

# Lovibond® Water Testing

Tintometer® Group



## Manual of Methods

MD 100 • MD 110 • MD 200

**(EN) Manual of Methods**

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**(ES) Manual de Métodos**

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**(IT) Manuale dei Metodi**

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**(NL) Handboek Methoden**

Zijde 16

**(DE) Methodenhandbuch**

Seite 6

**(FR) Méthodes Manuel**

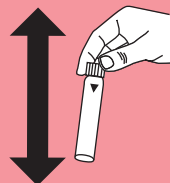
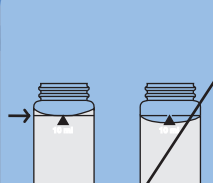
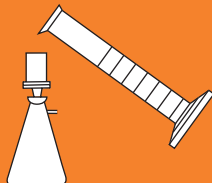
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**(PT) Métodos Manual**

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**(ZH) 方法手册**

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**Method name**

**Measuring range**

**Chemical Method**

**Method number**

**Bar code for the detection of the methods**

**Display in the MD 100 / MD 110 / MD 200**

**KS4.3 T / 20**

**K<sub>S4.3</sub> T**

**0.1 - 4 mmol/l K<sub>S4.3</sub>**

**Acid / Indicator**

**20**

**S:4.3**

**Instrument specific information**

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

| Instrument Type                                             | Cuvette | λ      | Measuring Range                  |
|-------------------------------------------------------------|---------|--------|----------------------------------|
| MD 200, MD 600, MD 610, MD 640, MultiDirect, PM 620, PM 630 | ø 24 mm | 610 nm | 0.1 - 4 mmol/l K <sub>S4.3</sub> |
| SpectroDirect, XD 7000, XD 7500                             | ø 24 mm | 615 nm | 0.1 - 4 mmol/l K <sub>S4.3</sub> |

**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<sub>S4.3</sub> 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

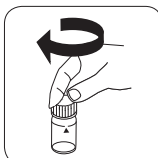
**Performing test procedure**
**Implementation of the provision Acid capacity  $K_{s4.3}$  with Tablet**

Select the method on the device

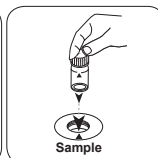
For this method, no ZERO measurements are to be carried out with the following devices: XD 7000, XD 7500



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

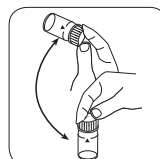


Close vial(s).

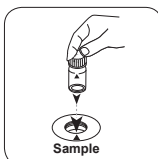


Place **sample vial** in the sample chamber. • Pay attention to the positioning.

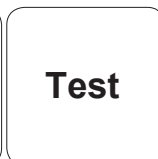
• • •



Dissolve tablet(s) by inverting.



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



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

The result in Acid Capacity  $K_{s4.3}$  appears on the display.

**Test**

**KS4.3 T / 20**



Methoden Name

Methodennummer

Barcode zur Methodenerkennung

**Messbereich**

$K_{S4.3} T$  20  
0,1 - 4 mmol/l  $K_{S4.3}$  S:4.3  
Säure / Indikator

**Displayanzeige**  
im MD 100 MD 110 / MD 200

**Chemische Methode**

**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**

- Die Begriffe Alkalität-m, m-Wert, Gesamtalkalität und Säurekapazität  $K_{S4.3}$  sind identisch.
- Die exakte Einhaltung des Probevolumens von 10 ml ist für die Genauigkeit des Analysenergebnisses entscheidend.

Sprachkürzel nach ISO 639-1

Revisionsstand

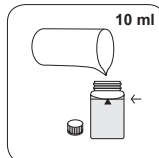
DE Methodenhandbuch 01/20

DE

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

Die Methode im Gerät auswählen.

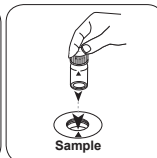
Für diese Methode muss bei folgenden Geräten keine ZERO-Messung durchgeführt werden: XD 7000, XD 7500



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

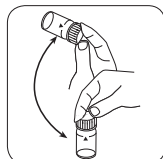


Küvette(n) verschließen.

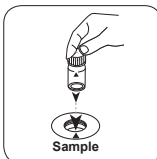


Die **Probenküvette** in den Messschacht stellen. Positionierung beachten.

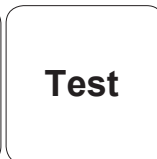
• • •



Tablette(n) durch Umschwenken lösen.



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



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

**Test**

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

KS4.3 T / 20

Nombre del método

Rango de medición

Método químico

Número de método

Código de barras para reconocer el método

Indicación en la pantalla de MD 100 / MD 110 / MD 200

KS<sub>4.3</sub> T

0.1 - 4 mmol/l K<sub>4.3</sub>

Ácido / Indicador

20

S:4.3

Información específica del instrumento

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

| Dispositivos                                                | Cubeta  | λ      | Rango de medición               |
|-------------------------------------------------------------|---------|--------|---------------------------------|
| MD 200, MD 600, MD 610, MD 640, MultiDirect, PM 620, PM 630 | ø 24 mm | 610 nm | 0.1 - 4 mmol/l K <sub>4.3</sub> |
| SpectroDirect, XD 7000, XD 7500                             | ø 24 mm | 615 nm | 0.1 - 4 mmol/l K <sub>4.3</sub> |

Material

Material requerido (parcialmente opcional):

| Título            | Unidad de embalaje | Referencia No |
|-------------------|--------------------|---------------|
| Fotómetro alcal-M | Tabletas / 100     | 513210BT      |
| Fotómetro alcal-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<sub>4.3</sub> 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

ES

8

EN Handbook of Methods

### Realización de la determinación

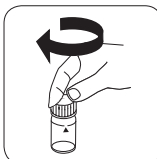
#### Ejecución de la determinación Capacidad ácida $K_{s4.3}$ con tableta

Seleccionar el método en el aparato.

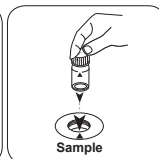
Para este método no es necesario realizar medición CERO en los aparatos siguientes: XD 7000, XD 7500



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

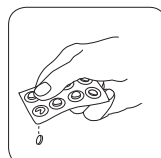


Cerrar la(s) cubeta(s).



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

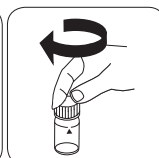
• • •



Añadir tableta ALKA-M-PHOTOMETER.



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



Cerrar la(s) cubeta(s).

KS4.3 T / 20



Nom de la méthode

Numéro de méthode

Code à barres pour reconnaître la méthode

Plage de mesure

Affichage dans le MD 100 / MD 110 / MD 200

Méthode chimique

Informations spécifiques à l'instrument

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

| Appareils                                                   | Cuvette | $\lambda$ | 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

État de révision

FR Méthodes Manuel 01/20

## Procédure du test

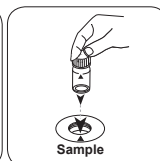
**Réalisation de la quantification Capacité acide  $K_{s4.3}$  avec pastille**

Sélectionnez la méthode sur l'appareil.

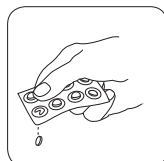
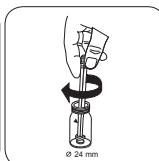
Cette méthode ne nécessite aucune mesure du zéro sur les appareils suivants : XD 7000, XD 7500

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

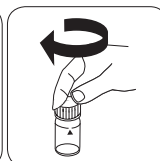
Fermez la(les) cuvette(s).

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

• • •

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

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



Fermez la(les) cuvette(s).

**KS4.3 T / 20**

**Denominazione metodo**

**Range di misura**

**Metodo chimico**

**Numero metodo**

**Codice a barre per riconoscere il metodo**

$K_{S4.3} T$

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

Acido/indicatore

20

S:4.3

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

**Codice a barre per riconoscere il metodo**

**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 $K_{S4.3}$ |
| SpectroDirect, XD 7000, XD 7500                             | ø 24 mm | 615 nm    | 0.1 - 4 mmol/l $K_{S4.3}$ |

**Materiale**

Materiale richiesto (in parte facoltativo):

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

**Campo di applicazione**

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

**Note**

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

**ISO 639-1 codici linguistici**

IT Manuale dei Metodi 01/20

**Stato di revisione**

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

Selezionare il metodo nel dispositivo.

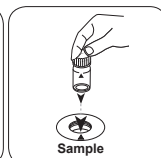
Con i seguenti dispositivi, per questo metodo non è necessario eseguire una misurazione ZERO: XD 7000, XD 7500



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

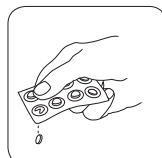


Chiudere la/e cuvetta/e.

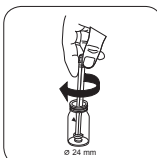


Posizionare la **cuvetta del campione** nel vano di misurazione. Fare attenzione al posizionamento.

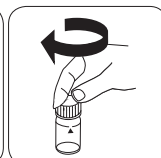
• • •



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



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



Chiudere la/e cuvetta/e.

KS4.3 T / 20

Nome do método

Número do método

Código de barras para a detecção dos métodos

Área de medição

KS<sub>4.3</sub> T

0.1 - 4 mmol/l K<sub>4.3</sub>

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 fotômetro são indicadas.

| Dispositivos                                                | Cubeta  | λ      | Faixa de Medição                |
|-------------------------------------------------------------|---------|--------|---------------------------------|
| MD 200, MD 600, MD 610, MD 640, MultiDirect, PM 620, PM 630 | ø 24 mm | 610 nm | 0.1 - 4 mmol/l K <sub>4.3</sub> |
| SpectroDirect, XD 7000, XD 7500                             | ø 24 mm | 615 nm | 0.1 - 4 mmol/l K <sub>4.3</sub> |

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<sub>4.3</sub> 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

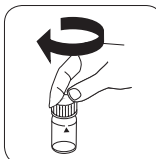
**Realização da determinação Capacidade de acidez  $K_{s4.3}$  com pastilha**

Escolher o método no equipamento.

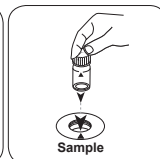
Para este método não tem de ser efetuada uma medição ZERO nos seguintes equipamentos: XD 7000, XD 7500



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

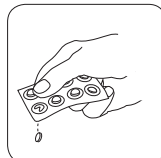


Fechar a(s) célula(s).

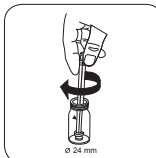


Colocar a **célula de amostra** no compartimento de medição. Observar o posicionamento.

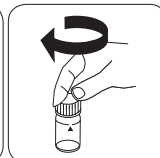
• • •



**Pastilha ALKA-M-PHOTO-METER.**



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



Fechar a(s) célula(s).

**KS4.3 T / 20**

**Naam van de methode**

**Meetbereik**

**Chemische methode**



**Nummer methode**

**KS4.3 T**

**0.1 - 4 mmol/l  $K_{S4.3}$**

**Zuur / Indicator**

**M20**

**S:4.3**

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

**Streepjescode ter identificatie van de methode**

**Instrumentspecifieke informatie**

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

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

**Reagentia**

Benodigd materiaal (deels optioneel):

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

**Toepassingsbereik**

- Afvalwaterzuivering
- Behandeling drinkwater
- Zuivering vervuild water

**Aantekeningen**

1. De termen alkaliteit-m, m-waarde, totale alkaliteit en zuurcapaciteit<sub>KS4.3</sub> zijn identiek.
2. De exacte naleving van het monstervolume van 10 ml is bepalend voor de nauwkeurigheid van het analysesresultaat.

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

NL Handboek van Methoden 01/20

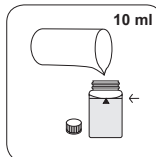
**Herziene versie**

### Uitvoering van de meting

#### Uitvoering van de bepaling Zuurcapaciteit $K_{s4.3}$ met tablet

De methode in het apparaat selecteren.

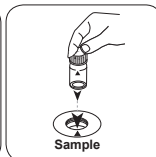
Voor deze methode moet bij de volgende apparaten geen nulmeting worden uitgevoerd:  
XD 7000, XD 7500



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

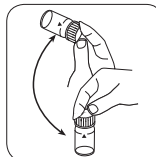


De spoelbakjes afsluiten.

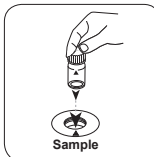


Het **staalspoelbakje** in de meetschacht plaatsen. Op de positionering letten.

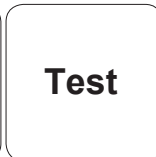
• • •



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  $K_{s4.3}$ .

ZH

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

KS<sub>4.3</sub> T

0.1 - 4 mmol/l K<sub>S4.3</sub>

酸性 / 指示剂

20

S:4.3

屏幕显示: MD 100 / MD 110 / MD 200

化学方法

儀器的具體信息

測試可以在以下設備上執行。此外還指出了所需的比色杯和光度計的吸收範圍。

| 儀器類型                                                        | 比色皿     | λ      | 測量範圍                             |
|-------------------------------------------------------------|---------|--------|----------------------------------|
| MD 200, MD 600, MD 610, MD 640, MultiDirect, PM 620, PM 630 | ø 24 mm | 610 nm | 0.1 - 4 mmol/l K <sub>S4.3</sub> |
| SpectroDirect, XD 7000, XD 7500                             | ø 24 mm | 615 nm | 0.1 - 4 mmol/l K <sub>S4.3</sub> |

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. 術語鹼度-m、m-值、總鹼度和酸容量 K<sub>S4.3</sub> 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

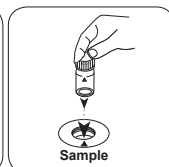
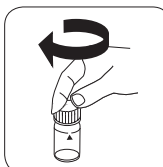
进行测定  $K_{s4.3}$  片剂酸容量

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

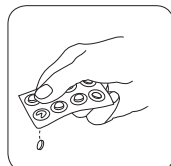


用 10 ml 样本填充 24 mm 比密封比色杯。

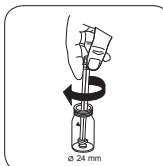


将样本比色杯放入测量轴中。注意定位。

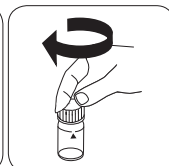
• • •



加入 ALKA-M-PHOTOMETER 片剂。



用轻微的扭转压碎片剂。



密封比色杯。









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