29 mL	532210

## 取样

1. 在样本制备中, 通过移液和摇动来避免的排气。
2. 取样后必须立即进行分析。

## 准备

1. 清洗比色杯 :  
由于许多家用清洁剂 (例如洗碗用洗涤剂) 含有还原剂, 所以测定的二氧化氯结果可能会不足。为了排除这种测量误差, 玻璃器皿应无氯。为此, 将玻璃器皿在次氯酸钠溶液 (0.1 g/L) 下存放 1 小时, 然后用去离子水 (软化水) 彻底冲洗。
2. 在分析前 (用 0.5 mol/l 硫酸或 1 mol/l 氢氧化钠溶液) 必须将强碱性或酸性水的 pH 范围调节到 6 和 7 之间。

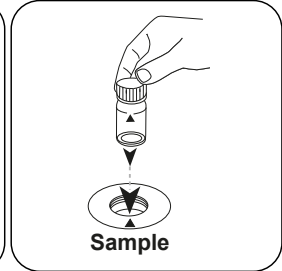
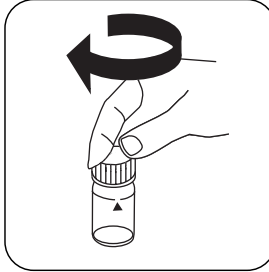
## 进行测定 Chlorine Dioxide, in absence of chlorine with powder packs

选择设备中的方法。

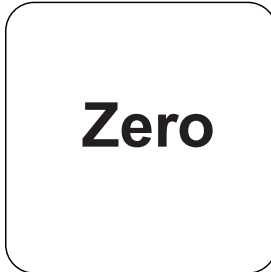
另外选择测定：without Chlorine



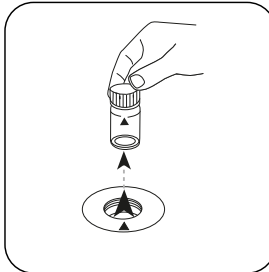
用 10 mL 样本填充 24 mm 比色杯。  
密封比色杯。



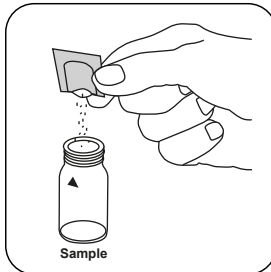
将样本比色杯放入测量轴中。注意定位。



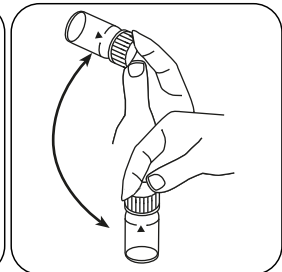
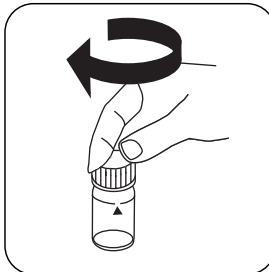
按下 ZERO 按钮。



从测量轴上取下比色杯。



加入 Chlorine FREE-DPD / F10 粉包。  
密封比色杯。

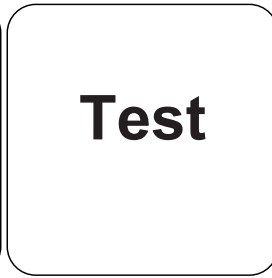
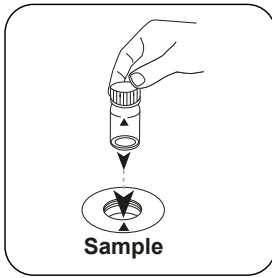


通过旋转混合内容物  
( 20 sec. )。

ZH



ZH



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 二氧化氯。

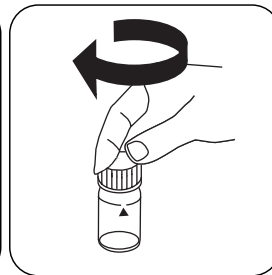
### 进行测定 Chlorine Dioxide, in presence of chlorine with powder packs

选择设备中的方法。

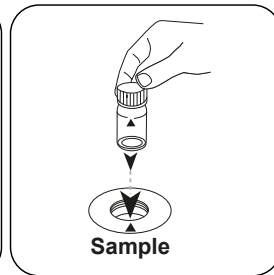
另外选择测定：in presence of Chlorine



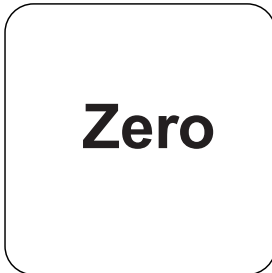
用 **10 mL** 样本填充 24 mm 比色杯。



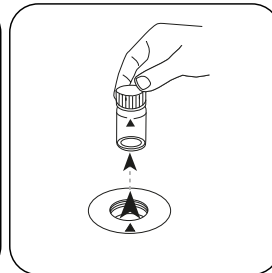
密封比色杯。



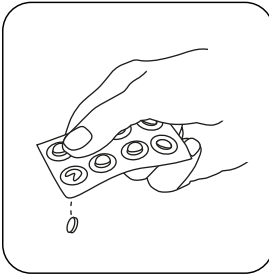
将样本比色杯放入测量轴中。注意定位。



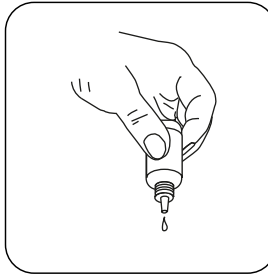
按下 **ZERO** 按钮。



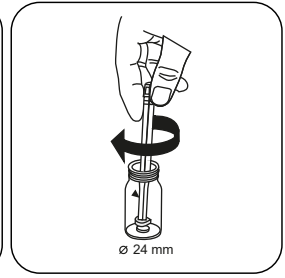
从测量轴上取下比色杯。



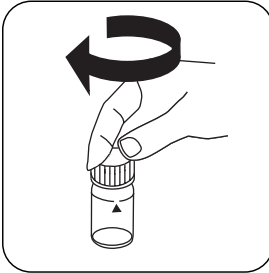
加入 **GLYCINE** 片剂。



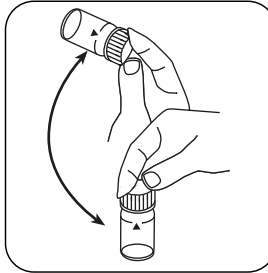
或加4滴**GLYCINE**  
Reagent。



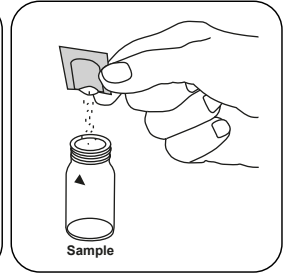
用轻微的扭转压碎片剂。



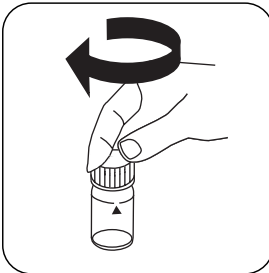
密封比色杯。



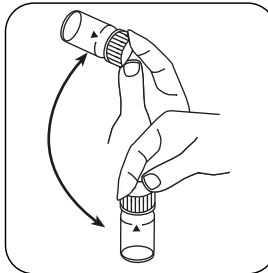
通过旋转溶解片剂。



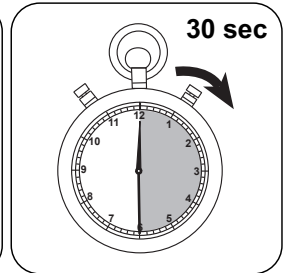
加入 **Chlorine-Free-DPD/  
F10** 粉包。



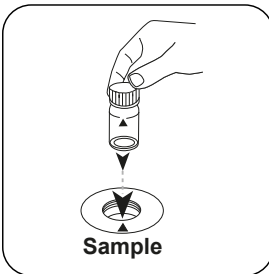
密封比色杯。



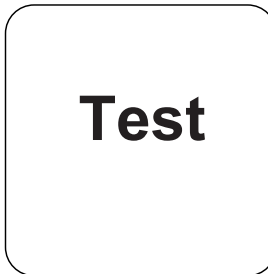
通过旋转混合内容物  
( 20 sec. )。



等待 **30 秒** 反应时间。



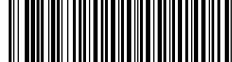
将样本比色杯放入测量轴  
中。注意定位。



按下 **TEST (XD: START)** 按  
钮。

结果在显示屏上显示为 **mg / l 二氧化氯**。





## 化学方法

DPD

## 附录

ZH

### 干扰说明

#### 持续干扰

1. 存在于样本中的所有氧化剂都导致多重结果。

#### 可消除干扰

1. 高于 3.8 mg/L 二氧化氯的浓度可导致测量范围内的结果高达 0 mg/L。在这种情况下应用不含二氧化氯的水稀释水样。将 10 ml 稀释的样本与试剂混合并重复测量（可信度测试）。

#### 源于

DIN 38408, 第 5 部分

<sup>9</sup> 附加试剂，用于含氯水样，进行溴，二氧化氯和臭氧的测定分析







**Tintometer GmbH**

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

**Tintometer South East Asia**

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

**Tintometer India Pvt. Ltd.**

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

**The Tintometer Limited**

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

**Tintometer Brazil**

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

**Tintometer Spain**

Postbox: 24047  
08080 Barcelona  
Tel.: +34 661 606 770  
sales@tintometer.es  
www.lovibond.com  
Spain

**Tintometer China**

9F, SOHO II C.  
No.9 Guanghualu,  
Chaoyang District,  
Beijing, 100020  
Customer Care China Tel.: 4009021628  
Tel.: +86 10 85251111 Ext. 330  
Fax: +86 10 85251001  
chinaoffice@tintometer.com  
www.lovibond.com  
China

**Tintometer Inc.**

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



Technical changes without notice  
Printed in Germany 07/24

No.: 00386446

Lovibond® and Tintometer® are Trademarks of  
the Tintometer Group of Companies

