

# NANOCOLOR® Ammonium 3

Amonio

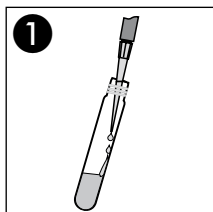
690 nm

Method(e) / Método

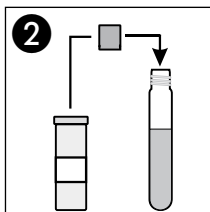
<b>0031</b>	0.04 - 2.30 mg/l $\text{NH}_4\text{-N}$
<b>0032</b>	0.05 - 3.00 mg/l $\text{NH}_4^+$
<b>0033</b>	0.05 - 3.00 mg/l $\text{NH}_3$

**Test 0-03**

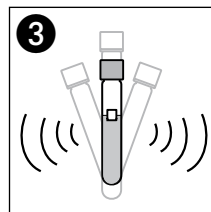
REF 985 003



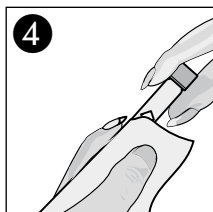
**1**  
4.0 ml Probe  
Sample  
Echantillon  
Muestra



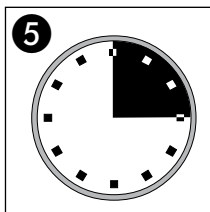
**2**  
1 x **NANOFIX R2**



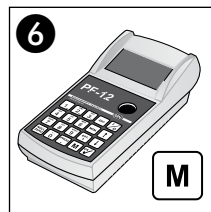
**3**  
Schütteln  
Shake  
Agiter  
Agitar



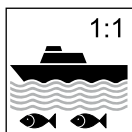
**4**  
Säubern  
Clean  
Nettoyer  
Limpiar



**5**  
15'00 min



**6**  
Messung  
Measurement  
Mesure  
Medición



1:1

Meerwasser  
Sea water  
Eau de mer  
Agua de mar

# NANOCOLOR® Ammonium 10

Amonio

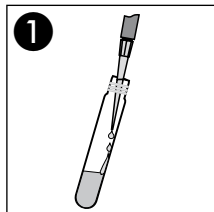
690 nm

Method(e) / Método

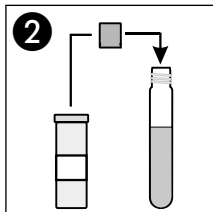
0041	0.2 - 8.0 mg/l $\text{NH}_4\text{-N}$
0042	0.2 - 10.0 mg/l $\text{NH}_4^+$
0043	0.2 - 10.0 mg/l $\text{NH}_3$

**Test 0-04**

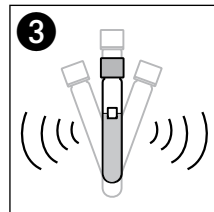
REF 985 004



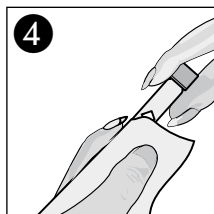
**1**  
1.0 ml Probe  
Sample  
Echantillon  
Muestra



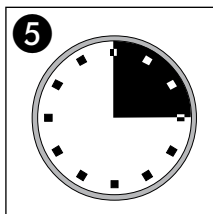
**2**  
1 x **NANOFIX R2**



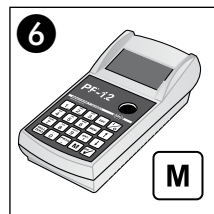
**3**  
Schütteln  
Shake  
Agiter  
Agitar



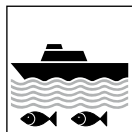
**4**  
Säubern  
Clean  
Nettoyer  
Limpiar



**5**  
15'00 min



**6**  
Messung  
Measurement  
Mesure  
Medición



Meerwasser  
Sea water  
Eau de mer  
Agua de mar

# NANOCOLOR® Ammonium 50

Amonio

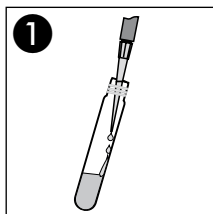
690 nm

Method(e) / Método

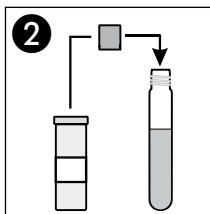
0051	1 - 40 mg/l $\text{NH}_4\text{-N}$
0052	1 - 50 mg/l $\text{NH}_4^+$
0053	1 - 50 mg/l $\text{NH}_3$

**Test 0-05**

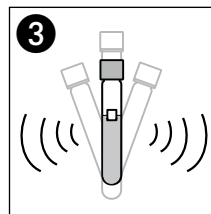
REF 985 005



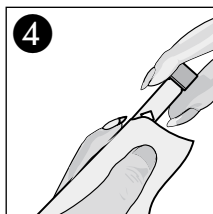
**200 µl** Probe  
Sample  
Echantillon  
Muestra



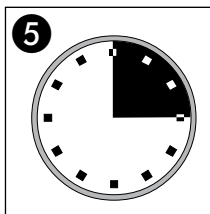
**1 x NANOFIX R2**



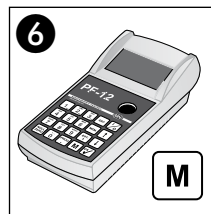
Schütteln  
Shake  
Agiter  
Agitar



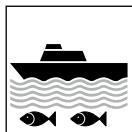
Säubern  
Clean  
Nettoyer  
Limpiar



**15'00 min**



Messung  
Measurement  
Mesure  
Medición



Meerwasser  
Sea water  
Eau de mer  
Agua de mar

# NANOCOLOR® Ammonium 200

Amonio

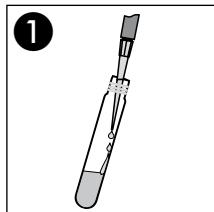
585 nm

Method(e) / Método

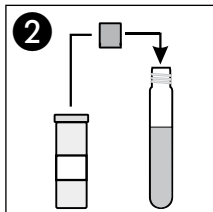
<b>0061</b>	30 - 160 mg/l $\text{NH}_4\text{-N}$
<b>0062</b>	40 - 200 mg/l $\text{NH}_4^+$
<b>0063</b>	40 - 200 mg/l $\text{NH}_3$

**Test 0-06**

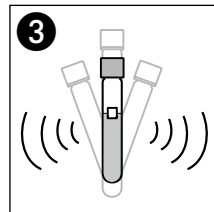
REF 985 006



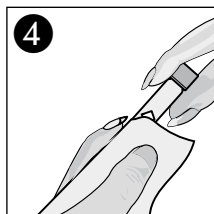
**1**  
200 µl Probe  
Sample  
Echantillon  
Muestra



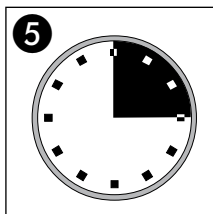
**2**  
1 x NANOFIX R2



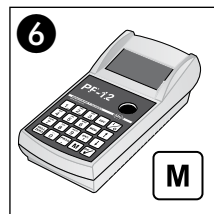
**3**  
Schütteln  
Shake  
Agiter  
Agitar



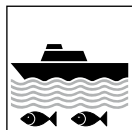
**4**  
Säubern  
Clean  
Nettoyer  
Limpiar



**5**  
15'00 min



**6**  
Messung  
Measurement  
Mesure  
Medición



Meerwasser  
Sea water  
Eau de mer  
Agua de mar

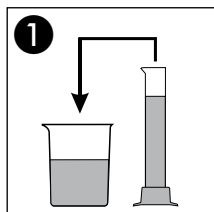
470 nm

Method(e) / Método

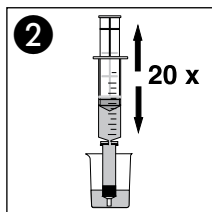
0071

0.1 - 3.0 mg/l AOX

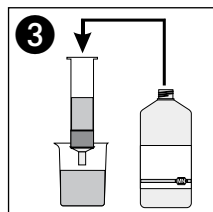
### 1. Festphasenextraktion mit / Solid phase extraction with **NANOSORB** Extraction à l'état solide avec / Extracción de la fase sólida con **NANOSORB**



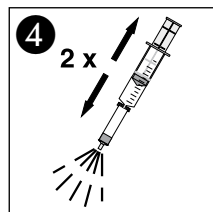
**1**  
100 ml Probe  
Sample  
Enchantillon  
Muestra



**2**  
Adsorption (pH < 5)

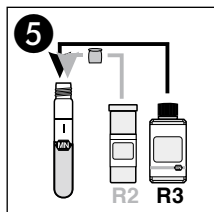


**3**  
5 x 20 ml AOX R1

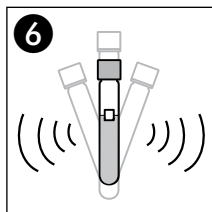


**4**  
Wasser entfernen  
Remove water  
Eliminer d'eau  
Eliminar el agua

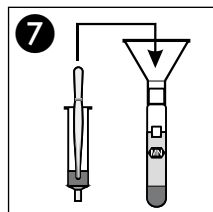
### 2. Aufschluss / Decomposition / Dissolution / Disgregación



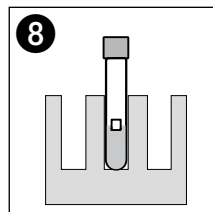
**5**  
1 x **NANOFIX**  
AOX R2  
+ 5 ml AOX R3



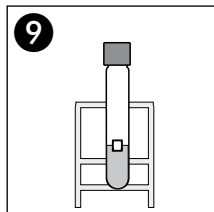
**6**  
Schütteln  
Shake  
Agiter  
Agitar



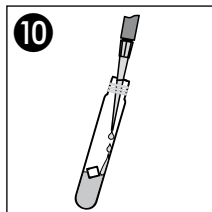
**7**  
**NANOSORB**  
Überführen / Insert  
Introduire / Colocar



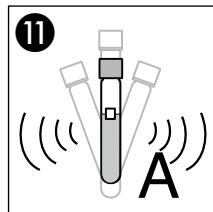
**8**  
120 °C / 30 min



**9**  
Abkühlen lassen  
Allow to cool  
Laisser refroidir  
Dejar enfriar



**10**  
3.5 ml AOX R4

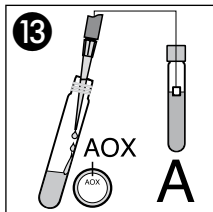


**11**  
Schütteln  
Shake  
Agiter  
Agitar

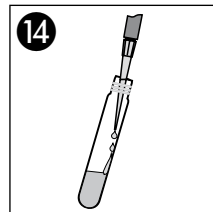
### 3. Bestimmung von / Determination of / Détection de l' / Determinación de AOX



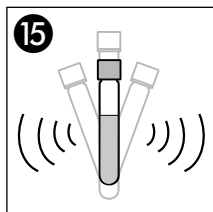
NULL messen  
Measure blank  
Lecture blanc  
Lectura blanco



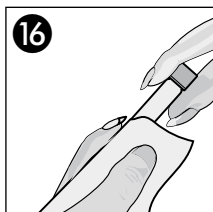
4.0 ml **A** in Küvette AOX  
into tube AOX  
dans tube AOX  
en tubo AOX



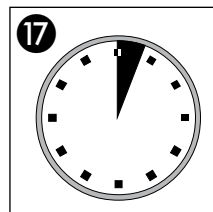
1.0 ml **Cl<sup>-</sup> R2**



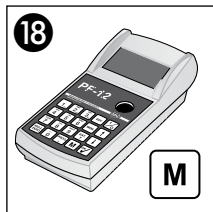
Schütteln  
Shake  
Agiter  
Agitar



Säubern  
Clean  
Nettoyer  
Limpiar

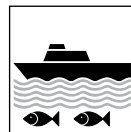


3'00 min



Messung  
Measurement  
Mesure  
Medición

Meerwasser  
Sea water  
Eau de mer  
Agua de mar



### Rundküvettest

Methode: Die Bestimmung von AOX aus einer wässrigen Probe erfolgt in drei Schritten:  
 1. Festphasenextraktion mit **NANOSORB** für AOX  
 2. Aufschluss des angereicherten Adsorbermediums  
 3. Bestimmung als Chlorid mit **NANOCOLOR® AOX 3** Reagenziensatz

Messbereich: 0,1 - 3,0 mg/l AOX  
 0,01 - 0,30 mg/l AOX

Methode  
**0071**  
**0072**

**NANOCOLOR®**  
 Reagenziensatz:

AOX 3 (REF 985 007) und Erweiterungs-Set (REF 918 072)

Wellenlänge:

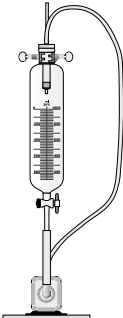
**470 nm**

Störungen:

CSB > 1000 mg/l bei Einsatz von 100 ml Probevolumen. Bei Erhöhung des Probevolumens auf 1 L liegt die Störgrenze > 100 mg/l CSB.  
 Die Methode ist bei Verwendung von 200 ml Spüllösung auch für die Analyse von Meerwasser geeignet.

**Ausführung:**

Benötigtes Zubehör: Start-Set für AOX (REF 916 111), Kolbenhubpipette mit Spitzen, CHROMAFIL® Membranfilter (REF 916 50) oder Faltenfilter MN 619 de ¼ (REF 539 011), ggf. Pumpen-Set für AOX (REF 916 115)

<b>1. Extraktion:</b>	
<b>a) manuelle Durchführung</b>	
<p><b>NANOSORB</b>-Kartusche mittels Adapter mit Spritze 50 ml verbinden.  <b>100 ml</b> Probelösung in ein Becherglas 150 ml geben, <b>NANOSORB</b>-Kartusche in die Probelösung (pH-Wert &lt; 5) eintauchen und mit 20 gleichmäßigen Auf- und Abwärtshüben den vorhandenen AOX aus der Probe adsorbieren (Hilfsmittel: Stativ mit Muffe und Klammer).</p>	
<p>Nach der Extraktion <b>NANOSORB</b>-Kartusche von Adapter und Spritze trennen und langsam in 4 – 5 Portionen mit insgesamt  <b>100 ml AOX R1</b> Spüllösung zur Abtrennung von anorganischem Chlorid spülen.                  Spritze mit dem Adapter aufsetzen und mit 2 kräftigen Lufthüben überschüssiges Wasser aus dem <b>NANOSORB</b> entfernen.</p>	
<b>b) automatische Durchführung mit Pumpenset</b>	
<p>Ventil des Vorratsgefäßes schließen,  <b>100 ml</b> Probe oder für den empfindlichen Messbereich  <b>1000 ml</b> in das Vorratsgefäß geben, die <b>NANOSORB</b>-Kartusche an den Adapter anschließen und oben in das Vorratsgefäß einhängen. Das Ventil öffnen und Pumpe starten.  <b>20 min</b> den AOX aus der Probe extrahieren.</p>	
<p>Nach der Extraktion <b>NANOSORB</b>-Kartusche von Adapter trennen und langsam in 4 – 5 Portionen mit insgesamt  <b>100 ml AOX R1</b> Spüllösung zur Abtrennung von anorganischem Chlorid spülen. Die Spritze mit dem Adapter aufsetzen und mit 2 kräftigen Lufthüben überschüssiges Wasser aus dem <b>NANOSORB</b> entfernen.</p>	

# NANOCOLOR® AOX 3

Adsorbable organically bound halogens  
sensitive range / high COD contents

**Test 0-072**  
REF 985 007 / 918 072

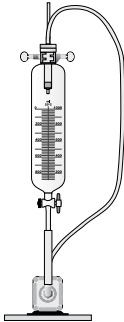
**Method:** Determination of AOX in aqueous samples in 3 steps:  
1. Solid phase extraction with **NANOSORB** for AOX  
2. Decomposition of enriched adsorber  
3. Determination as chloride with reagent set **NANOCOLOR® AOX 3**

**Range:** 0.1 - 3.0 mg/l AOX  
0.01 - 0.30 mg/l AOX

**NANOCOLOR®**  
reagent set: AOX 3 (REF 985 007) and Supplement kit for AOX (REF 918 072)  
Wavelength: **470 nm**  
Interferences: COD > 100 mg/l interferes if the sample volume is 100 ml.  
COD > 100 mg/l interferes if the sample volume is 1 litre.  
The method can be applied for the analysis of sea water if 200 ml of rinsing solution are used.

**Procedure:** Requisite accessories: start set for AOX (REF 916 111), piston pipette with disposable tips, CHROMAFIL® membrane filters (REF 916 50) or folded filters MN 619 de ¼ (REF 539 011), optional: pump set for AOX (REF 916 115)

Method  
**0071**  
**0072**

<b>1. Extraction:</b>	
<b>a) manual procedure</b>	
Connect a <b>NANOSORB</b> cartridge to the 50 ml syringe with the aid of an adaptor. Pour <b>100 ml</b> test sample into a 150 ml glass beaker, dip the <b>NANOSORB</b> cartridge into the test sample (pH < 5) and lift the syringe plunger up and down 20 times to adsorb the organically bound halogens from the sample (Accessories: stand with clamp and boss).	
After extraction disconnect the <b>NANOSORB</b> cartridge from the adaptor and syringe. Rinse the <b>NANOSORB</b> cartridge slowly in 4 – 5 portions with a total of <b>100 ml AOX R1</b> rinsing solution in order to remove inorganic chloride. Connect the syringe to the cartridge once more and blow out any excess of water from the <b>NANOSORB</b> adsorber with two strong draughts of air.	
<b>b) automatic procedure using the pump set</b>	
Close valve of the flask. Pour <b>100 ml</b> test sample or <b>1000 ml</b> test sample ( <i>sensitive range</i> ) into the flask and connect a <b>NANOSORB</b> cartridge to the flask using the adaptor (see figure). Open valve and start pumping for <b>20 min</b> to adsorb the organically bound halogens from the sample.	
After extraction disconnect the <b>NANOSORB</b> cartridge from the adaptor and flask. Rinse the <b>NANOSORB</b> cartridge slowly in 4 – 5 portions with a total of <b>100 ml AOX R1</b> rinsing solution in order to remove inorganic chloride. Connect the syringe to the cartridge using the adaptor and blow out any excess of water from the <b>NANOSORB</b> adsorber with two strong draughts of air.	



(Fortsetzung)

<b>2. Aufschluss bei hoher CSB-Belastung:</b>
<b>a) Thermoblock</b>
In eine leere Rundküvette 14 mm ID <b>1 NANOFIX AOX R2,</b> <b>1 schwarzen Messlöffel AOX R5</b> und <b>5 ml AOX R3</b> geben, verschließen und mischen. In diese Lösung mittels einer Pinzette und Trichter das <b>NANOSORB</b> bis auf den Boden der Rundküvette bringen. Die Rundküvette verschließen und in den Thermoblock einsetzen, 30 min auf 120 °C erhitzen und anschließend ca. 10 min abkühlen lassen, umschwenken, öffnen, mit <b>3,5 ml AOX R4</b> versetzen und <b>1 orangenen Messlöffel AOX R6</b> zusetzen ( <i>die Lösung wird trüb</i> ), verschließen und mischen. Den entstandenen Niederschlag abfiltrieren.
<b>b) Mikrowelle</b>
In das Aufschlussgefäß <b>1 NANOFIX AOX R2</b> und zusätzlich <b>1 schwarzen Messlöffel AOX R5</b> und <b>5 ml AOX R3</b> geben, verschließen und mischen. In diese Lösung mittels einer Pinzette das <b>NANOSORB</b> einbringen. Um ein Aufschwimmen zu vermeiden, einen Glasstab mit in das Aufschlussgefäß geben. Das Aufschlussgefäß im Mikrowellengerät auf den äußeren Rand des Drehtellers stellen und 23 s mit 900 Watt oder 28 s mit 750 Watt bestrahlen (immer die höchste Leistungsstufe des jeweiligen Gerätes wählen). Aus der Mikrowelle nehmen und etwa 10 min abkühlen lassen. Das Aufschlussgefäß einmal auf den Kopf schwenken und anschließend vorsichtig öffnen. Die Aufschlusslösung mit <b>3,5 ml AOX R4</b> versetzen und <b>1 orangenen Messlöffel AOX R6</b> zusetzen ( <i>die Lösung wird trüb</i> ), verschließen und mischen. Den entstandenen Niederschlag abfiltrieren.
<b>3. AOX-Bestimmung:</b>
AOX-Rundküvette öffnen, <b>4,0 ml</b> des Filtrats in die Küvette pipettieren, <b>1,0 ml Chlorid R2</b> zugeben, verschließen und mischen. Rundküvette außen säubern.

Reaktionszeit: 3'00 min

Rundküvette einsetzen

Deutsche Einheitsverfahren zur Wasser-, Abwasser und Schlammuntersuchung (DIN EN 1485 H14 und DIN 38409 H22)

Messung:

Literatur:

(continued)

<b>2. Decomposition if high COD contents are present:</b>
<b>a) Heating block</b> Add to reaction tube 14 mm ID <b>1 NANOFIX AOX R2,</b> <b>1 black spoon AOX R5</b> and <b>5 ml AOX R3</b> , close and mix. Open and add the <b>NANOSORB</b> to this solution with the help of a funnel, then press it down to the bottom of the tube using tweezers. Close the tube, place it into the heating block and heat at 120 °C for 30 min. Remove the tube from the heating block, shake gently and leave it to cool. Open tube, add <b>3.5 ml AOX R4</b> and <b>1 orange spoon AOX R6</b> ( <i>the solution becomes turbid</i> ), close and mix. Filter the solution with membrane or folded filters.
<b>b) Microwave</b> Add to the decomposition vessel <b>1 NANOFIX AOX R2,</b> <b>1 black spoon AOX R5</b> and <b>5 ml AOX R3</b> , close and mix. Open and add the <b>NANOSORB</b> to this solution using tweezers. Add a glass rod to the vessel to prevent the <b>NANOSORB</b> from swimming on the surface. Close the decomposition vessel. Place it on the outer edge of the microwave revolving plate and heat 23 s at 900 VA or 28 s at 750 VA (always use the highest power rating of your microwave oven). Remove the vessel from the microwave and let it cool for about 10 min. Turn the pressure vessel upside down once and open it with caution. Add <b>3.5 ml AOX R4</b> and <b>1 orange spoon AOX R6</b> ( <i>the solution becomes turbid</i> ), close and mix. Filter the solution with membrane or folded filters.
<b>3. Determination of AOX:</b> Open test tube AOX, add <b>4.0 ml</b> of the filtered decomposition solution and <b>1.0 ml Chloride R2</b> , close and mix. Clean outside of test tube.

Measurement:  
Reference:

Reaction time: 3'00 min  
Insert test tube  
German standard methods for the examination of water, waste water and sludge (DIN EN 1485 H14 and DIN 38409 H22)

# NANOCOLOR® Ammonium 100

Amonio

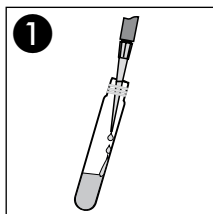
585 nm

Method(e) / Método

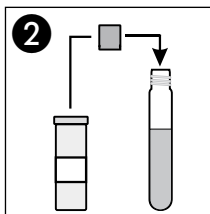
0081	4 - 80 mg/l $\text{NH}_4\text{-N}$
0082	5 - 100 mg/l $\text{NH}_4^+$
0083	5 - 100 mg/l $\text{NH}_3$

**Test 0-08**

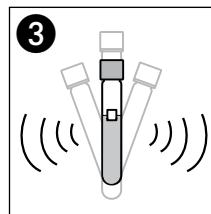
REF 985 008



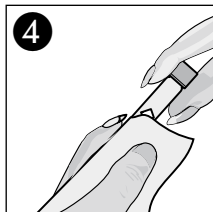
**500 µl** Probe  
Sample  
Echantillon  
Muestra



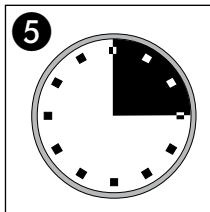
**1 x NANOFIX R2**



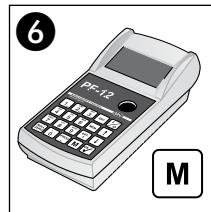
Schütteln  
Shake  
Agiter  
Agitar



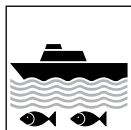
Säubern  
Clean  
Nettoyer  
Limpiar



**15'00 min**



Messung  
Measurement  
Mesure  
Medición



Meerwasser  
Sea water  
Eau de mer  
Agua de mar

# NANOCOLOR® Blei 5

Lead / Plomb / Plomo

540 nm

Method(e) / Método

0091

0.10 - 5.00 mg/l Pb

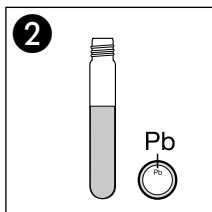
**Test 0-09**

REF 985 009

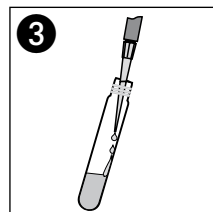
**Messwert A / Sample value A / Valeur A / Valor de medición A:**



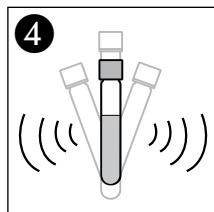
**1**  
NULL messen  
Measure blank  
Lecture blanc  
Lectura blanco



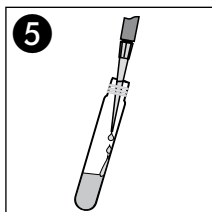
**2**  
**Blei-Rundküvette**  
Test tube **Lead**  
Cuve ronde **Plomb**  
Tubo de test **Plomo**



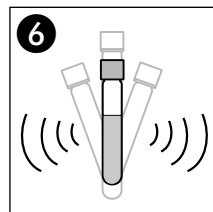
**3**  
**200 µl R2**



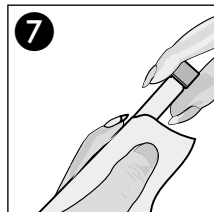
**4**  
Schütteln  
Shake  
Agiter  
Agitar



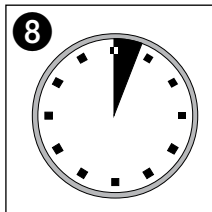
**5**  
**4.0 ml Probe**  
Sample  
Echantillon  
Muestra



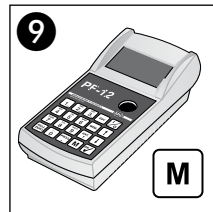
**6**  
Schütteln  
Shake  
Agiter  
Agitar



**7**  
Säubern  
Clean  
Nettoyer  
Limpiar

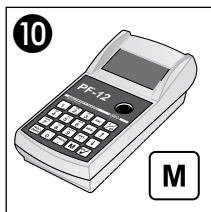


**8**  
**3'00 min**

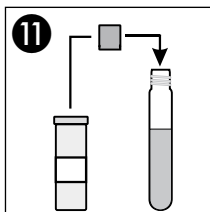


**9**  
Messwert A  
Value A  
Valeur A  
Valor A

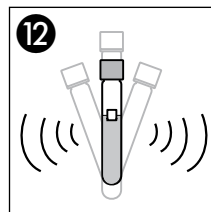
### Messwert B / Sample value B / Valeur B / Valor de medición B:



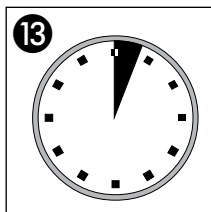
Messwert A = Null  
Value A = Zero  
Valeur A = Zéro  
Valor A = Cer



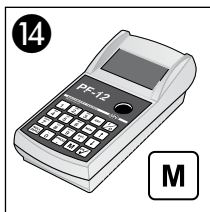
1 x **NANOFIX R3**



Schütteln  
Shake  
Agiter  
Agitar



3'00 min



Messwert B  
Value B  
Valeur B  
Valor B



Meerwasser  
Sea water  
Eau de mer  
Agua de mar

# NANOCOLOR® CSB 60 000

COD / DCO / DQO

620 nm

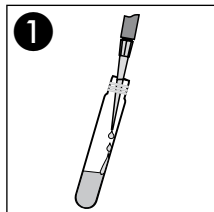
Method(e) / Método

0121

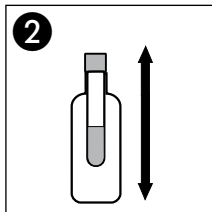
5.0 - 60.0 g/l O<sub>2</sub> (5000 - 60000 mg/l O<sub>2</sub>)

**Test 0-12**

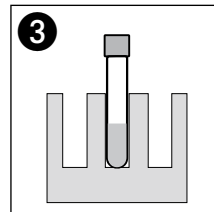
REF 985 012



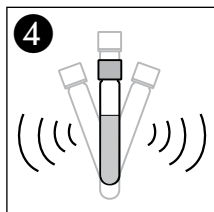
**200 µl** Probe  
Sample  
Echantillon  
Muestra



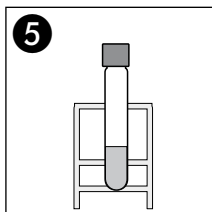
Sicherheitsgefäß  
Safety bottle  
Récipient de sécurité  
Recipiente de seguridad



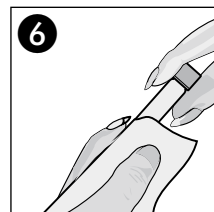
**148 °C / 2 h**



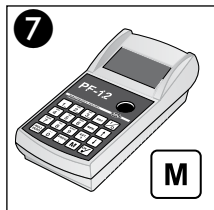
Schütteln  
Shake  
Agiter  
Agitar



Abkühlen lassen  
Allow to cool  
Laisser refroidir  
Dejar enfriar



Säubern  
Clean  
Nettoyer  
Limpiar



Messung  
Measurement  
Mesure  
Medición

Meerwasser  
Sea water  
Eau de mer  
Agua de mar



# NANOCOLOR® Cadmium 2

Cadmio

**Test 0-14**

REF 985 014

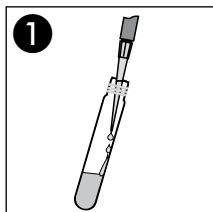
540 nm

Method(e) / Método

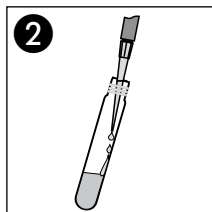
0141

0.05 - 2.00 mg/l Cd<sup>2+</sup>

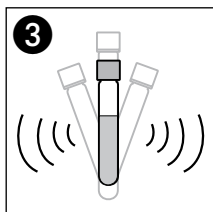
**Nullwert / Blanc value / Zéro / Cero**



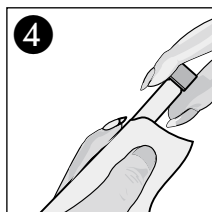
**1**  
4.0 ml dest. Wasser  
dist. water  
d'eau distillée  
agua dest.



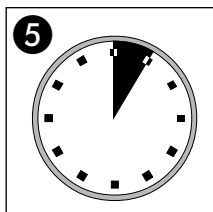
**2**  
200 µl R2



**3**  
Schütteln  
Shake  
Agiter  
Agitar



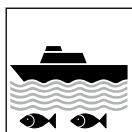
**4**  
Säubern  
Clean  
Nettoyer  
Limpiar



**5**  
5'00 min

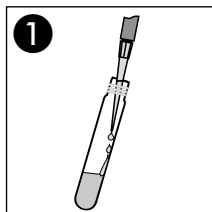


**6**  
Messung  
Measurement  
Mesure  
Medición

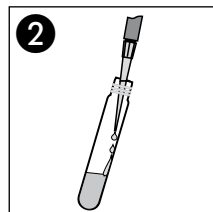


Meerwasser / Sea water  
Eau de mer / Agua de mar

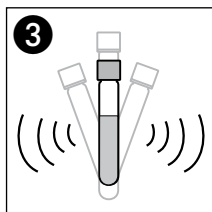
**Messwert / Sample / Echantillon / Muestra**



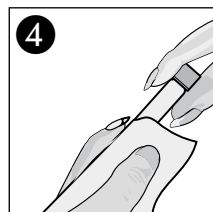
**1**  
4.0 ml Probe  
Sample  
Echantillon  
Muestra



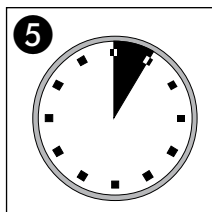
**2**  
200 µl R2



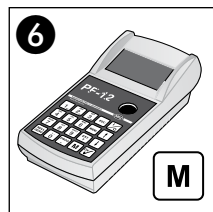
**3**  
Schütteln  
Shake  
Agiter  
Agitar



**4**  
Säubern  
Clean  
Nettoyer  
Limpiar



**5**  
5'00 min



**6**  
Messung  
Measurement  
Mesure  
Medición

# NANOCOLOR® Carbonathärte 15

Carbonate hardness / Dureté carbonatée

Alcalinidad de Carbonato

**Test 0-15**

REF 985 015

436 / 585 nm

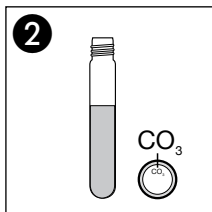
Method(e) / Método

**0151 / 0152** 1.0 - 15.0 °d / 0.4 - 5.4 mmol/l H<sup>+</sup>

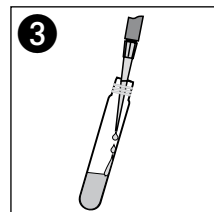
**0153 / 0154** 1.0 - 18.0 °e / 2.0 - 26.0 °f



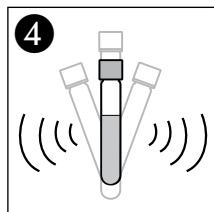
**1**  
NULL messen  
Measure blank  
Lecture blanc  
Lectura blanco



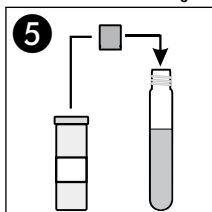
**2**  
CO<sub>3</sub>-Rundküvette  
Test tube CO<sub>3</sub>  
Cuve ronde CO<sub>3</sub>  
Tubo de test CO<sub>3</sub>



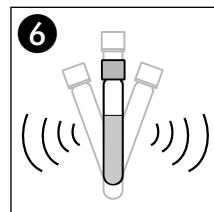
**3**  
4.0 ml Probe  
Sample  
Echantillon  
Muestra



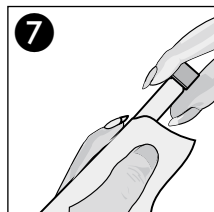
**4**  
Schütteln  
Shake  
Agiter  
Agitar



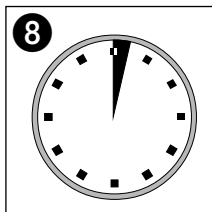
**5**  
1 x NANOFIX R2



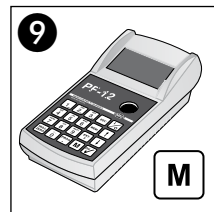
**6**  
Kräftig Schütteln  
Shake well  
Bien Agiter  
Agitar intensamente



**7**  
Säubern  
Clean  
Nettoyer  
Limpiar

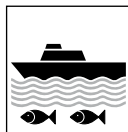


**8**  
2'00 min



**9**  
Messung  
Measurement  
Mesure  
Medición

Meerwasser  
Sea water  
Eau de mer  
Agua de mar





# NANOCOLOR® Chlor(ine) / Ozon(e) 2

**Test 0-17**

Chlore / Cloro / Ozono

REF 985 017

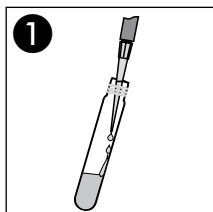
540 nm

Method(e) / Método

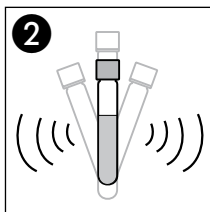
0171

0.05 - 2.50 mg/l Cl<sub>2</sub>

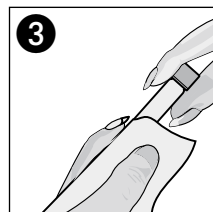
## Freies Chlor / Free Chlorine / Chlore libre / Cloro libre:



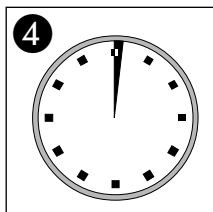
**4.0 ml** Probe  
Sample  
Echantillon  
Muestra



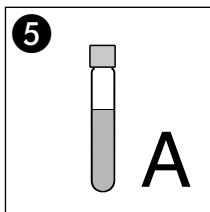
**Kräftig** Schütteln  
Shake well  
Bien Agiter  
Agitar intensamente



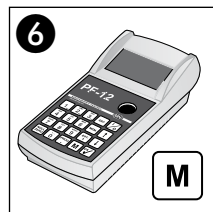
**Säubern**  
Clean  
Nettoyer  
Limpiar



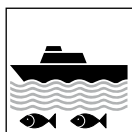
**1'00 min**



**Lösung A**  
Solution A  
Solution A  
Solución A



**Messung**  
Measurement  
Mesure  
Medición



Meerwasser  
Sea water  
Eau de mer  
Agua de mar

# NANOCOLOR® Chlor(ine) / Ozon(e) 2

Chlore / Cloro / Ozono

**Test 0-17**

REF 985 017

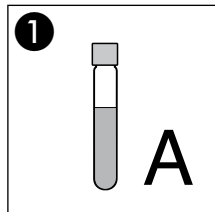
540 nm

Method(e) / Método

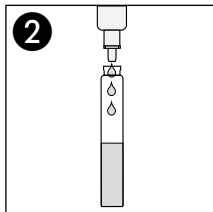
0172

0.05 - 2.50 mg/l Cl<sub>2</sub>

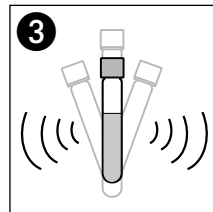
## Gesamtchlor / Total chlorine / Chlore total / Cloro total:



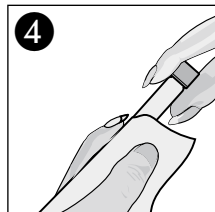
Lösung A  
Solution A  
Solution A  
Solución A



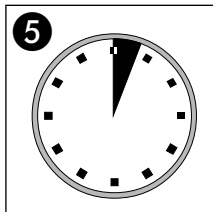
3 x  $\Delta$  R2



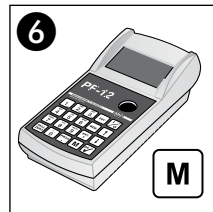
Schütteln  
Shake  
Agiter  
Agitar



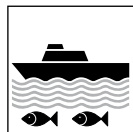
Säubern  
Clean  
Nettoyer  
Limpiar



3'00 min



Messung  
Measurement  
Mesure  
Medición



Meerwasser  
Sea water  
Eau de mer  
Agua de mar

# NANOCOLOR® Chlor(ine) / Ozon(e) 2

**Test 0-17**

Chlore / Cloro / Ozono

REF 985 017

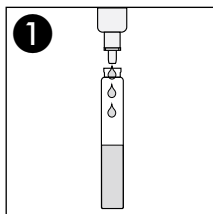
540 nm

Method(e) / Método

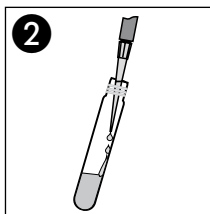
0173

0.05 - 2.00 mg/l O<sub>3</sub>

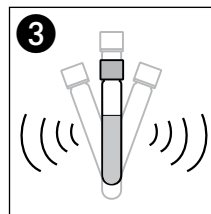
## Ozon / Ozone / Ozono:



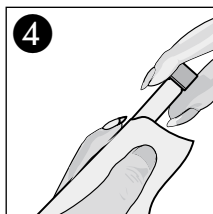
3 x ∆ R2



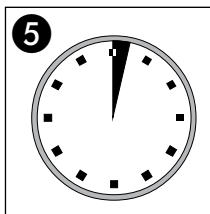
5 ml Probe  
Sample  
Echantillon  
Muestra



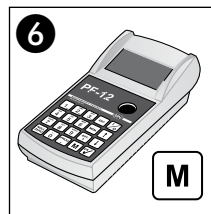
Schütteln  
Shake  
Agiter  
Agitar



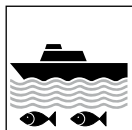
Säubern  
Clean  
Nettoyer  
Limpiar



2'00 min



Messung  
Measurement  
Mesure  
Medición



Meerwasser  
Sea water  
Eau de mer  
Agua de mar

# NANOCOLOR® Chlordioxid 5

Chlorine dioxide / Bioxyde de chlore /  
Dioxido de cloro

540 nm

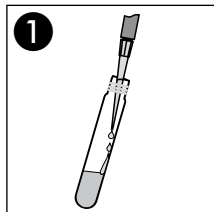
Method(e) / Método

0181

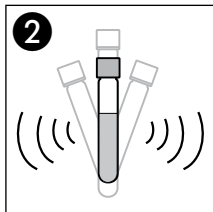
0.15 - 5.00 mg/l ClO<sub>2</sub>

**Test 0-18**

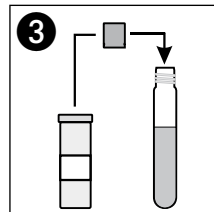
REF 985 018



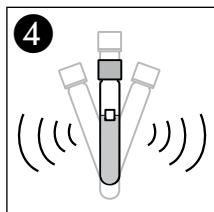
**1**  
4.0 ml Probe  
Sample  
Echantillon  
Muestra



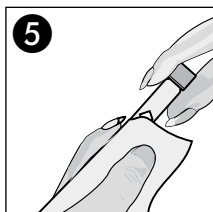
**2**  
Schütteln  
Shake  
Agitear  
Agitar



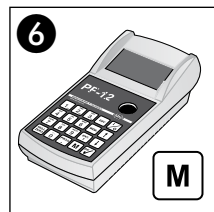
**3**  
1 x NANOPIX R2



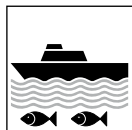
**4**  
Schütteln  
Shake  
Agitear  
Agitar



**5**  
Säubern  
Clean  
Nettoyer  
Limpiar



**6**  
Messung  
Measurement  
Mesure  
Medición



Meerwasser  
Sea water  
Eau de mer  
Agua de mar

# NANOCOLOR® Chlorid 200

Chloride / Chlorure / Cloruro

470 nm

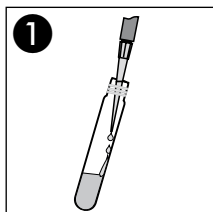
Method(e) / Método

0191

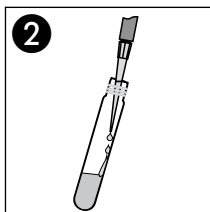
5 - 200 mg/l Cl<sup>-</sup>

**Test 0-19**

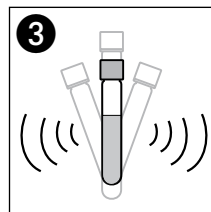
REF 985 019



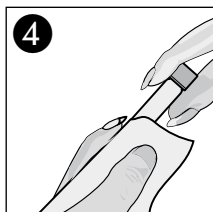
**1.0 ml Probe**  
Sample  
Echantillon  
Muestra



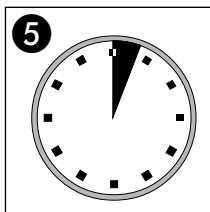
**1.0 ml R2**



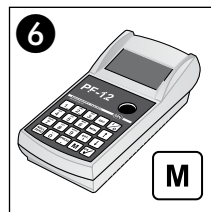
**Schütteln**  
Shake  
Agiter  
Agitar



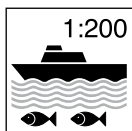
**Säubern**  
Clean  
Nettoyer  
Limpiar



**3'00 min**



**Messung**  
Measurement  
Mesure  
Medición



**1:200**  
Meerwasser  
Sea water  
Eau de mer  
Agua de mar

# NANOCOLOR® Chlorid 50

Chloride / Chlorure / Cloruro

470 nm

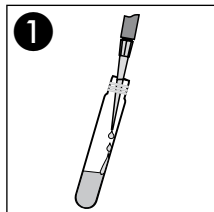
Method(e) / Método

0211

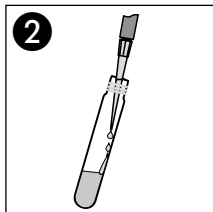
0.5 - 50.0 mg/l Cl<sup>-</sup>

**Test 0-21**

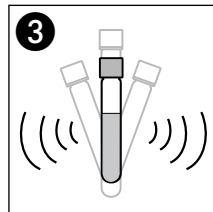
REF 985 021



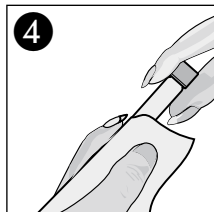
**1**  
4.0 ml Probe  
Sample  
Echantillon  
Muestra



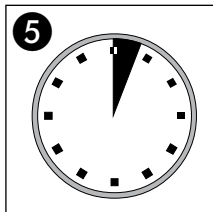
**2**  
1.0 ml R2



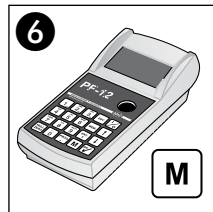
**3**  
Schütteln  
Shake  
Agiter  
Agitar



**4**  
Säubern  
Clean  
Nettoyer  
Limpiar



**5**  
3'00 min



**6**  
Messung  
Measurement  
Mesure  
Medición



Meerwasser  
Sea water  
Eau de mer  
Agua de mar

# NANOCOLOR® CSB 60

COD / DCO / DQO

345 nm

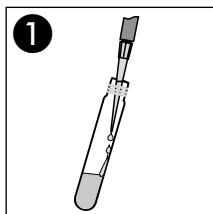
Method(e) / Método

0221

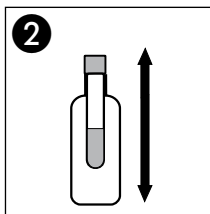
5 - 60 mg/l O<sub>2</sub>

**Test 0-22**

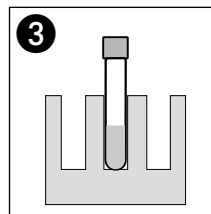
REF 985 022



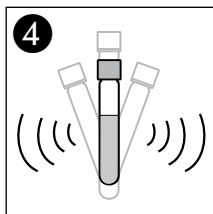
**1**  
2.0 ml Probe  
Sample  
Echantillon  
Muestra



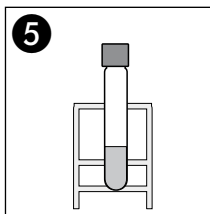
**2**  
Sicherheitsgefäß  
Safety bottle  
Récipient de sécurité  
Recipiente de seguridad



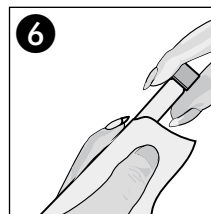
**3**  
148 °C / 2 h



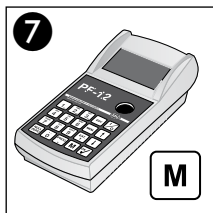
**4**  
Schütteln  
Shake  
Agiter  
Agitar



**5**  
Abkühlen lassen  
Allow to cool  
Laisser refroidir  
Dejar enfriar



**6**  
Säubern  
Clean  
Nettoyer  
Limpiar



**7**  
Messung  
Measurement  
Mesure  
Medición

Meerwasser  
Sea water  
Eau de mer  
Agua de mar



**Methode:** **Winklerflaschen-Methode**  
Bestimmung des Biochemischen Sauerstoffbedarfs nach 5 Tagen (BSB<sub>5</sub>) nach dem sogenannten Verdünnungsprinzip (DIN EN 1899-1-H51) in Sauerstoff-Flaschen nach Winkler. Die Bestimmung des gelösten Sauerstoffs erfolgt in Anlehnung an das Winkler-Verfahren (DIN EN 25813-G21) durch photometrische Auswertung der Iod-Farbe.

**Messbereich:** 2 – 3000 mg/l O<sub>2</sub> Methode  
**8221**

**NANOCOLOR®**  
**Reagenziensatz:** BSB<sub>5</sub> (REF 985 822)  
**Wellenlänge:** 436 nm

**Benötigtes Zubehör:** BSB<sub>5</sub>-Zubehörsset (REF 916 918), BSB<sub>5</sub>-Nährsalzgemisch (REF 918 994) oder BSB<sub>5</sub>-Nährsalzgemisch PLUS (REF 918 995), Kolbenhubpipetten mit Spitzen, Messzylinder (Nennvolumen 100 ml und 500 ml), Wasserbad oder Temperierschrank (alternativ: dunkler Raum mit ca. 20 °C Raumtemperatur)

**Ausführung:**

<b>Vorbereitende Arbeiten</b>	
<b>1. Probenvorbereitung</b>	Die Probe wird auf Raumtemperatur gebracht, und dann wird der pH-Wert überprüft. Der pH-Wert der Probe sollte zwischen pH 6 und 8 liegen und muss gegebenenfalls eingestellt werden. Falls sich hierbei eine Ausfällung bildet, sollte die Probe gut homogenisiert werden.
<b>2. Verdünnungswasser, BSB<sub>5</sub>-Nährlösungen und Impfwasser</b>	Die Herstellung und Handhabung von Verdünnungswasser ist im BSB <sub>5</sub> -Zubehörsset (REF 916 918) ausführlich beschrieben. Einsatz und Anwendung von BSB <sub>5</sub> -Nährsalzlösungen und Impfwasser entnehmen Sie bitte den Gebrauchsanweisungen zu den Reagenziensätzen BSB <sub>5</sub> -Nährsalzgemisch (REF 918 994) bzw. BSB <sub>5</sub> -Nährsalzgemisch PLUS (REF 918 995). Bitte beachten Sie die dort angegebenen Kenndaten.

<b>Arbeitsschritt 1: Kontrollansatz</b>	
Man füllt in eine 1-l-Laborflasche (BSB <sub>5</sub> -Zubehörsset) <b>500 ml</b> belüftetes Verdünnungswasser und <b>2,5 ml</b> Nährsalzlösung (1,25 ml R1 + 1,25 ml R2 von BSB <sub>5</sub> -Nährsalzgemisch, REF 918 994/995), verschließt das Gefäß und mischt unter kräftigem Schütteln ( <b>Kontrollansatz</b> ).	
<b>1</b> Sauerstoff-Flasche nach Winkler und <b>1</b> Rundkuvette öffnen, mit einigen Millilitern des Kontrollansatzes vorspülen und <b>luftblasenfrei</b> bis zum Überlaufen auffüllen.	
Sauerstoff-Flasche nach Winkler durch langsames Eindrücken des abgechrägten Glasstopfens <b>luftblasenfrei</b> verschließen und im Wasserbad oder Temperierschrank <b>5 Tage</b> im Dunkeln bei <b>20 ± 1 °C</b> inkubieren.	
Rundkuvette <b>luftblasenfrei</b> verschließen und sofort eine Sauerstoffmessung gemäß <b>Arbeitsschritt 3</b> durchführen.	



**Procedure with Winkler bottles**

Method: Determination of the biochemical oxygen demand in 5 days (BOD<sub>5</sub>) by using the dilution principle according to the German Standard Method DIN EN 1899-1-H51. The incubation of the samples is carried out in Winkler oxygen flasks. Determination of the dissolved oxygen is carried out similarly to the Winkler method (DIN EN 25813-G21) by photometric evaluation of the iodine colour.

Range: 2 – 3000 mg/l O<sub>2</sub> Method  
8221

NANOCOLOR® reagent set: BOD<sub>5</sub> (REF 985 822)  
436 nm

Wavelength: 436 nm

Requ. accessories: BOD<sub>5</sub> accessories set (REF 916 918), BOD<sub>5</sub> nutrient mixture (REF 918 994) or BOD<sub>5</sub> nutrient mixture PLUS (REF 918 995), piston pipettes with disposable tips, graduated cylinders (volumes 100 ml and 500 ml), water bath or incubator (alternative: a dark room with a temperature of about 20 °C)

**Procedure:**

<b>Preparatory steps</b>
<p><b>1. Preparation of samples</b> First, the sample is adjusted to room temperature. Then the pH value is checked. The pH value of the sample should be between pH 6 and 8 and has to be adjusted, if necessary. If, in this case, a precipitate is formed, the sample should be homogenised very thoroughly.</p>
<p><b>2. Diluting water, BOD<sub>5</sub> nutrient mixtures and inoculating water</b> The instructions supplied with the BOD<sub>5</sub> accessories set (REF 916 918) contain full details about the production and handling of the diluting water. Instructions for preparation and use of BOD<sub>5</sub> nutrient mixtures and inoculating water see leaflets of the test kits BOD<sub>5</sub> nutrient mixture (REF 918 994) or BOD<sub>5</sub> nutrient mixture PLUS (REF 918 995). Please observe the data given in the instructions.</p>
<b>Step 1: Preparation of the control</b>
<p>Fill a 1 l laboratory flask (from the BOD<sub>5</sub> accessories set) with <b>500 ml</b> aerated diluting water and <b>2.5 ml</b> nutrient mixture (1.25 ml R1 and 1.25 ml R2 from the BOD<sub>5</sub> nutrient mixture, REF 918 994/995), close the flask and mix by shaking vigorously (<b>control</b>).</p>
<p>Open <b>1</b> Winkler oxygen flask and <b>1</b> test tube, rinse both with several millilitres of the control and fill to the brim <b>without air bubbles</b>.</p>
<p>Close the Winkler oxygen flask <b>without air bubbles</b>, by slowly inserting the tapered glass stopper, and incubate in a water bath or an incubator for <b>5 days at 20 ± 1 °C</b> in the dark.</p>
<p>Close the test tube <b>without air bubbles</b> and immediately start the measurement of dissolved oxygen according to <b>step 3</b>.</p>

<b>Arbeitsschritt 2: Probenansatz</b>							
<p>Je nach dem zu erwartenden BSB<sub>5</sub> einer Probe wird in einer 1-l-Laborflasche die günstigste Verdünnung gemäß der nachfolgenden Tabelle hergestellt.</p> <p><i>Liegen hinsichtlich des zu erwartenden BSB<sub>5</sub> keine Erfahrungen vor, sollten zur sicheren Bestimmung mindestens zwei, besser sogar drei verschiedene Verdünnungen einer Probe angesetzt werden. Zur Erhöhung der Ergebnis-sicherheit empfehlen wir generell den Ansatz von <b>Doppelbestimmungen</b>.</i></p>							
erwarteter BSB <sub>5</sub> [mg/l O <sub>2</sub> ]	Verdünnung	Beispiele für typische Wässer	Probe [ml]	Belüftetes Verdünnungswasser [ml]	Nährsalz lösung* [ml]		
					R1	R2	
< 5	1 : 1	F	500	0	1,25	1,25	
4 – 12	1 : 2	F, B	250	250	1,25	1,25	
10 – 30	1 : 5	F, B	100	400	1,25	1,25	
20 – 60	1 : 10	B	50	450	1,25	1,25	
40 – 120	1 : 20	G	25	475	1,25	1,25	
100 – 300	1 : 50	G, R	10	490	1,25	1,25	
200 – 600	1 : 100	G, R	5	495	1,25	1,25	
400 – 1200	1 : 200	R, I	2	398	1,0	1,0	
800 – 2400	1 : 400	I	1	399	1,0	1,0	
1000 – 3000	1 : 500	I	1	499	1,25	1,25	
* BSB <sub>5</sub> -Nährsalzgemisch (REF 918 994) oder BSB <sub>5</sub> -Nährsalzgemisch PLUS (REF 918 995)							
<p>F = Flusswasser                      B = Biologisch gereinigtes kommunales Abwasser                      G = Geklärttes kommunales Abwasser oder leicht verschmutztes Industrieabwasser                      R = Kommunales Rohabwasser                      I = Stark verschmutztes Industrieabwasser</p>							
Verschließen der Laborflasche nach Herstellung des <b>Probenansatzes</b> anhand obiger Tabelle und Mischen unter kräftigem Schütteln.							
<p>1 Sauerstoff-Flasche nach Winkler und                      1 Rundküvette öffnen, mit einigen Millilitern des Verdünnungsansatzes der Probe vorspülen und <b>luftblasenfrei</b> bis zum Überlaufen auffüllen.</p>							
Sauerstoff-Flasche nach Winkler durch langsames Eindrücken des abge-schrägten Glasstopfens <b>luftblasenfrei</b> verschließen und im Wasserbad oder Temperierschrank <b>5 Tage</b> im Dunklen bei <b>20 ± 1 °C</b> inkubieren.							
Rundküvette <b>luftblasenfrei</b> verschließen und sofort eine Sauerstoffmes-sung gemäß <b>Arbeitsschritt 3</b> durchführen.							
<b>Bei allen weiteren Verdünnungen einer Probe bzw. allen weiteren Pro-ben auf die gleiche Weise verfahren.</b>							

<b>Step 2: Sample</b>						
Depending on the expected BOD <sub>5</sub> of the sample, prepare in a 1 l laboratory flask the most suitable dilution according to the following table.						
<i>If there are no experiences regarding the expected BOD<sub>5</sub>, at least two, preferably three different dilutions of the sample should be prepared to assure accuracy of the determination. For more reliable results, we recommend <b>duplicate determinations</b>.</i>						
expected BOD <sub>5</sub> [mg/l O <sub>2</sub> ]	Dilution	Examples for typical waters	Sample [ml]	Aerated diluting water [ml]	BOD <sub>5</sub> nutrient mixture* [ml]	
					R1	R2
< 5	1 : 1	R	500	0	1.25	1.25
4 – 12	1 : 2	R, B	250	250	1.25	1.25
10 – 30	1 : 5	R, B	100	400	1.25	1.25
20 – 60	1 : 10	B	50	450	1.25	1.25
40 – 120	1 : 20	C	25	475	1.25	1.25
100 – 300	1 : 50	C, M	10	490	1.25	1.25
200 – 600	1 : 100	C, M	5	495	1.25	1.25
400 – 1200	1 : 200	M, I	2	398	1.0	1.0
800 – 2400	1 : 400	I	1	399	1.0	1.0
1000 – 3000	1 : 500	I	1	499	1.25	1.25
* BOD <sub>5</sub> nutrient mixture (REF 918 994) or BOD <sub>5</sub> nutrient mixture PLUS (REF 918 995)						
R = river water B = biologically suitable biomass from a sewage plant C = clarified biomass from a sewage plant or mildly polluted industrial waste water M = raw municipal water I = heavily polluted industrial waste water						
After preparation of the <b>sample</b> , close the flask and mix well by shaking vigorously.						
Open 1 Winkler oxygen flask and 1 test tube, rinse both with several millilitres of the sample dilution and fill to the brim <b>without air bubbles</b> .						
Close the Winkler oxygen flask <b>without air bubbles</b> , by slowly inserting the tapered glass stopper, and incubate in a water bath or an incubator for <b>5 days at 20 ± 1 °C</b> in the dark.						
Close the test tube <b>without air bubbles</b> and immediately start the measurement of dissolved oxygen according to <b>step 3</b> .						
<b>For all further dilutions of a sample or all further samples, the preparation is to be carried out in the same manner.</b>						

### Arbeitsschritt 3: Sauerstoffmessung

**Sauerstoffmessung an Tag 0:** Bei den zu Versuchsbeginn an **Tag 0** bereits abgefüllten Rundküvetten wird sofort mit der Durchführung der Sauerstoffbestimmung begonnen.

**Sauerstoffmessung an Tag 5:** Bei der Bestimmung des Sauerstoffgehaltes in den angesetzten Winkler-Flaschen nach **5 Tagen** wird zunächst pro Winkler-Flasche eine, bei Doppelbestimmungen zwei, Rundküvetten bis zum Überlaufen mit dem zu prüfenden Wasser gefüllt und **luftblasenfrei** verschlossen. Anschließend wird verfahren wie unter „Durchführung“ beschrieben.

#### Durchführung:

Mit dem Kontrollansatz bzw. dem Probenansatz gefüllte Rundküvette öffnen,

**2 Tropfen** BSB<sub>5</sub> R1 zugeben,

**2 Tropfen** BSB<sub>5</sub> R2 zugeben, **luftblasenfrei** verschließen und zum Verteilen schütteln. **2 min** warten.

Rundküvette öffnen,

**5 Tropfen** BSB<sub>5</sub> R3 zugeben, **luftblasenfrei** verschließen und schwenken, bis der Niederschlag aufgelöst ist.

Rundküvette außen säubern und messen.

Messung:

Methode **8221** aufrufen.

Sauerstoffkonzentration jeder Küvette durch Drücken der Taste **[M]** messen.

Die nach den einzelnen Messungen an Tag 0 und Tag 5 im Display des Photometers angezeigten Sauerstoffkonzentrationen für die anschließende Auswertung sorgfältig notieren.

### Arbeitsschritt 4: Auswertung

#### Sauerstoffverbrauch des Verdünnungswassers O<sub>v</sub> (Kontrollansatz):

$$O_v = O_{v0} - O_{v5}$$

O<sub>v0</sub> = Sauerstoffgehalt des Kontrollansatzes zu Versuchsbeginn (Tag 0)

O<sub>v5</sub> = Sauerstoffgehalt des Kontrollansatzes zu Versuchsende (Tag 5)

#### Sauerstoffverbrauch der Probe O<sub>p</sub> (Probenansatz):

$$O_p = O_{p0} - O_{p5}$$

O<sub>p0</sub> = Sauerstoffgehalt des Probenansatzes zu Versuchsbeginn (Tag 0)

O<sub>p5</sub> = Sauerstoffgehalt des Probenansatzes zu Versuchsende (Tag 5)

#### Berechnung des BSB<sub>5</sub>:

$$\text{BSB}_5 [\text{mg/l O}_2] = V \times (O_p - O_v) + O_v$$

V = Reziprokwert der Probenverdünnung

(z. B. Probenverdünnung 1:200 → V = 200)

Analytische

Qualitätssicherung:

Literatur:

NANOCONTROL BSB<sub>5</sub> (REF 925 82)

Deutsche Einheitsverfahren zur Wasser-, Abwasser- und Schlammuntersuchung (DIN EN 1899-1-H51 und DIN EN 25 813-G21)

### Step 3: Measurement of dissolved oxygen

**Measurement of dissolved oxygen at day 0:** The measurement of dissolved oxygen in test tubes filled at the beginning of the test (**day 0**) must be started immediately.

**Measurement of dissolved oxygen at day 5:** For measurement of the concentration of dissolved oxygen in the incubated Winkler flasks after **5 days** of incubation one (or, if twofold determinations are required, two) test tubes are filled to the brim with the sample to be tested. After filling, the test tubes are carefully closed **without air bubbles**, and the determination of dissolved oxygen is carried out as described in "Procedure".

#### Procedure:

Open test tube with control or sample dilution, add  
**2 drops** BOD<sub>5</sub> R1 and  
**2 drops** BOD<sub>5</sub> R2, close **without air bubbles** and shake.  
 Wait **2 min**.

Open test tube, add  
**5 drops** BOD<sub>5</sub> R3, close **without air bubbles**, shake to dissolve the flakes.  
 Clean outside of test tube and measure.

Measurement:

Call up method **8221**.

Measure the concentration of dissolved oxygen in each test tube by pressing key **M**.

Write down all concentrations of dissolved oxygen measured at day 0 and after 5 days of incubation, because they are required for the subsequent evaluation.

### Step 4: Evaluation

**Oxygen consumption of the water for dilution O<sub>c</sub> (control):**

$$O_c = O_{c0} - O_{c5}$$

O<sub>c0</sub> = oxygen concentration in the control at the beginning of the test (day 0)

O<sub>c5</sub> = oxygen concentration in the control at the end of the test (day 5)

**Oxygen consumption of the sample O<sub>s</sub> (sample dilution):**

$$O_s = O_{s0} - O_{s5}$$

O<sub>s0</sub> = oxygen concentration in the sample dilution at the beginning of the test (day 0)

O<sub>s5</sub> = oxygen concentration in the sample dilution at the end of the test (day 5)

**Calculation of BOD<sub>5</sub>:**

$$BOD_5 [mg/l O_2] = D \times (O_s - O_c) + O_c$$

D = reciprocal value of the sample dilution (e.g. dilution = 1:200 → D = 200)

Analytical  
 quality control:  
 Reference:

NANOCOLOR BOD<sub>5</sub> (REF 925 82)

German standard methods for the examination of water, waste water and sludge (DIN EN 1899-1-H51 and DIN EN 25 813-G21)

# NANOCOLOR® CSB 10 000

COD / DCO / DQO

620 nm

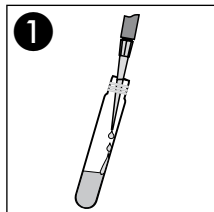
Method(e) / Método

0231

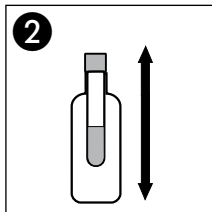
1.00 - 10.00 g/l O<sub>2</sub> (1000 - 10000 mg/l O<sub>2</sub>)

**Test 0-23**

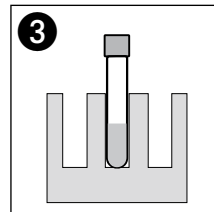
REF 985 023



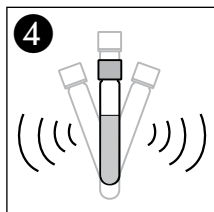
**1**  
1.0 ml Probe  
Sample  
Echantillon  
Muestra



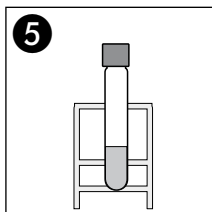
**2**  
Sicherheitsgefäß  
Safety bottle  
Récipient de sécurité  
Recipiente de seguridad



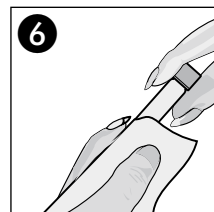
**3**  
148 °C / 2 h



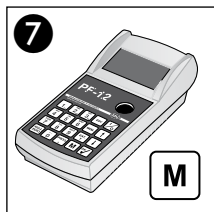
**4**  
Schütteln  
Shake  
Agiter  
Agitar



**5**  
Abkühlen lassen  
Allow to cool  
Laisser refroidir  
Dejar enfriar



**6**  
Säubern  
Clean  
Nettoyer  
Limpiar



**7**  
Messung  
Measurement  
Mesure  
Medición

Meerwasser  
Sea water  
Eau de mer  
Agua de mar



# NANOCOLOR® Chromat 5

Chromate / Cromat

**Test 0-24**

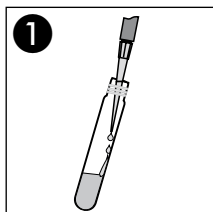
REF 985 024

540 nm

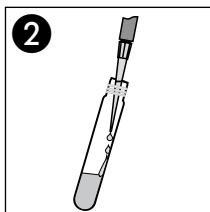
Method(e) / Método

**0241** 0.05 - 2.00 mg/l Cr(VI)

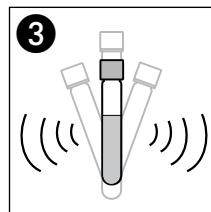
**0242** 0.1 - 4.0 mg/l CrO<sub>4</sub><sup>2-</sup>



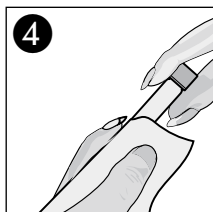
**1**  
4.0 ml Probe  
Sample  
Echantillon  
Muestra



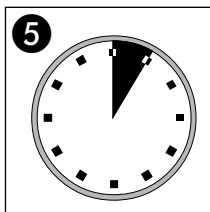
**2**  
200 µl R2



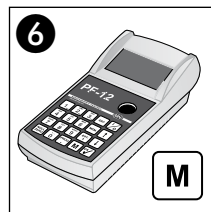
**3**  
Schütteln  
Shake  
Agiter  
Agitar



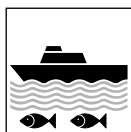
**4**  
Säubern  
Clean  
Nettoyer  
Limpiar



**5**  
5'00 min



**6**  
Messung  
Measurement  
Mesure  
Medición



Meerwasser  
Sea water  
Eau de mer  
Agua de mar

**Methode:** **Rundküvettentest**  
Saure Oxidation von Chrom(III) zu Chrom(VI) und nachfolgende Bestimmung mittels Diphenylcarbazid

**Messbereich:** 0,1 - 4,0 mg/l Cr  
0,05 - 2,0 mg/l Cr

Methode  
**0243**  
**0244**

**NANOCOLOR®**  
**Reagenziensätze:** *gesamt-Chrom* (REF 918 253) und Chromat 5 (REF 985 024) oder  
*NanOx Metall* (REF 918 978) und Chromat 5 (REF 985 024)

**Wellenlänge:** **540 nm**

**Störungen:** Es stören nicht:  
Al, Ba, Bi, Ca, Mn(II), Ni, Pb, Sn, Zn  
Kupfer > 0,5 mg/l und Eisen > 10 mg/l stören durch Minderbefund.  
Die Methode ist auch für die Analyse von Meerwasser geeignet.

**Ausführung A:**  
mit *gesamt-Chrom*  
(REF 918 253)

**Benötigtes Zubehör:**  
*NANOCOLOR®* Thermoblock, elektr. Luftpumpe mit Einleitungsrohr (REF 916 55), *NANOCOLOR®* Reaktionsgläser 14 mm ID (REF 916 80), Kolbenhubpipette mit Spitzen



**a) Vorreinigung** **2 h / 148 °C**

In ein Reaktionsglas  
**2,0 ml *gesamt-Chrom* R1** pipettieren,  
**2,0 ml** Probelösung (der *pH*-Wert der Probe muss zwischen *pH* 1 und 9 liegen) und  
**1 Stück** Siedehilfe zugeben, mischen. Papierstreifen (siehe Skizze) zusammenrollen (z. B. mit Hilfe eines Bleistiftes) und in das Reaktionsglas einsetzen. Der Papierstreifen soll fest an der Wand anliegen und oben etwas überstehen.  
Reaktionsglas in den Thermoblock einsetzen und die Starttaste drücken. Luftpumpe anstellen und Einleitungsrohr in das Reaktionsglas einhängen (siehe Skizze).  
Nach 2 h Luftpumpe abstellen, Einleitungsrohr herausnehmen und das Reaktionsglas mit dem Rückstand entnehmen. Reaktionsglas abkühlen lassen. Papier aus dem Reaktionsglas entfernen.

**b) Oxidation** **30 min / 100 °C**

**4,0 ml *gesamt-Chrom* R2** vorsichtig zugeben, mischen.  
**1 gestr. Messlöffel *gesamt-Chrom* R3** zugeben,  
Reaktionsglas mit Schraubkappe verschließen und mischen.  
Reaktionsglas in den Thermoblock einsetzen und Starttaste drücken.

**c) Messwertbestimmung**

Chromat-Rundküvette öffnen,  
**4,0 ml** voroxidierte Probelösung zugeben, verschließen, mischen (Chromat R2 ist nicht erforderlich).  
Rundküvette außen säubern und nach 5 min messen.

**Messung:** Rundküvette einsetzen, Methode **0243** anwählen und Messung durchführen.



**Method:** Acidic oxidation of chromium(III) to chromium(VI) and subsequent determination with diphenylcarbazide

**Range:** 0.1 - 4.0 mg/l Cr  
0.05 - 2.0 mg/l Cr

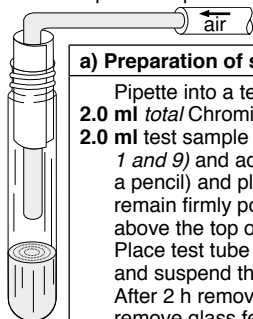
**Method**  
**0243**  
**0244**

**NANOCOLOR® reagent sets:** total Chromium (REF 918 253) and Chromate 5 (REF 985 024)  
or  
NanOx Metal (REF 918 978) and Chromate 5 (REF 985 024)

**Wavelength:** 540 nm

**Interferences:** The following ions will not interfere:  
Al, Ba, Bi, Ca, Mn(II), Ni, Pb, Sn, Zn  
Copper > 0.5 mg/l and iron > 10 mg/l interfere and cause falsely low results.  
The method can also be applied for the analysis of sea water.

**Procedure A:** Requisite accessories:  
with total Chromium NANOCOLOR® heating block, electric air pump with glass feed tube (REF 916 55), NANOCOLOR® test tubes 14 mm ID (REF 916 80), piston pipette with disposable tips



**a) Preparation of sample** **2 h / 148 °C**

Pipette into a test tube  
**2.0 ml total Chromium R1**, add  
**2.0 ml test sample solution** (*the pH value of the sample must be between pH 1 and 9*) and add one glass spiral, mix. Roll a strip of paper (e. g. around a pencil) and place inside test tube (see sketch). The paper should remain firmly positioned against the side of the test tube and protrude just above the top of the test tube.  
Place test tube in heating block and press „START“. Switch on air pump and suspend the glass feed tube in the test tube as shown in the figure.  
After 2 h remove test tube with the residue (first switch off air pump and remove glass feed tube from test tube). Allow test tube to cool down.  
Remove the strip of rolled paper from the test tube.

**b) Oxidation** **30 min / 100 °C**

Carefully add  
**4.0 ml total Chromium R2**, mix. Add  
**1 level spoon total Chromium R3**,  
close tube with screw cap and mix.  
Place test tube in heating block. Press „START“.

**c) Determination of chromium**

Open chromate test tube, add  
**4.0 ml** of preoxidized test sample, close, mix (Chromate R2 is not required).  
Clean outside of test tube and measure after 5 min.

**Measurement:** Insert test tube, select method **0243** and perform measurement.

**Ausführung B:**  
mit NANOCOLOR®  
NanOx Metall  
(Art-Nr. 918 978)

Benötigtes Zubehör:  
NANOCOLOR® Thermoblock, NANOCOLOR® Reaktionsgläser 14 mm ID  
(REF 916 80), Kolbenhubpipette mit Spitzen

a) Oxidation	30 min / 120 °C
<b>5,0 ml</b> Probelösung in ein Reaktionsglas pipettieren, <b>1 gestr. orangenen Messlöffel</b> NanOx Metall Aufschlussreagenz zugeben, verschließen und gründlich schütteln. Das Reaktionsglas in den Thermoblock einsetzen und Starttaste drücken. Aus dem Thermoblock entnehmen, abkühlen lassen und kurz umschwenken. Das Reaktionsglas einmal auf den Kopf schwenken und anschließend öffnen, mit <b>QUANTOFIX® Peroxid 25</b> (REF 913 19) auf Peroxidfreiheit prüfen.	
<b>b) Messwertbestimmung</b>	
Chromat-Rundküvette öffnen, <b>4,0 ml</b> voroxidierte Probelösung zugeben, verschließen, mischen (Chromat R2 ist nicht erforderlich). Rundküvette außen säubern und nach 5 min messen.	

Messung:

Rundküvette einsetzen, Methode **0244** anwählen und Messung durchführen.

Chrom(III) = *gesamt-Chrom* – Chrom(VI)

= *gesamt-Chrom* – (Chromat x 0,45)

Analytische  
Qualitätssicherung:

NANOCONTROL Multistandard Metalle 1 (REF 925 015)

**Procedure B:**  
with NANOCOLOR®  
NanOx Metal  
(REF 918 978)

Requisite accessories:  
NANOCOLOR® heating block, NANOCOLOR® test tubes 14 mm ID (REF 916 80), piston pipette with disposable tips

<b>a) Oxidation</b>	<b>30 min / 120 °C</b>
Pipet <b>5.0 ml</b> test sample into a reaction tube, add <b>1 level orange measuring spoon</b> NanOx Metal decomposition reagent, close and shake thoroughly. Place the reaction tube into the heating block and press „START“. Remove tube from the heating block, shake gently and leave it cool. Open the reaction tube and test the decomposition solution for peroxides using <i>QUANTOFIX</i> ® Peroxide 25 test sticks (REF 913 19).	
<b>b) Determination of chromium</b>	
Open chromate test tube, add <b>4.0 ml</b> of preoxidized test sample, close, mix (Chromate R2 is not required). Clean outside of test tube and measure after 5 min.	

Measurement:

Insert test tube, select method **0244** and perform measurement.

Chromium(III) = *total* chromium – chromium(VI)

= *total* chromium – (chromate x 0.45)

Analytical  
quality control:

*NANOCONTROL* multistandard Metals 1 (REF 925 015)

### Rundküvettenest

**Methode:** Rundküvettenest zur Bestimmung des Biochemischen Sauerstoffbedarfs nach 5 Tagen (BSB<sub>5</sub>) in Gegenwart zugesetzter Nährsalze nach DIN EN 1899-1 - H51 und unter zusätzlicher Hemmung der Nitrifikation mit *N*-Allylthioharnstoff. Die Inkubation der Proben erfolgt direkt in Rundküvetten. Die Bestimmung des gelösten Sauerstoffs erfolgt nach 5 Tagen in Anlehnung an das Winkler-Verfahren DIN EN 25813 - G21 durch photometrische Auswertung der Iod-Farbe.

Methode

**Messbereiche:** 2 – 3000 mg/l O<sub>2</sub> (verdünnte Proben) **8251**  
 0,5 – 7,5 mg/l O<sub>2</sub> (unverdünnte Proben) **8252**

**NANOCOLOR®**  
**Reagenziensatz:** BSB<sub>5</sub>-RKT (REF 985 825)

**Wellenlänge:** 436 nm

**Benötigtes Zubehör:** BSB<sub>5</sub>-RKT-Zubehörset (REF 916 925), Kolbenhubpipette mit Spitzen, Messzylinder 25 ml, Wasserbad oder Temperierschrank (alternativ: dunkler Raum mit ca. 20 °C Raumtemperatur)

### Ausführung:

#### Vorbereitende Arbeiten

##### 1. Probenvorbereitung

Die Probe wird auf Raumtemperatur gebracht und der pH-Wert überprüft. Dieser sollte zwischen pH 6 und 8 liegen und muss gegebenenfalls nachkorrigiert werden. Falls sich hierbei eine Ausfällung bildet, sollte die Probe gut homogenisiert oder filtriert werden.

##### 2. Verdünnungswasser und Impfwasser

Die Herstellung und Handhabung von Verdünnungswasser zur BSB<sub>5</sub>-Bestimmung sowie der Einsatz von Impfwasser ist im BSB<sub>5</sub>-RKT-Zubehörset (REF 916 925) ausführlich beschrieben. Bitte beachten Sie die dort angegebenen Kenndaten.

#### Arbeitsschritt 1: Kontrollansatz (Eigenzehrung des Verdünnungswassers)

*Pro Analysentag muss **eine** Kontrollansatz-Küvette (Verdünnungswasser ohne Probe) als Nullwert für alle Probenansätze angesetzt und mitgeführt werden. Auch bei ganzen **Testreihen** ist **nur eine** Kontrollansatz-Küvette notwendig.*

Man füllt in ein Reaktionsgefäß (BSB<sub>5</sub>-RKT-Zubehörset) **20 ml belüftetes Verdünnungswasser**, verschließt das Gefäß und schüttelt kräftig **30 s**, um den Kontrollansatz mit Sauerstoff anzureichern.

Eine **Rundküvette** mit Reagenz **BSB<sub>5</sub>-RKT R0** öffnen und mit Kontrollansatz **luftblasenfrei** bis zum Überlaufen füllen.

Rundküvette **luftblasenfrei** verschließen, beschriften mit „Kontrolle“ und im Wasserbad oder Temperierschrank **5 Tage** im Dunkeln bei **20 ± 1 °C** inkubieren.

<b>Method:</b>	Determination of the biochemical oxygen demand in 5 days (BOD <sub>5</sub> ) by adding nutrient salts according to the German Standard Method DIN EN 1899-1 - H51 and additional nitrification inhibition with <i>N</i> -allylthiourea. Incubation of the samples is performed directly in test tubes. Determination of the dissolved oxygen is carried out similarly to the Winkler method (DIN EN 25813 - G21) by photometric evaluation of the iodine colour.	
<b>Ranges:</b>	2 – 3000 mg/l O <sub>2</sub> (diluted samples)	Method <b>8251</b>
	0.5 – 7.5 mg/l O <sub>2</sub> (non-diluted samples)	<b>8252</b>
<b>NANOCOLOR® reagent set:</b>	BOD <sub>5</sub> -TT (REF 985 825)	
<b>Wavelength:</b>	<b>436 nm</b>	
<b>Req. accessories:</b>	BOD <sub>5</sub> -TT accessories set (REF 916 925), piston pipette with disposable tips, graduated cylinder 25 ml, water bath or incubator (alternative: a dark room with a temperature of about 20 °C)	



**Procedure:**

<b>Preparatory steps</b>
<p><b>1. Sample preparation</b></p> <p>At the beginning, the sample is adjusted to room temperature. Then the pH value is checked. The pH value of the sample should be between pH 6 and 8 and has to be adjusted, if necessary. If, in this case, a precipitate is formed, the sample should be homogenised very well or filtrated.</p>
<p><b>2. Diluting water and inoculating water</b></p> <p>The instructions supplied with the BOD<sub>5</sub>-TT accessories set (REF 916 925) contain full details about the preparation and handling of the diluting water and inoculating water. Please observe the data given in the instructions.</p>
<b>Step 1: Control (oxygen consumption of the diluting water)</b>
<p><i>Per analysis day you have to prepare <b>one</b> control tube (water for dilution without sample) which is used as blank value for all samples of that day. For <b>test series</b>, too, only <b>one</b> control is required.</i></p>
<p>Fill a reaction tube (from the BOD<sub>5</sub>-TT accessories set) with <b>20 ml aerated diluting water</b>, close the tube and shake vigorously for <b>30 s</b> to enrich the control solution with oxygen.</p>
<p>Open one <b>test tube</b> with reagent <b>BOD<sub>5</sub>-TT R0</b> and fill to the brim with control solution <b>without</b> letting <b>air bubbles</b> in.</p>
<p>Close the test tube <b>without air bubbles</b>, label it as "control" and incubate in a water bath or an incubator for <b>5 days at 20 ± 1 °C</b> in the dark.</p>

<b>Arbeitsschritt 2: Probenansatz</b>				
<p>Je nach dem zu erwartenden BSB<sub>5</sub> einer Probe wird in einem Reaktionsgefäß (BSB<sub>5</sub>-RKT-Zubehörset) die günstigste Verdünnung gemäß der nachfolgenden Tabelle hergestellt.</p> <p><i>Liegen hinsichtlich des zu erwartenden BSB<sub>5</sub> keine Erfahrungen vor, sollten zur sicheren Bestimmung mindestens zwei, besser sogar drei verschiedene Verdünnungen einer Probe angesetzt werden. Zur Erhöhung der Ergebnis-sicherheit empfehlen wir generell den Ansatz von <b>Doppelbestimmungen</b>.</i></p>				
erwarteter BSB <sub>5</sub> [mg/l O <sub>2</sub> ]	Verdünnung	Beispiele für typische Wässer	Probe [ml]	Verdünnungs- wasser [ml]
< 5	1 : 1	F	20,00	0
4 – 12	1 : 2	F, B	10,00	10,00
10 – 30	1 : 5	F, B	4,00	16,00
20 – 60	1 : 10	B	2,00	18,00
40 – 120	1 : 20	G	1,00	19,00
100 – 300	1 : 50	G, R	0,40	19,60
200 – 600	1 : 100	G, R	0,20	19,80
400 – 1200	1 : 200	R, I	0,10	19,90
800 – 2400	1 : 400	I	0,05	19,95
1000 – 3000	1 : 500	I	0,04	19,96
<p>F = Flusswasser            B = Biologisch gereinigtes kommunales Abwasser            G = Geklärtetes kommunales Abwasser oder leicht verschmutztes Industrieabwasser            R = Kommunales Rohabwasser            I = Stark verschmutztes Industrieabwasser</p>				
<p>Man füllt in ein Reaktionsgefäß (BSB<sub>5</sub>-RKT-Zubehörset) <b>Probe</b> und <b>belüftetes Verdünnungswasser</b> gemäß obiger Tabelle.</p>				
<p>Anschließend wird das Reaktionsgefäß verschlossen und <b>30 s</b> kräftig geschüttelt, um den Probenansatz mit Sauerstoff anzureichern.</p>				
<p>Eine <b>Rundkuvette</b> mit Reagenz <b>BSB<sub>5</sub>-RKT R0</b> öffnen und mit Probenansatz <b>luftblasenfrei</b> bis zum Überlaufen füllen.</p>				
<p>Rundkuvette <b>luftblasenfrei</b> verschließen, beschriften und im Wasserbad oder Temperierschrank <b>5 Tage</b> im Dunkeln bei <b>20 ± 1 °C</b> inkubieren.</p>				
<p><i>Hinweis: Die im Rahmen des BSB<sub>5</sub>-RKT-Zubehörsets mitgelieferten Reaktionsgefäße können zum Ansetzen sämtlicher Testansätze (Kontrolle und Proben) eingesetzt werden. Sie müssen jedoch nach jedem Ansatz bzw. vor jedem neuen Ansatz gründlich mit Leitungswasser gespült werden.</i></p>				

<b>Step 2: Sample</b>				
Depending on the expected BOD <sub>5</sub> of the sample, prepare in a reaction tube (BOD <sub>5</sub> -TT accessories set) the most suitable dilution according to the following table.				
<i>If there are no experiences regarding the expected BOD<sub>5</sub>, at least two, preferably three different dilutions of the sample should be prepared to assure accuracy of the determination. For more reliable results, we recommend <b>duplicate determinations</b>.</i>				
expected BOD <sub>5</sub> [mg/l O <sub>2</sub> ]	Dilution	Examples for typical waters	Sample [ml]	Water for dilution [ml]
< 5	1 : 1	R	20.00	0
4 – 12	1 : 2	R, B	10.00	10.00
10 – 30	1 : 5	R, B	4.00	16.00
20 – 60	1 : 10	B	2.00	18.00
40 – 120	1 : 20	C	1.00	19.00
100 – 300	1 : 50	C, M	0.40	19.60
200 – 600	1 : 100	C, M	0.20	19.80
400 – 1200	1 : 200	M, I	0.10	19.90
800 – 2400	1 : 400	I	0.05	19.95
1000 – 3000	1 : 500	I	0.04	19.96
R = river water B = biologically suitable biomass from a sewage plant C = clarified biomass from a sewage plant or mildly polluted industrial waste water M = raw municipal water I = heavily polluted industrial waste water				
In a reaction tube (BOD <sub>5</sub> -TT accessories set) mix <b>sample</b> and <b>aerated diluting water</b> in accordance with the table above.				
Close the reaction tube and shake vigorously for <b>30 s</b> to enrich the sample dilution with oxygen.				
Open one <b>test tube</b> with <b>BOD<sub>5</sub>-TT R0</b> and fill to the brim with sample dilution <b>without</b> letting <b>air bubbles</b> in.				
Close the test tube <b>without air bubbles</b> , label as sample and incubate in a water bath or an incubator for <b>5 days at 20 ± 1 °C</b> in the dark.				
<i>Remark: The reaction tubes included in the BOD<sub>5</sub>-TT accessories set can be used for all preparations of water samples to be tested (control, sample dilutions). Before using them for a new preparation, they have to be washed thoroughly with tap water.</i>				

<p><b>Arbeitsschritt 3: Sauerstoffmessung</b></p> <p><i>Nach 5-tägiger Inkubation bei <math>20 \pm 1</math> °C im Dunkeln wird in allen angesetzten Analysenküvetten (Kontroll- und Probenansätze) der Sauerstoffgehalt bestimmt.</i></p> <p>Rundküvette öffnen,  <b>2 Tr. BSB<sub>5</sub>-RKT R1</b> zugeben,  <b>2 Tr. BSB<sub>5</sub>-RKT R2</b> zugeben, <b>luftblasenfrei</b> verschließen und zum Verteilen schütteln. <b>2 min</b> warten.</p> <p>Rundküvette öffnen,  <b>5 Tr. BSB<sub>5</sub>-RKT R3</b> zugeben, <b>luftblasenfrei</b> verschließen und schwenken, bis der Niederschlag aufgelöst ist.  Rundküvette außen säubern und messen.</p>
---

Messung: Methode **8251** aufrufen  
Zunächst durch Drücken der Taste  die Küvette mit dem **Kontrollansatz** messen.  
Anschließend die **Probenansätze** durch Drücken der Taste  messen.  
Die Anzeige des gemessenen BSB<sub>5</sub>-Wertes der Probe erfolgt in mg/l O<sub>2</sub>.

**Sondermethode:** **Vereinfachte BSB<sub>5</sub>-Bestimmung bei unverdünnten Proben**  
Kein Kontrollansatz notwendig!

<p>Man füllt in ein Reaktionsgefäß (BSB<sub>5</sub>-RKT-Zubehörsatz) <b>20 ml unverdünnte Probelösung</b>.</p> <p>Reaktionsgefäß verschließen und zur Sauerstoffanreicherung der Probe <b>30 s</b> kräftig schütteln.</p> <p>Eine <b>Rundküvette</b> mit Reagenz <b>BSB<sub>5</sub>-RKT R0</b> öffnen und mit dem Probenansatz <b>luftblasenfrei</b> bis zum Überlaufen füllen.</p> <p>Rundküvette <b>luftblasenfrei</b> verschließen, beschriften und im Wasserbad oder Temperierschrank <b>5 Tage</b> im Dunkeln bei <math>20 \pm 1</math> °C inkubieren.</p> <p>Nach 5-tägiger Inkubation <b>Sauerstoffmessung</b> gemäß Arbeitsschritt 3 durchführen.</p> <p><b>Messung:</b>  Methode <b>8252</b> aufrufen und Messung durchführen.  Es erfolgt die <b>direkte</b> Anzeige des <b>BSB<sub>5</sub>-Wertes der unverdünnten Probe</b> in <b>mg/lO<sub>2</sub></b>.</p>
--

Analytische  
Qualitätssicherung: **NANOCONTROL BSB<sub>5</sub>** (REF 925 82)



### Step 3: Measurement of dissolved oxygen

*After 5 days of incubation at  $20 \pm 1$  °C in the dark, the concentration of dissolved oxygen is determined in all incubated test tubes (control and sample dilutions).*

Open test tube, add  
**2 drops of BOD<sub>5</sub>-TT R1** and  
**2 drops of BOD<sub>5</sub>-TT R2**, close **without air bubbles** and shake. Wait **2 min.**

Open test tube, add  
**5 drops of BOD<sub>5</sub>-TT R3** close **without air bubbles**, shake to dissolve the flakes.  
 Clean outside of test tube and perform measurement.

Measurement:

Call up method **8251**

First press key  $\left[ \frac{\text{Start}}{\text{Zero}} \right]$  and measure the test tube with the **control**.

Then measure the **sample dilutions** by pressing key  $\left[ \text{M} \right]$  for every sample.

The BOD<sub>5</sub> value of the sample is displayed in mg/l O<sub>2</sub>.

**Special application: Simplified BOD<sub>5</sub> determination on non-diluted samples**

**No control necessary!**

Fill a reaction tube (BOD<sub>5</sub>-TT accessories set) with  
**20 ml non-diluted sample.**

Close the tube and **shake** vigorously for **30 s** to enrich the sample with oxygen.

Open one **test tube** with reagent **BOD<sub>5</sub>-TT R0** and fill to the brim with sample solution **without** letting **air bubbles** in.

Close the test tube **without air bubbles**, label and incubate in a water bath or an incubator for **5 days at  $20 \pm 1$  °C in the dark.**

After 5 days of incubation **measure oxygen concentration** in accordance with step 3.

#### Measurement:

Call up method **8252** and perform measurement.

The **BOD<sub>5</sub> value of the non-diluted sample** is directly displayed in **mg/lO<sub>2</sub>**.

Analytical  
 quality control:

NANOCONTROL BOD<sub>5</sub> (REF 925 82)

# NANOCOLOR® CSB 160

COD / DCO / DQO

436 nm

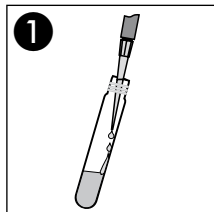
Method(e) / Método

0261

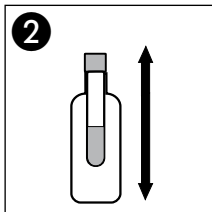
15 - 160 mg/l O<sub>2</sub>

**Test 0-26**

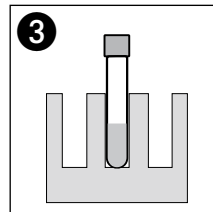
REF 985 026



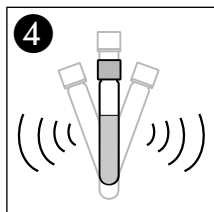
**2.0 ml** Probe  
Sample  
Echantillon  
Muestra



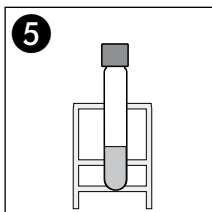
Sicherheitsgefäß  
Safety bottle  
Récipient de sécurité  
Recipiente de seguridad



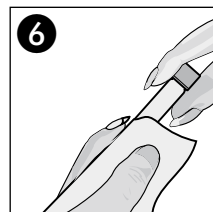
**148 °C / 2 h**



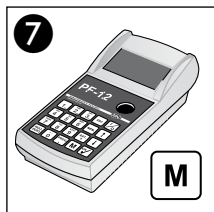
Schütteln  
Shake  
Agiter  
Agitar



Abkühlen lassen  
Allow to cool  
Laisser refroidir  
Dejar enfriar



Säubern  
Clean  
Nettoyer  
Limpiar



Messung  
Measurement  
Mesure  
Medición

Meerwasser  
Sea water  
Eau de mer  
Agua de mar



# NANOCOLOR® CSB 160 Hg-frei

COD Hg-free / DCO sans Hg / DQO sin Hg

**Test 0-26**

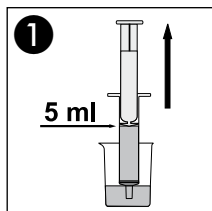
REF 963 026

436 nm

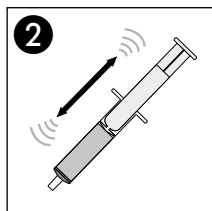
Method(e) / Método

0261

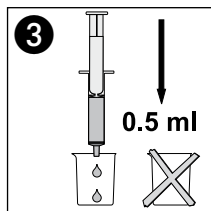
15 - 160 mg/l O<sub>2</sub>



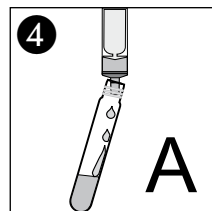
**ca. 5.0 ml** Probe  
Sample  
Echantillon  
Muestra



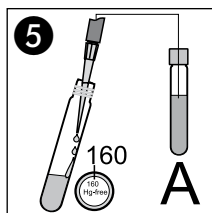
**Kräftig Schütteln**  
Shake well  
Bien Agiter  
Agitar intensamente



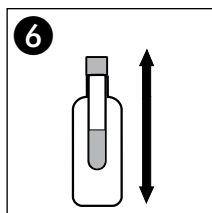
**ca. 5.0 ml** verwerfen  
reject  
rejeter  
desechar



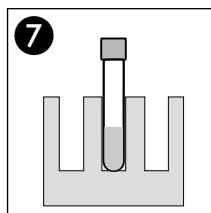
in **Leerküvette** überführen  
fill into **empty** tube  
introduire dans cuve **vide**  
llenar en tubo **vacío**



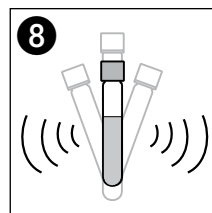
**2.0 ml A** in Küvette CSB 160  
into tube COD 160  
dans tube DCO 160  
en tubo DQO 160



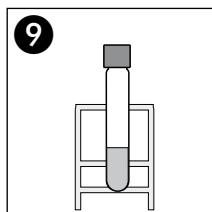
**Sicherheitsgefäß**  
Safety bottle  
Récipient de sécurité  
Recipiente de seguridad



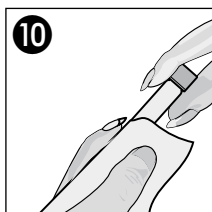
**148 °C / 2 h**



**Schütteln**  
Shake  
Agiter  
Agitar



**Abkühlen lassen**  
Allow to cool  
Laisser refroidir  
Dejar enfriar



**Säubern**  
Clean  
Nettoyer  
Limpiar



**Messung**  
Measurement  
Mesure  
Medición

Meerwasser  
Sea water  
Eau de mer  
Agua de mar



# NANOCOLOR® CSB 40

COD / DCO / DQO

345 nm

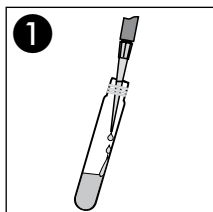
Method(e) / Método

0271

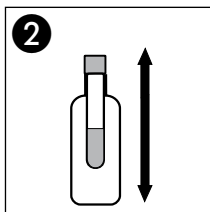
2 - 40 mg/l O<sub>2</sub>

**Test 0-27**

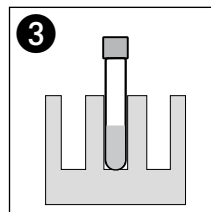
REF 985 027



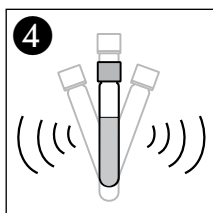
**2.0 ml** Probe  
Sample  
Echantillon  
Muestra



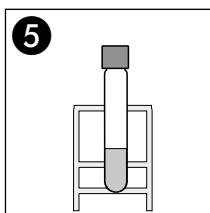
Sicherheitsgefäß  
Safety bottle  
Récipient de sécurité  
Recipiente de seguridad



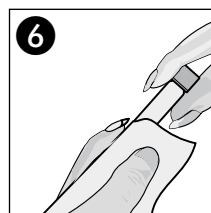
**148 °C / 2 h**



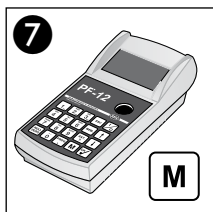
Schütteln  
Shake  
Agiter  
Agitar



Abkühlen lassen  
Allow to cool  
Laisser refroidir  
Dejar enfriar



Säubern  
Clean  
Nettoyer  
Limpiar



Messung  
Measurement  
Measure  
Medición

Meerwasser  
Sea water  
Eau de mer  
Agua de mar



# NANOCOLOR® CSB 15 000

COD / DCO / DQO

620 nm

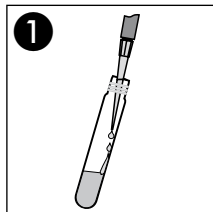
Method(e) / Método

0281

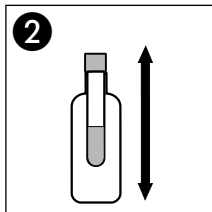
1.0 - 15.0 g/l O<sub>2</sub> (1000 - 15000 mg/l O<sub>2</sub>)

**Test 0-28**

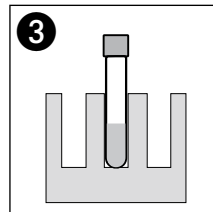
REF 985 028



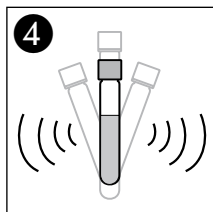
**1**  
200 µl Probe  
Sample  
Echantillon  
Muestra



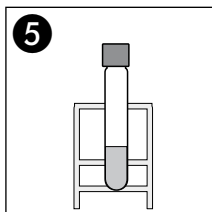
**2**  
Sicherheitsgefäß  
Safety bottle  
Récipient de sécurité  
Recipiente de seguridad



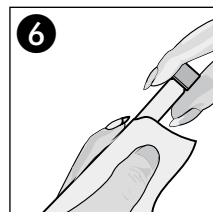
**3**  
148 °C / 2 h



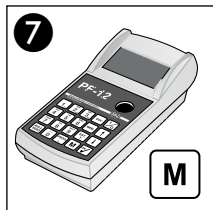
**4**  
Schütteln  
Shake  
Agiter  
Agitar



**5**  
Abkühlen lassen  
Allow to cool  
Laisser refroidir  
Dejar enfriar



**6**  
Säubern  
Clean  
Nettoyer  
Limpiar



**7**  
Messung  
Measurement  
Mesure  
Medición

Meerwasser  
Sea water  
Eau de mer  
Agua de mar



# NANOCOLOR® CSB 1500

COD / DCO / DQO

620 nm

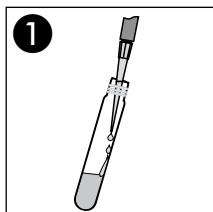
Method(e) / Método

0291

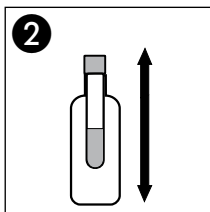
100 - 1500 mg/l O<sub>2</sub>

**Test 0-29**

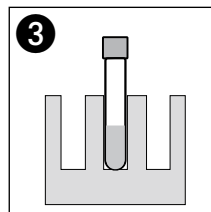
REF 985 029



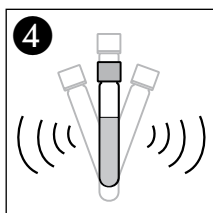
**1**  
2.0 ml Probe  
Sample  
Echantillon  
Muestra



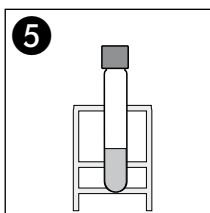
**2**  
Sicherheitsgefäß  
Safety bottle  
Récipient de sécurité  
Recipiente de seguridad



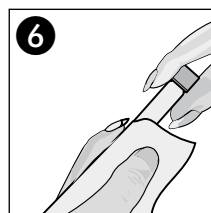
**3**  
148 °C / 2 h



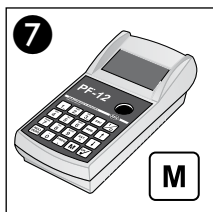
**4**  
Schütteln  
Shake  
Agiter  
Agitar



**5**  
Abkühlen lassen  
Allow to cool  
Laisser refroidir  
Dejar enfriar



**6**  
Säubern  
Clean  
Nettoyer  
Limpiar



**7**  
Messung  
Measurement  
Measure  
Medición

Meerwasser  
Sea water  
Eau de mer  
Agua de mar



# NANOCOLOR® Cyanid 08

Cyanid / Cyanure / Cianuro

585 nm

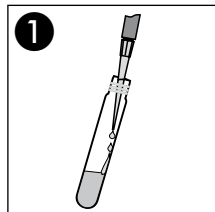
Method(e) / Método

0311

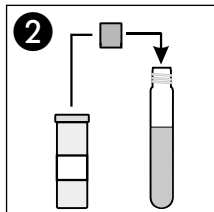
0.02 - 0.80 mg/l CN<sup>-</sup>

**Test 0-31**

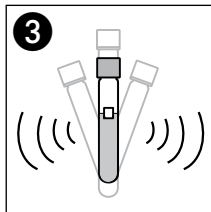
REF 985 031



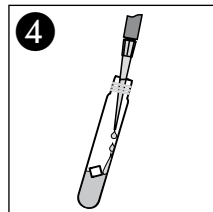
**1**  
4.0 ml Probe  
Sample  
Echantillon  
Muestra



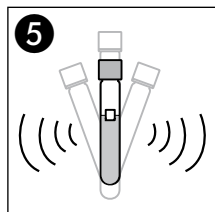
**2**  
1 x **NANOFIX R2**



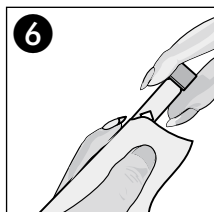
**3**  
Schütteln  
Shake  
Agiter  
Agitar



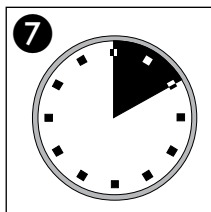
**4**  
500 µl R3



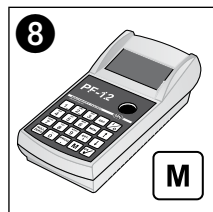
**5**  
Schütteln  
Shake  
Agiter  
Agitar



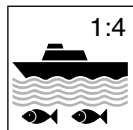
**6**  
Säubern  
Clean  
Nettoyer  
Limpiar



**7**  
10'00 min



**8**  
Messung  
Measurement  
Mesure  
Medición



1:4  
Meerwasser  
Sea water  
Eau de mer  
Agua de mar

# NANOCOLOR® Anionische Tenside 4

**Test 0-32**

Anionic surfactants / Tensio-actifs  
anioniques / Tensioactivos aniónicos

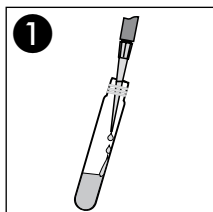
REF 985 032

620 nm

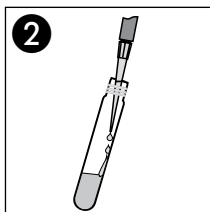
Method(e) / Método

0321

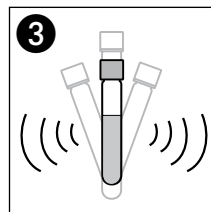
0.20 - 4.00 mg/l MBAS



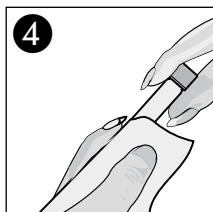
**4.0 ml** Probe  
Sample  
Echantillon  
Muestra



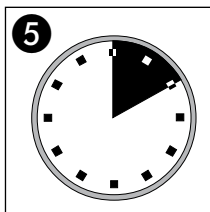
**500 µl** R2



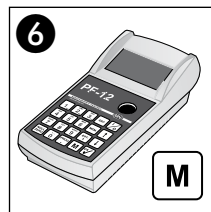
**1 min** Schütteln  
Shake  
Agiter  
Agitar



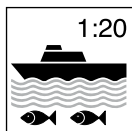
Säubern  
Clean  
Nettoyer  
Limpiar



**10'00 min**  
Phasentrennung abwarten  
wait for phase separation  
laisser séparer les phases  
esperar la separación de fases



Messung  
Measurement  
Mesure  
Medición



Meerwasser  
Sea water  
Eau de mer  
Agua de mar



# NANOCOLOR® CSB 300

COD / DCO / DQO

436 nm

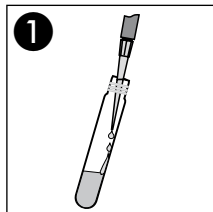
Method(e) / Método

0331

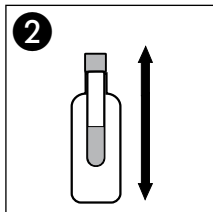
50 - 300 mg/l O<sub>2</sub>

**Test 0-33**

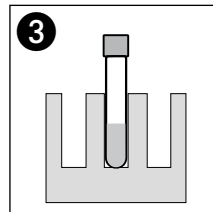
REF 985 033



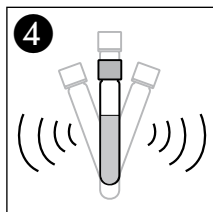
**1**  
2.0 ml Probe  
Sample  
Echantillon  
Muestra



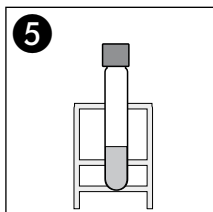
**2**  
Sicherheitsgefäß  
Safety bottle  
Récipient de sécurité  
Recipiente de seguridad



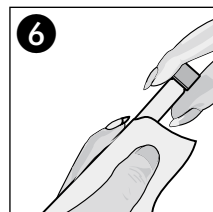
**3**  
148 °C / 2 h



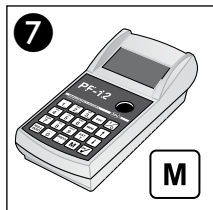
**4**  
Schütteln  
Shake  
Agiter  
Agitar



**5**  
Abkühlen lassen  
Allow to cool  
Laisser refroidir  
Dejar enfriar



**6**  
Säubern  
Clean  
Nettoyer  
Limpiar



**7**  
Messung  
Measurement  
Mesure  
Medición

Meerwasser  
Sea water  
Eau de mer  
Agua de mar



# NANOCOLOR® Kationische Tenside 4

Cationic surfactants / Tensio-actifs  
cationiques / Tensioactivos catiónicos

620 nm

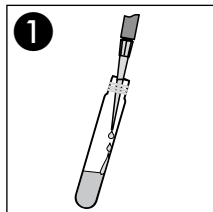
Method(e) / Método

0341

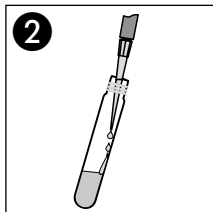
0.20 - 4.00 mg/l CTBA

**Test 0-34**

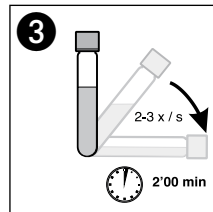
REF 985 034



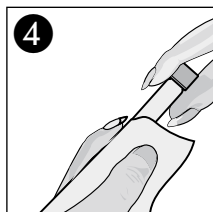
**1**  
4.0 ml Probe  
Sample  
Echantillon  
Muestra



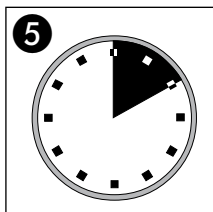
**2**  
500 µl R2



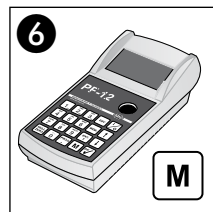
**3**  
Umschwenken  
Shake gently  
Secouer légèrement  
Mezclar volteándolo



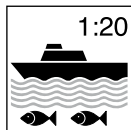
**4**  
Säubern  
Clean  
Nettoyer  
Limpiar



**5**  
10'00 min  
Phasentrennung abwarten  
wait for phase separation  
laisser séparer les phases  
esperar la separación de fases



**6**  
Messung  
Measurement  
Mesure  
Medición



1:20  
Meerwasser  
Sea water  
Eau de mer  
Agua de mar

# NANOCOLOR® DEHA 1

**Test 0-35**

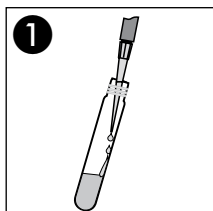
REF 985 035

540 nm

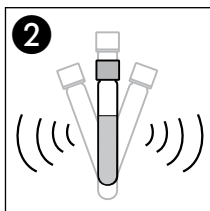
Method(e) / Método

0351

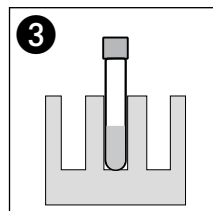
0.05 - 1.00 mg/l DEHA



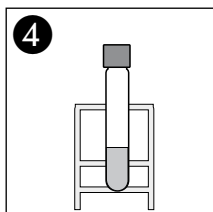
**4.0 ml Probe**  
Sample  
Echantillon  
Muestra



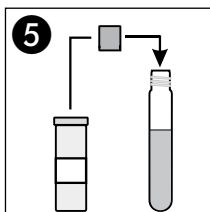
**Schütteln**  
Shake  
Agiter  
Agitar



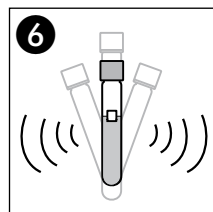
**100 °C / 15 min**



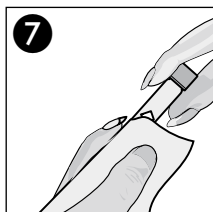
**Abkühlen lassen**  
Allow to cool  
Laisser refroidir  
Dejar enfriar



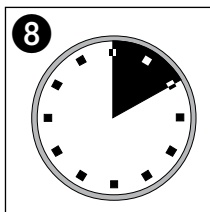
**1 x NANOFIX R2**



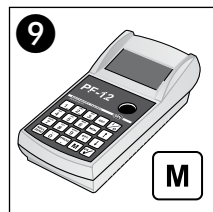
**Schütteln**  
Shake  
Agiter  
Agitar



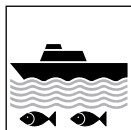
**Säubern**  
Clean  
Nettoyer  
Limpiar



**10'00 min**



**Messung**  
Measurement  
Mesure  
Medición



**Meerwasser**  
Sea water  
Eau de mer  
Agua de mar

# NANOCOLOR® Eisen 3

Iron / Fer / Hierro

540 nm

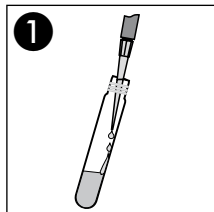
Method(e) / Método

0371

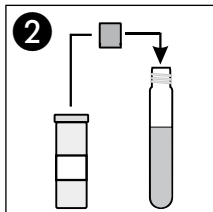
0.10 - 3.00 mg/l Fe

**Test 0-37**

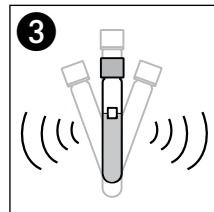
REF 985 037



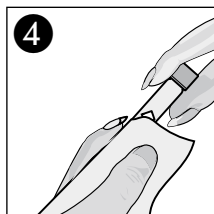
**4.0 ml** Probe  
Sample  
Echantillon  
Muestra



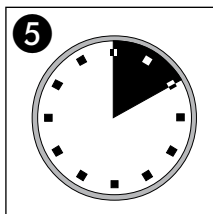
1 x **NANOFIX R2**



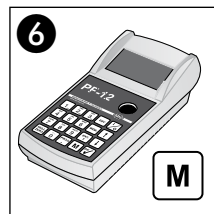
Schütteln  
Shake  
Agiter  
Agitar



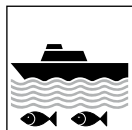
Säubern  
Clean  
Nettoyer  
Limpiar



**10'00 min**



Messung  
Measurement  
Mesure  
Medición



Meerwasser  
Sea water  
Eau de mer  
Agua de mar

# NANOCOLOR® Ethanol 1000

## Etanol

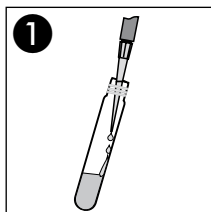
620 nm

Method(e) / Método

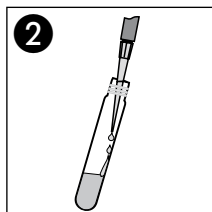
8381 0.10 - 1.00 g/l EtOH  
8382 0.013 - 0.130 Vol% EtOH

**Test 8-38**

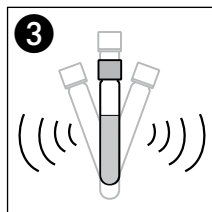
REF 985 838



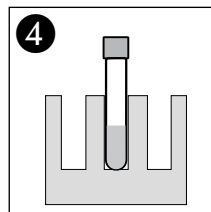
**4.0 ml R1**



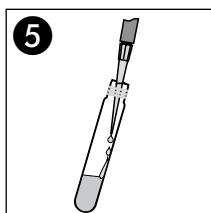
**0.5 ml Probe**  
Sample  
Echantillon  
Muestra



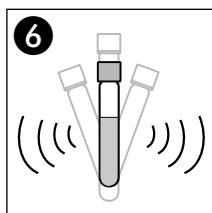
**Schütteln**  
Shake  
Agiter  
Agitar



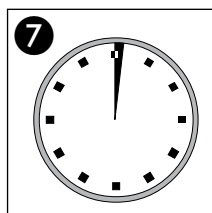
**25 °C / 20 min**



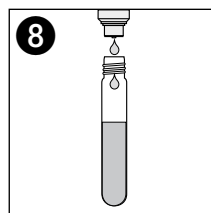
**100 µl R2**



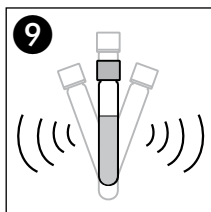
**Schütteln**  
Shake  
Agiter  
Agitar



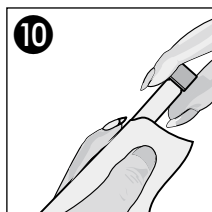
**1'00 min**



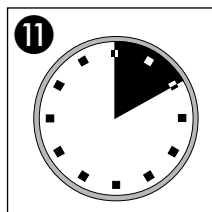
**2 x ▽ R3**



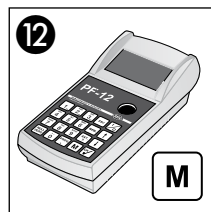
**Schütteln**  
Shake  
Agiter  
Agitar



**Säubern**  
Clean  
Nettoyer  
Limpiar



**10'00 min**



**Messung**  
Measurement  
Mesure  
Medición

# NANOCOLOR® Fluorid 2

Fluoride / Fluorure / Fluoruro

620 nm

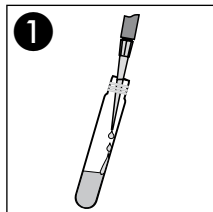
Method(e) / Método

0401

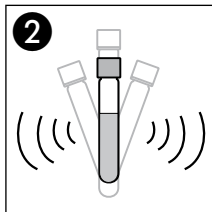
0.1 - 2.0 mg/l F<sup>-</sup>

**Test 0-40**

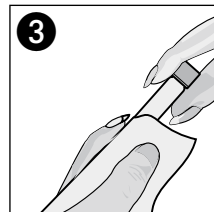
REF 985 040



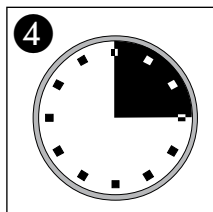
**1**  
2.0 ml Probe  
Sample  
Echantillon  
Muestra



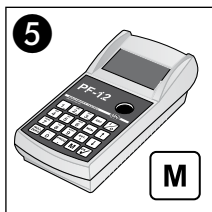
**2**  
Schütteln  
Shake  
Agiter  
Agitar



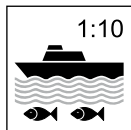
**3**  
Säubern  
Clean  
Nettoyer  
Limpiar



**4**  
15'00 min



**5**  
Messung  
Measurement  
Mesure  
Medición



1:10  
Meerwasser / Sea water  
Eau de mer / Agua de mar

# NANOCOLOR® Formaldehyd(e) 8

## Formaldehído

585 nm

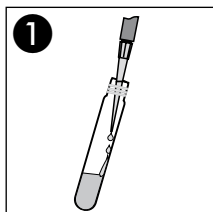
Method(e) / Método

0411

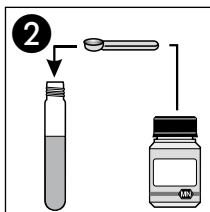
0.1 - 8.0 mg/l HCHO

**Test 0-41**

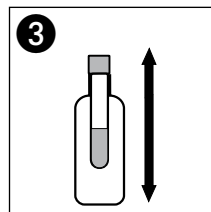
REF 985 041



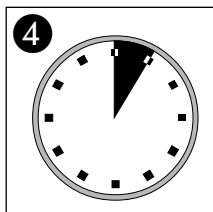
**2.0 ml** Probe  
Sample  
Echantillon  
Muestra



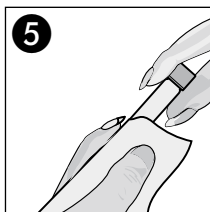
**1 x R2**



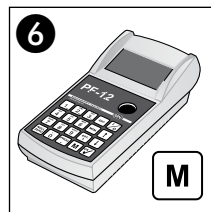
Sicherheitsgefäß  
Safety bottle  
Réipient de sécurité  
Recipiente de seguridad



**5'00 min**



Säubern  
Clean  
Nettoyer  
Limpiar



Messung  
Measurement  
Mesure  
Medición



Meerwasser  
Sea water  
Eau de mer  
Agua de mar

# NANOCOLOR® Härte 20

Hardness / Dureté / Durezza

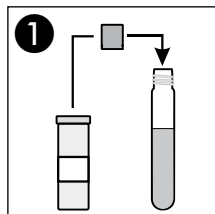
540 nm

Method(e) / Método

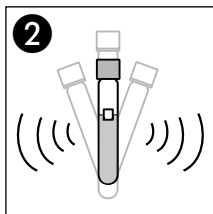
0431 / 0432 1.0 - 20.0 °d / 0.2 - 3.6 mmol/l

0433 / 0434 1.0 - 25.0 °e / 2.0 - 36.0 °f

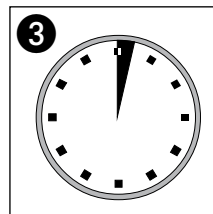
Gesamthärte / Total hardness / Dureté total / Durezza total:



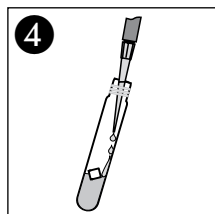
1 x NANOFIX R2



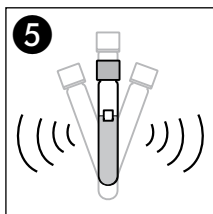
Kräftig Schütteln  
Shake well  
Bien Agiter  
Agitar intensamente



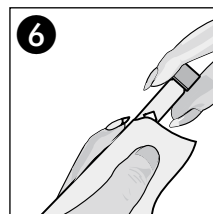
2'00 min



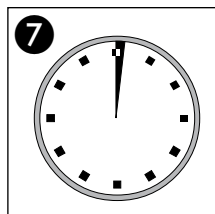
200 µl Probe  
Sample  
Echantillon  
Muestra



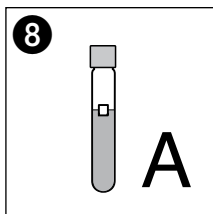
Schütteln  
Shake  
Agiter  
Agitar



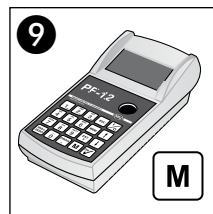
Säubern  
Clean  
Nettoyer  
Limpiar



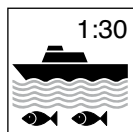
1'00 min



Lösung A  
Solution A  
Solution A  
Solución A



Messung  
Measurement  
Mesure  
Medición



1:30  
Meerwasser  
Sea water  
Eau de mer  
Agua de mar



# NANOCOLOR® Härte 20

Hardness / Dureté / Dureza

540 nm

Method(e) / Método

0435

10 - 100 mg/l Ca<sup>2+</sup>

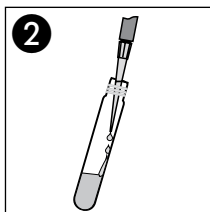
**Test 0-43**

REF 985 043

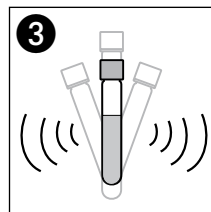
## Calcium / Calcio:



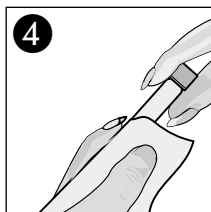
Lösung A = Null  
Solution A = Zero  
Solution A = Zéro  
Solución A = Cero



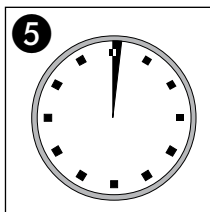
200 µl R3



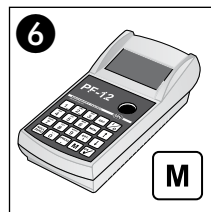
Schütteln  
Shake  
Agiter  
Agitar



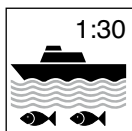
Säubern  
Clean  
Nettoyer  
Limpiar



1'00 min



Messung  
Measurement  
Mesure  
Medición



1:30  
Meerwasser  
Sea water  
Eau de mer  
Agua de mar

# NANOCOLOR® Härte 20

Hardness / Dureté / Durezza

540 nm

Method(e) / Método

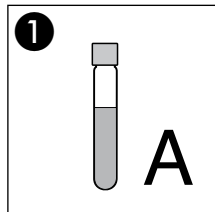
0436

5 - 50 mg/l Mg<sup>2+</sup>

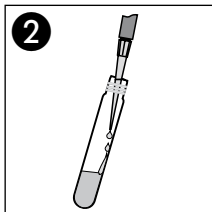
**Test 0-43**

REF 985 043

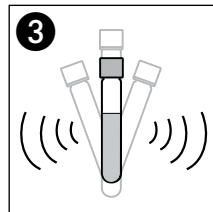
## Magnesium / Magnesio:



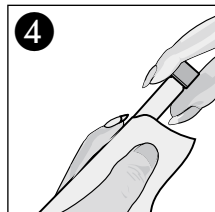
Lösung A  
Solution A  
Solution A  
Solución A



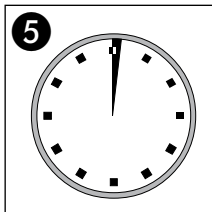
200 µl R3



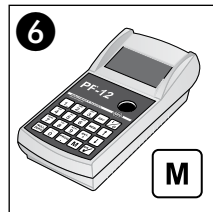
Schütteln  
Shake  
Agiter  
Agitar



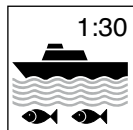
Säubern  
Clean  
Nettoyer  
Limpiar



1'00 min



Messung  
Measurement  
Mesure  
Medición



1:30  
Meerwasser  
Sea water  
Eau de mer  
Agua de mar

# NANOCOLOR® Kalium 50

Potassium / Potasio

690 nm

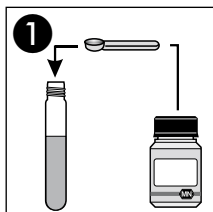
Method(e) / Método

0451

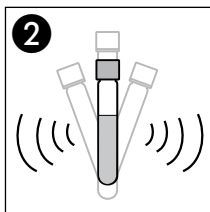
2 - 50 mg/l K<sup>+</sup>

**Test 0-45**

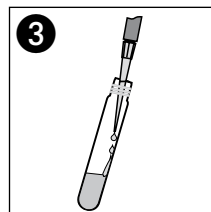
REF 985 045



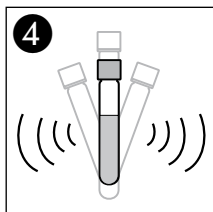
1 x R2



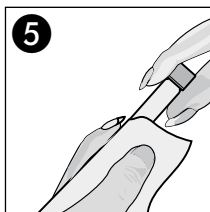
Schütteln  
Shake  
Agiter  
Agitar



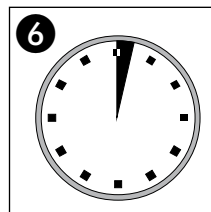
2.0 ml Probe  
Sample  
Echantillon  
Muestra



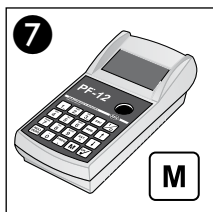
10 s Schütteln  
Shake  
Agiter  
Agitar



Säubern  
Clean  
Nettoyer  
Limpiar

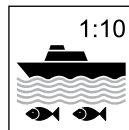


2'00 min



Messung  
Measurement  
Measure  
Medición

Meerwasser  
Sea water  
Eau de mer  
Agua de mar



# NANOCOLOR® Formaldehyd(e) 10

## Formaldehído

436 nm

Method(e) / Método

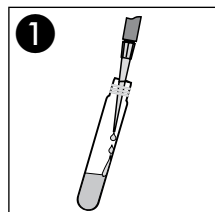
0461

0.20 - 10.00 mg/l HCHO

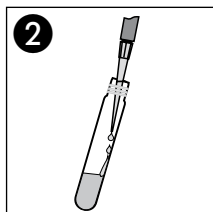
**Test 0-46**

REF 985 046

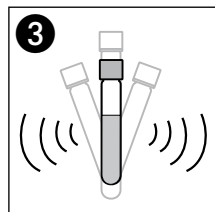
### Nullwert / Blanc value / Zéro / Cero



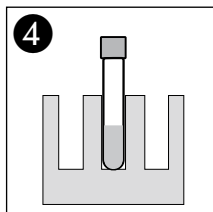
2.0 ml dest. Wasser  
dist. water  
d'eau distillée  
agua dest.



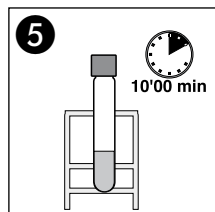
1.0 ml R2



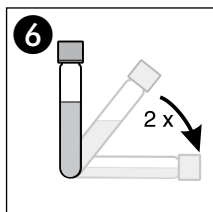
Schütteln  
Shake  
Agiter  
Agitar



40 °C / 30 min

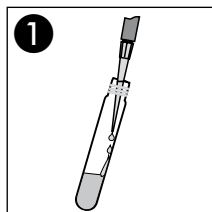


Abkühlen lassen  
Allow to cool  
Laisser refroidir  
Dejar enfriar

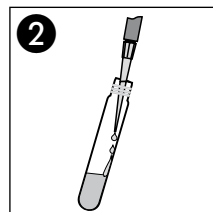


Umschwenken  
Shake gently  
Secouer légèrement  
Mezclar volteándolo

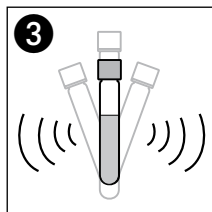
### Messwert / Sample / Echantillon / Muestra



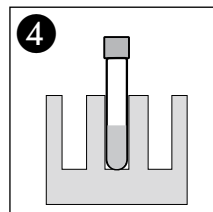
2.0 ml Probe  
Sample  
Echantillon  
Muestra



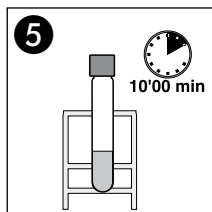
1.0 ml R2



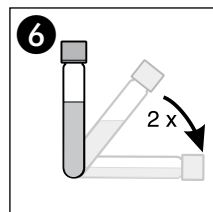
Schütteln  
Shake  
Agiter  
Agitar



40 °C / 30 min

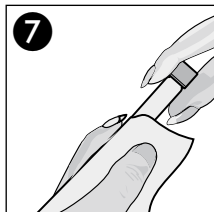


Abkühlen lassen  
Allow to cool  
Laisser refroidir  
Dejar enfriar

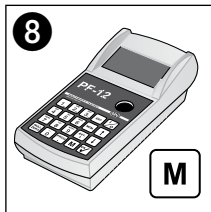


Umschwenken  
Shake gently  
Secouer légèrement  
Mezclar volteándolo

### Nullwert / Blanc value / Zéro / Cero

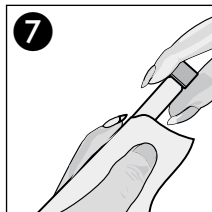


Säubern  
Clean  
Nettoyer  
Limpiar

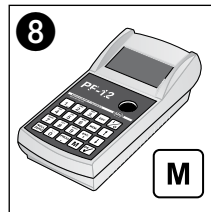


Messung  
Measurement  
Mesure  
Medición

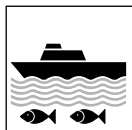
### Messwert / Sample / Echantillon / Muestra



Säubern  
Clean  
Nettoyer  
Limpiar



Messung  
Measurement  
Mesure  
Medición



Meerwasser  
Sea water  
Eau de mer  
Agua de mar

# NANOCOLOR® Nichtionische Tenside 15

**Test 0-47**

Nonionic surfactants / Tensio-actifs  
non ioniques / Tensioactivos no iónicos

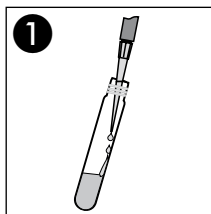
REF 985 047

620 nm

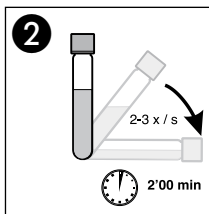
Method(e) / Método

0471

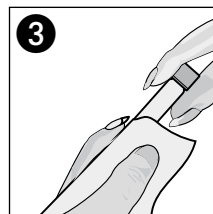
0.3 - 15.0 mg/l Triton® X-100



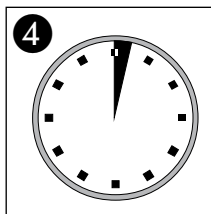
**4.0 ml** Probe  
Sample  
Echantillon  
Muestra



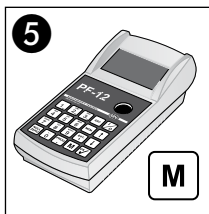
Umschwenken  
Shake gently  
Secouer légèrement  
Mezclar volteándolo



Säubern  
Clean  
Nettoyer  
Limpiar



**2'00 min**  
Phasentrennung abwarten  
wait for phase separation  
laisser séparer les phases  
esperar la separación de fases



Messung  
Measurement  
Mesure  
Medición



Meerwasser  
Sea water  
Eau de mer  
Agua de mar

# NANOCOLOR® Silber 3

Silver / Argent / Plata

620 nm

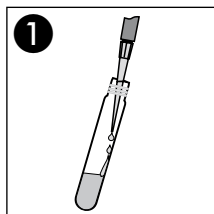
Method(e) / Método

0491

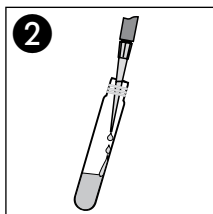
0.20 - 3.00 mg/l Ag<sup>+</sup>

**Test 0-49**

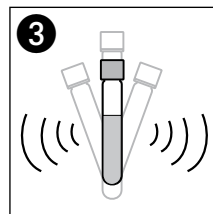
REF 985 049



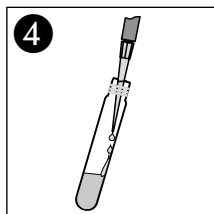
500 µl R2



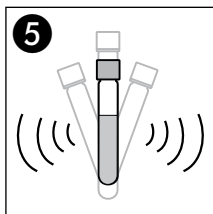
4.0 ml Probe  
Sample  
Echantillon  
Muestra



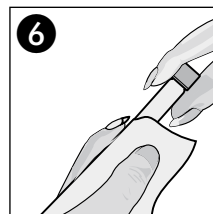
Schütteln  
Shake  
Agiter  
Agitar



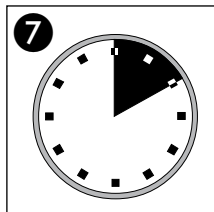
500 µl R3



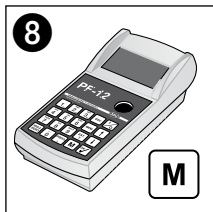
Schütteln  
Shake  
Agiter  
Agitar



Säubern  
Clean  
Nettoyer  
Limpiar



10'00 min



Messung  
Measurement  
Mesure  
Medición

Meerwasser  
Sea water  
Eau de mer  
Agua de mar



# NANOCOLOR® organische Säuren 3000

organic Acids / Acides organiques  
Acidos orgánicos

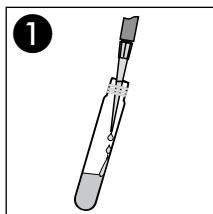
**Test 0-50**

REF 985 050

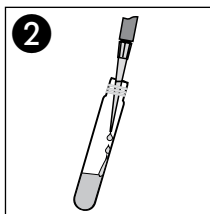
470 nm

Method(e) / Método

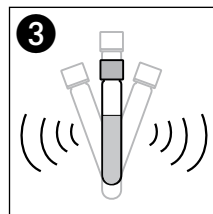
<b>0501</b>	30 - 3000	mg/l CH <sub>3</sub> COOH
<b>0502</b>	0.5 - 50.0	mmol/l CH <sub>3</sub> COOH



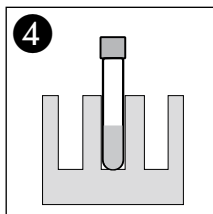
**500 µl R2**



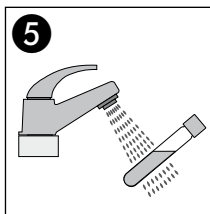
**1.0 ml Probe**  
Sample  
Echantillon  
Muestra



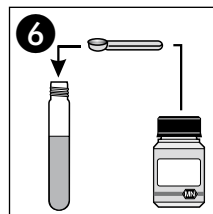
Schütteln  
Shake  
Agiter  
Agitar



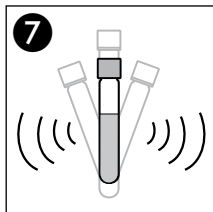
**100 °C / 10 min**



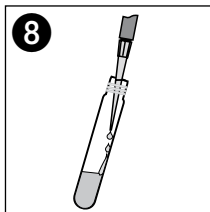
**Sofort abkühlen**  
Cool **immediately**  
Refroidir **immédiatement**  
Enfriar **inmediata**



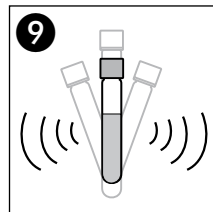
**1 x R3**



Schütteln  
Shake  
Agiter  
Agitar

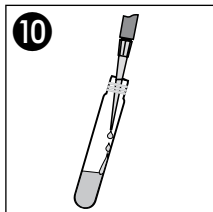


**1.0 ml R4**

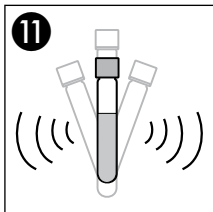


Schütteln  
Shake  
Agiter  
Agitar

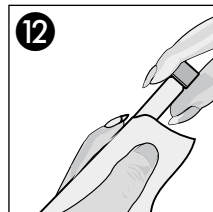




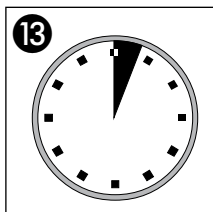
2.0 ml R5



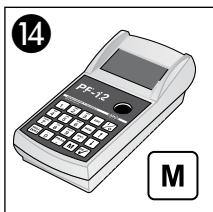
Schütteln  
Shake  
Agiter  
Agitar



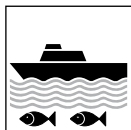
Säubern  
Clean  
Nettoyer  
Limpiar



3'00 min



Messung  
Measurement  
Mesure  
Medición



Meerwasser  
Sea water  
Eau de mer  
Agua de mar

# NANOCOLOR® Org. Komplexbildner 10

Complexing agents / Complexants organiques  
 Agente formador de complejos org.

**Test 0-52**

REF 985 052

540 nm

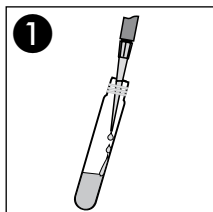
Method(e) / Método

0521

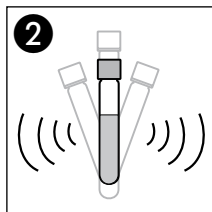
0.5 - 10.0 mg/l I<sub>Bik</sub>

Nullwert / Blanc value / Zéro / Cero

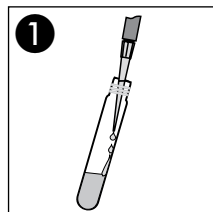
Messwert / Sample / Echantillon / Muestra



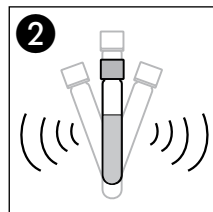
**1**  
 4.0 ml dest. Wasser  
 dist. water  
 d'eau distillée  
 agua dest.



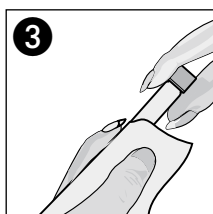
**2**  
 Schütteln  
 Shake  
 Agiter  
 Agitar



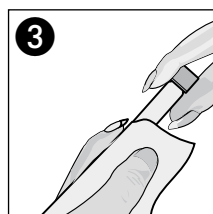
**1**  
 4.0 ml Probe  
 Sample  
 Echantillon  
 Muestra



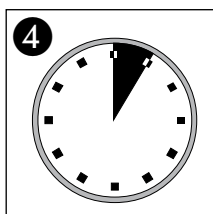
**2**  
 Schütteln  
 Shake  
 Agiter  
 Agitar



**3**  
 Säubern  
 Clean  
 Nettoyer  
 Limpiar



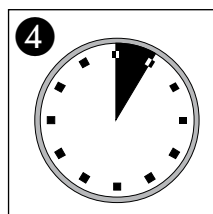
**3**  
 Säubern  
 Clean  
 Nettoyer  
 Limpiar



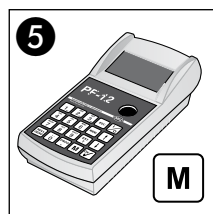
**4**  
 5'00 min



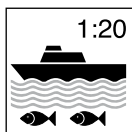
**5**  
 Messung  
 Measurement  
 Mesure  
 Medición



**4**  
 5'00 min



**5**  
 Messung  
 Measurement  
 Mesure  
 Medición



Meerwasser / Sea water  
 Eau de mer / Agua de mar

# NANOCOLOR® Kupfer 7

Copper / Cuivre / Cobre

585 nm

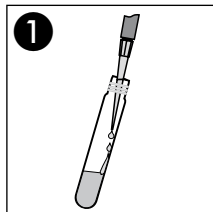
Method(e) / Método

0541

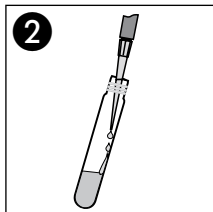
0.10 - 7.00 mg/l Cu<sup>2+</sup>

**Test 0-54**

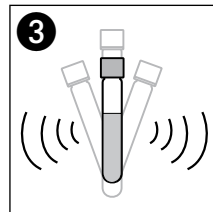
REF 985 054



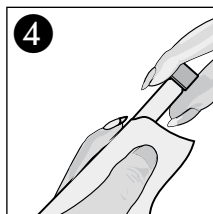
**1**  
4.0 ml Probe  
Sample  
Echantillon  
Muestra



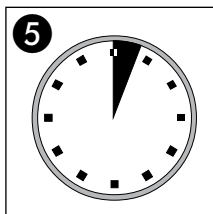
**2**  
200 µl R2



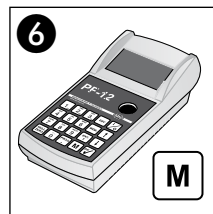
**3**  
Schütteln  
Shake  
Agiter  
Agitar



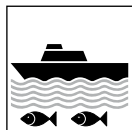
**4**  
Säubern  
Clean  
Nettoyer  
Limpiar



**5**  
10'00 min



**6**  
Messung  
Measurement  
Mesure  
Medición



Meerwasser  
Sea water  
Eau de mer  
Agua de mar

# NANOCOLOR® gesamt-Phosphat 45

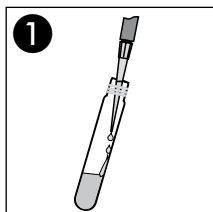
**Test 0-55****total Phosphate(s) / Fosfato total**

REF 985 055

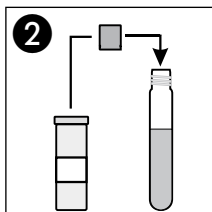
690 nm

Method(e) / Método

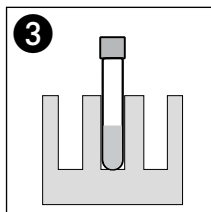
0551	5.0 - 50.0 mg/l P
0552	15 - 150 mg/l PO <sub>4</sub> <sup>3-</sup>
0553	10 - 115 mg/l P <sub>2</sub> O <sub>5</sub>



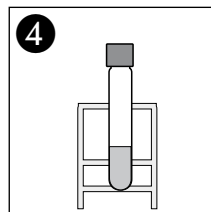
**200 µl Probe**  
Sample  
Echantillon  
Muestra



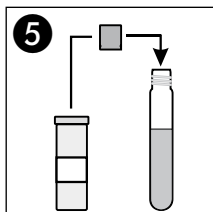
**1 x NANOFIX R2**



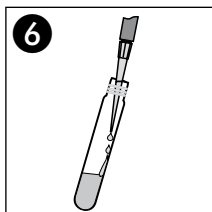
**120 °C / 30 min**  
oder / or / ou / o  
**100 °C / 1 h**



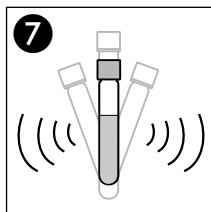
Abkühlen lassen  
Allow to cool  
Laisser refroidir  
Dejar enfriar



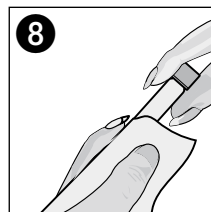
**1 x NANOFIX R3**



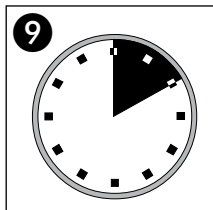
**200 µl R4**



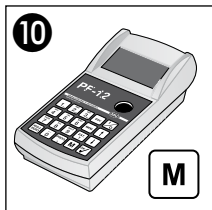
Schütteln  
Shake  
Agiter  
Agitar



Säubern  
Clean  
Nettoyer  
Limpiar



**10'00 min**



Messung  
Measurement  
Mesure  
Medición

Meerwasser  
Sea water  
Eau de mer  
Agua de mar



# NANOCOLOR® ortho-Phosphat 45

ortho Phosphate(s) / orto Fosfato

**Test 0-55**

REF 985 055

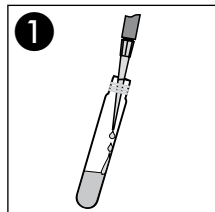
690 nm

Method(e) / Método

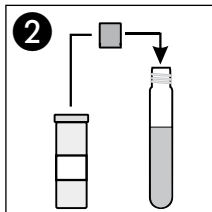
0554 5.0 - 50.0 mg/l  $\text{PO}_4\text{-P}$

0555 15 - 150 mg/l  $\text{PO}_4^{3-}$

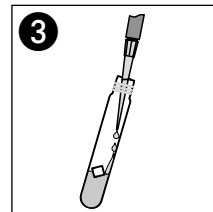
0556 10 - 115 mg/l  $\text{P}_2\text{O}_5$



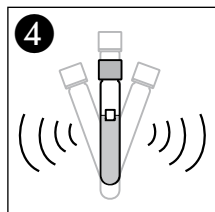
**1**  
200 µl Probe  
Sample  
Echantillon  
Muestra



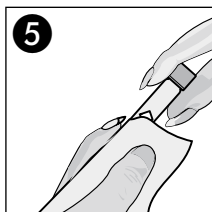
**2**  
1 x NANOFIX R3



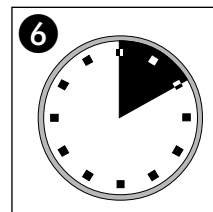
**3**  
200 µl R4



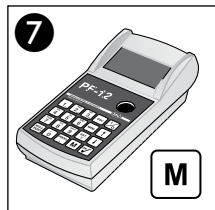
**4**  
Schütteln  
Shake  
Agiter  
Agitar



**5**  
Säubern  
Clean  
Nettoyer  
Limpiar

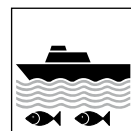


**6**  
10'00 min



Messung  
Measurement  
Mesure  
Medición

Meerwasser  
Sea water  
Eau de mer  
Agua de mar



# NANOCOLOR® Molybdän 40

Molybdenum / Molybdène / Molibdeno

345 nm

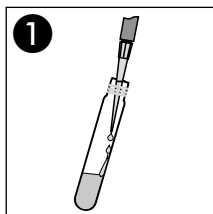
Method(e) / Método

0561 1.0 - 30.0 mg/l Mo(VI)

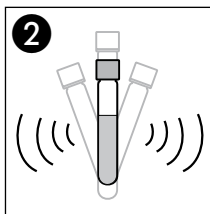
0562 1.6 - 50.0 mg/l MoO<sub>4</sub><sup>2-</sup>

**Test 0-56**

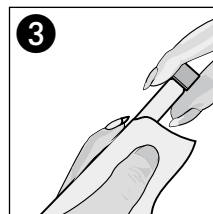
REF 985 056



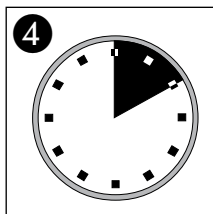
**1**  
4.0 ml Probe  
Sample  
Echantillon  
Muestra



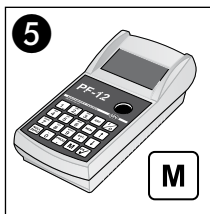
**2**  
Schütteln  
Shake  
Agiter  
Agitar



**3**  
Säubern  
Clean  
Nettoyer  
Limpiar



**4**  
5'00 min



**5**  
Messung  
Measurement  
Mesure  
Medición



Meerwasser  
Sea water  
Eau de mer  
Agua de mar

### Rundküvettenest

Methode: Patentierte photometrische Bestimmung der Kohlenwasserstoffe als Chemischer Sauerstoff-Bedarf (CSB) nach Pentanextraktion aus Wasser- und Bodenproben

Messbereiche: 0,5 – 5,6 mg/l KW  
30 – 300 mg/kg KW

Methode  
**0571**  
**0572**

### NANOCOLOR®

Reagenziensätze: KW 300 (REF 985 057) und Extraktion KW aus Wasser (REF 918 571) / Extraktion KW aus Boden (REF 918 572)

Wellenlänge: **436 nm**

Störungen: Ein Fettgehalt > 1000 mg/l führt zu höheren KW-Konzentrationen. Pentanreste ergeben ebenfalls höhere KW-Konzentrationen. Aus diesen Gründen muss die Abdampfzeit für das Lösemittel unbedingt eingehalten werden, und die verwendeten Glasgeräte müssen fettfrei sein. Kohlenwasserstoffe mit einer Siedetemperatur < 120 °C (z. B. Benzin) werden nicht mitbestimmt.

Die Methode ist auch zur Analyse von Meerwasser geeignet.

### Ausführung:

Benötigtes Zubehör:

2 Schütteltrichter 500 ml (REF 916 08), Soxhlet-Apparatur 30 ml (REF 916 05), Extraktionshülsen 23 Ø x 100 mm (REF 645 008), 2 CHROMABOND® ALOX N Trennsäulen (REF 730 250), Kunststoffspritze 50 ml mit Spritzenadapter (REF 916 09 und 916 03), Messkolben 25 ml (REF 916 61), Messkolben 50 ml (REF 916 06), Messzylinder 50 ml (REF 916 84), Erlenmeyerkolben 100 ml (REF 916 38), Kolbenhubpipette 1–5 ml mit Spitzen und zusätzlichem Auslaufstopp (REF 916 21), Thermoblock NANOCOLOR®, Reaktionsgläser (REF 916 80), Schraubkupplung (REF 916 04)

#### 1a. Extraktion von Wasserproben

Im Schütteltrichter 400 ml Wasserprobe (*der pH-Wert der Probe muss zwischen pH 1 und 10 liegen*) mit 25 g Magnesiumsulfat versetzen. Ca. 1 min schütteln, bis sich das Magnesiumsulfat gelöst hat. Wasserprobe mit 25 ml n-Pentan versetzen und 5 min unter häufigem, vorsichtigem Belüften schütteln. Phasen absetzen lassen. Untere wässrige Phase ablassen. Organischen Extrakt auf die CHROMABOND® ALOX N Trennsäule geben und im Messkolben 25 ml auffangen. Messkolben durch Nachwaschen der Säule mit n-Pentan bis kurz unter die Ringmarke auffüllen. Pentanextrakt bis zur Ringmarke mit n-Pentan auffüllen. Messkolben verschließen und zum Vermischen umschwenken.



#### 1b. Extraktion von Bodenproben

50 g der noch feuchten Bodenprobe sieben (2 mm Sieb). 15 g der gesiebten Probe mit 15 g Natriumsulfat im Mörser verreiben und in die Extraktionshülse überführen. Extraktionshülse in den Soxhlet-extraktor einsetzen und Rundkolben mit 50 ml n-Pentan füllen. Apparat aufbauen. Temperatur der Heizvorrichtung (Heizplatte/Wasserbad) auf 70 °C einstellen und Bodenprobe unter Rückfluss 1 h extrahieren.

Organischen Extrakt auf die CHROMABOND® ALOX N Trennsäule geben und im Messkolben 50 ml auffangen. Messkolben durch Nachwaschen der Säule mit n-Pentan bis kurz unter die Ringmarke auffüllen. Pentanextrakt bis zur Ringmarke mit n-Pentan auffüllen. Messkolben verschließen und zum Vermischen umschwenken.



### Tube test

Method: Patented photometric determination of hydrocarbons as chemical oxygen demand (COD) after pentane extraction from water and soil samples

Ranges: 0.5 – 5.6 mg/l HC  
30 – 300 mg/kg HC

Method  
**0571**  
**0572**

NANOCOLOR® reagent sets:

HC 300 (REF 985 057) and HC extraction from water (REF 918 571) or HC extraction from soil (REF 918 572)

Wavelength: **436 nm**

Interferences:

A fat content exceeding 1000 mg/l results in high hydrocarbon values. Residual pentane also causes high hydrocarbon results. For this reason the evaporation time for the solvent has to be strictly observed and all glassware has to be free of fat. Hydrocarbons with boiling temperature < 120 °C (e. g. petrol) are not covered by the test.

This method can also be used for analyzing sea water.

Procedure:

Requisite accessories: 2 separation funnels 500 ml (REF 916 08), Soxhlet apparatus 30 ml (REF 916 05), extraction thimbles 23 Ø x 100 mm (REF 645 008), 2 columns CHROMABOND® ALOX N (REF 730 250), plastic syringe 50 ml with syringe adaptor (REF 916 09 and 916 03), volumetric flask 25 ml (REF 916 61), volumetric flask 50 ml (REF 916 06), measuring cylinder 50 ml (REF 916 84), piston pipette 1–5 ml with disposable tips and additional stop valve (REF 916 21), heating block NANOCOLOR®, reaction tubes (REF 916 80), threaded union (REF 916 04)

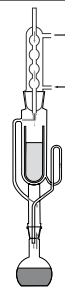
#### 1a. Extraction of water samples

In the separation funnel add 25 g magnesium sulphate to 400 ml water sample (*the pH value of the sample must be between pH 1 and 10*). Shake for about 1 min, until the magnesium sulphate has dissolved. Add 25 ml n-pentane and shake for about 5 min with frequent careful ventilation. Let phases separate. Discard lower aqueous layer. Apply organic layer to the CHROMABOND® ALOX N column and collect solvent in the volumetric flask 25 ml. Rinse the column with n-pentane, until the volumetric flask is filled slightly below the ring mark and then top up the volumetric flask to the ring mark. Close volumetric flask and mix by shaking slightly.



#### 1b. Extraction of soil samples

Sieve 50 g of the moist soil sample (2 mm mesh size). Grind 15 g of the sieved sample with 15 g sodium sulphate in a mortar and transfer mixture into the extraction thimble. Place the extraction thimble into the Soxhlet extractor and fill the flask with 50 ml n-pentane. Set up apparatus, adjust the temperature of heating unit (hotplate or water bath) to 70 °C and reflux for 1 h. Apply organic extract to the CHROMABOND® ALOX N column and collect solvent in the volumetric flask 50 ml. Rinse the column with n-pentane, until the volumetric flask is filled slightly below the ring mark and then top up the volumetric flask to the ring mark. Close volumetric flask and mix by shaking slightly.





### 2. Blindwert

Ca. 20 ml n-Pentan über die zweite CHROMABOND® Säule geben und in einem Erlenmeyerkolben auffangen.

### 3. Abdampfen des Extraktionsmittels

Jeweils 2,0 ml der Pentanextrakte mittels der Pipette mit Auslaufstopp in eine leere Reaktionsküvette überführen. Reaktionsküvette in den Thermoblock einsetzen (Programm 70 °C / 30 min) und Pentan abdampfen.

### 4. CSB-Bestimmung der Kohlenwasserstoffe

Nach Abdampfen des Extraktionsmittels jede Reaktionsküvette über die Schraubkupplung mit der KW 300-Rundküvette, die die Reaktionssäure enthält, dicht verschrauben. Die verschraubten Küvetten auf den Kopf drehen und in den Thermoblock einsetzen. (Reaktionsküvette unten, KW 300-Rundküvette oben). Heizblock auf 148 °C und 2 h einstellen und starten. Nach 2 h Rundküvetten aus dem Heizblock entnehmen und 15 min abkühlen lassen. Obere Rundküvette abschrauben und in der unteren Küvette die Lösung langsam mit 4,0 ml CSB-freiem Wasser überschichten (*nicht mischen*). Obere Küvette wieder aufschrauben und die Lösung noch einmal vorsichtig schütteln (**Vorsicht: Küvetten werden heiß**). Vor der photometrischen Messung die Rundküvetten auf Raumtemperatur abkühlen lassen.

Messung:

Rundküvette einsetzen.

Fehlerursache	Auswirkung <sup>1)</sup>	Fehlerbeseitigung
Die Abdampfzeit für das Lösemittel wird nicht eingehalten → Pentanreste	+	Abdampfzeit von 30 min einhalten
Einsatz falscher Pipetten bei der Extraktdosierung → Pipette tropft a) Tropfen geht verloren b) Tropfen zuviel	- +	Einsatz von Pipetten mit Direktverdrängung oder Einsatz des Auslaufstopps
Unsaubere Arbeitsweise, Reagenzienverunreinigungen → höherer KW-Gehalt	+	Blindwert bestimmen
Verdampfungsverluste → Aufkonzentrierung der Probe	+	Zügiges Arbeiten, Gefäße gut verschließen
Falsches Auffüllen der Messkolben a) bis oberhalb der Ringmarke b) bis unterhalb der Ringmarke	- +	Genaueres Arbeiten
Verdünnungsfehler bei der Zugabe von 4,0 ml CSB-freiem Wasser a) Volumen zu gering b) Volumen zu hoch	+ -	Genaueres Arbeiten, exaktes Pipettieren
Hoher Anteil leichtflüchtiger Kohlenwasserstoffe	-	KW mit einer Siedetemperatur < 120 °C sind nicht bestimmbar

<sup>1)</sup> Fehler führt zu Über- (+) bzw. Unterbefund (-).

<b>2. Blank value</b>
Apply about 20 ml n-Pentan to the second CHROMABOND® ALOX N column and collect solvent in a beaker.

<b>3. Evaporation of the extraction solvent</b>
2 ml each of the pentane extracts are transferred into an empty reaction tube with the aid of a pipette with stop valve. Place reaction tube in the heating block (programme 70 °C, 30 min) and evaporate the pentane.

<b>4. COD determination of the hydrocarbons</b>
After evaporation of the extraction solvent each reaction tube is tightly joined to a HC 300 test tube - which contains the acid reagent - with the aid of a threaded union. Turn the joined tubes top-down and place them into the heating block (reaction tube below, HC 300 tube on top). Set heating block to 148 °C and 2 h and start. After 2 h remove tubes from the heating block, allow to cool for 15 min. Remove upper tube and carefully add 4.0 ml COD-free water on top of the lower tube ( <i>do not mix</i> ). Again screw the upper tube onto the reaction tube, and shake carefully ( <b>Caution: tubes become hot</b> ). For photometric measurement equilibrate the temperature of the test tubes to 20 °C.

Measurement:

Insert test tube.

Source of error	Result <sup>1)</sup>	Correction
Evaporation time of the solvent was not observed → residual pentane	+	Observe evaporation time of 30 min
Use of wrong pipette when dosing the extracts → pipette drips a) drop is lost b) drop too much	- +	Use pipettes with direct displacement or use stop valve
Unclean operation, reagent impurities → higher HC content	+	Determine blank value
Losses due to evaporation → concentration of the sample	+	Uninterrupted speedy work, keep vessels closed
Error when volumetric flask is topped up a) above the ring mark b) below the ring mark	- +	Precise work
Dilution error during addition of 4.0 ml COD-free water a) volume too low b) volume too high	+ -	Precise work, exact pipetting
High content of volatile hydrocarbons	-	HC with boiling temperature < 120 °C cannot be determined

<sup>1)</sup> Error causes high (+) or low (-) results.

# NANOCOLOR® Mangan 10

Manganese / Manganèse / Manganeso

**Test 0-58**

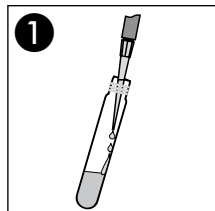
REF 985 058

470 nm

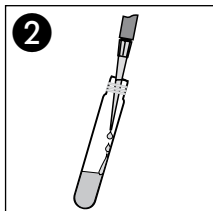
Method(e) / Método

0581

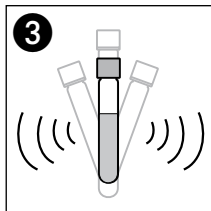
0.1 - 10.0 mg/l Mn



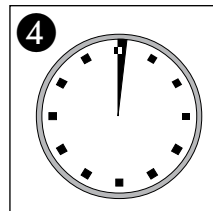
**1**  
4.0 ml Probe  
Sample  
Echantillon  
Muestra



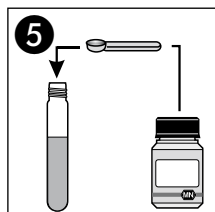
**2**  
500 µl R2



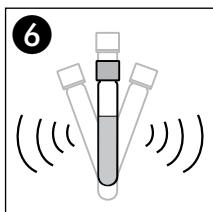
**3**  
Schütteln  
Shake  
Agiter  
Agitar



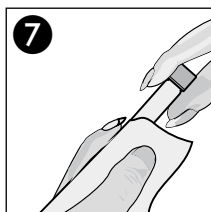
**4**  
1'00 min



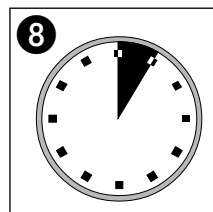
**5**  
1 x R3



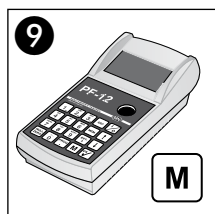
**6**  
Kräftig Schütteln  
Shake well  
Bien Agiter  
Agitar intensamente



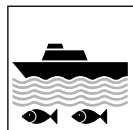
**7**  
Säubern  
Clean  
Nettoyer  
Limpiar



**8**  
5'00 min



Messung  
Measurement  
Mesure  
Medición



Meerwasser  
Sea water  
Eau de mer  
Agua de mar

# NANOCOLOR® Methanol 15

Méthanol / Metanol

**Test 8-59**

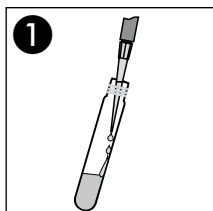
REF 985 859

620 nm

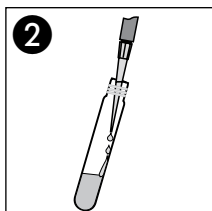
Method(e) / Método

0591

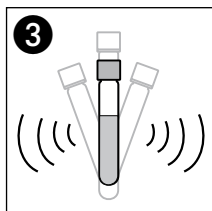
0.2 - 15.0 mg/l MeOH



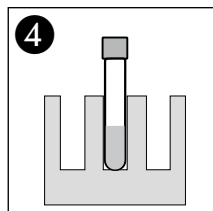
3.0 ml R1



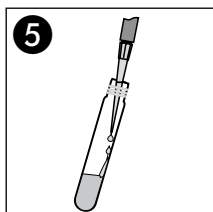
1.5 ml Probe  
Sample  
Echantillon  
Muestra



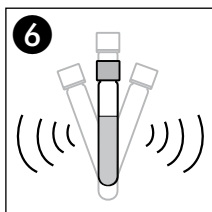
Schütteln  
Shake  
Agiter  
Agitar



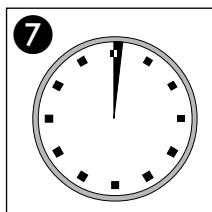
25 °C / 30 min



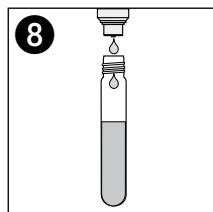
100 µl R2



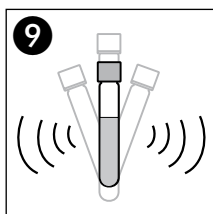
Schütteln  
Shake  
Agiter  
Agitar



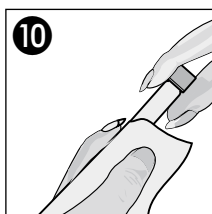
1'00 min



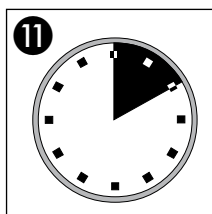
2 x R3



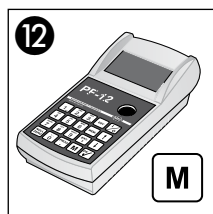
Schütteln  
Shake  
Agiter  
Agitar



Säubern  
Clean  
Nettoyer  
Limpiar



10'00 min



Messung  
Measurement  
Mesure  
Medición



Meerwasser  
Sea water  
Eau de mer  
Agua de mar

# NANOCOLOR® Nickel 7

Níquel

470 nm

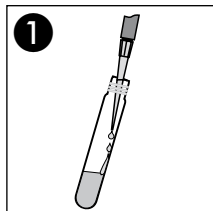
Method(e) / Método

0611

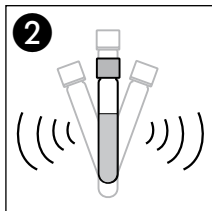
0.10 - 7.00 mg/l Ni<sup>2+</sup>

**Test 0-61**

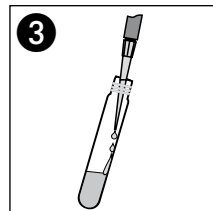
REF 985 061



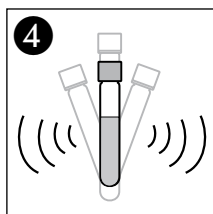
**1**  
5.0 ml Probe  
Sample  
Echantillon  
Muestra



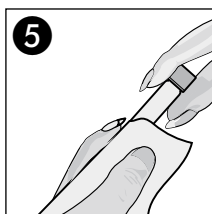
**2**  
Schütteln  
Shake  
Agiter  
Agitar



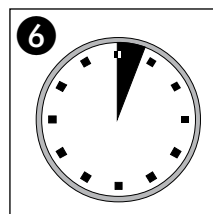
**3**  
1.0 ml R2



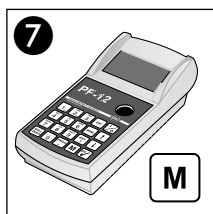
**4**  
Schütteln  
Shake  
Agiter  
Agitar



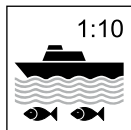
**5**  
Säubern  
Clean  
Nettoyer  
Limpiar



**6**  
3'00 min



**7**  
Messung  
Measurement  
Mesure  
Medición



1:10

Meerwasser  
Sea water  
Eau de mer  
Agua de mar

# NANOCOLOR® Nitrat 50

Nitrate / Nitrato

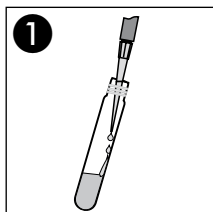
345 nm

Method(e) / Método

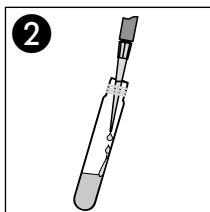
0641 0.3 - 22.0 mg/l  $\text{NO}_3\text{-N}$   
0642 2 - 100 mg/l  $\text{NO}_3^-$

**Test 0-64**

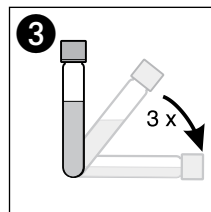
REF 985 064



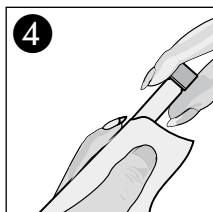
**1**  
500 µl Probe  
Sample  
Echantillon  
Muestra



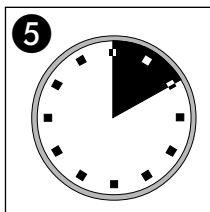
**2**  
500 µl R2



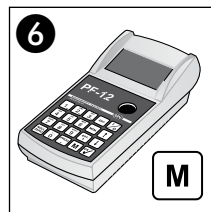
**3**  
Umschwenken  
Shake gently  
Secouer légèrement  
Mezclar volteándolo



**4**  
Säubern  
Clean  
Nettoyer  
Limpiar



**5**  
10'00 min



**6**  
Messung  
Measurement  
Mesure  
Medición



Meerwasser  
Sea water  
Eau de mer  
Agua de mar

# NANOCOLOR® Nitrat 8

Nitrate / Nitrato

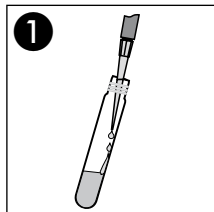
365 nm

Method(e) / Método

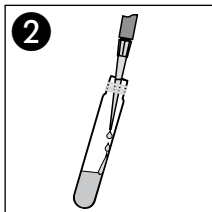
0651 0.30 - 8.00 mg/l NO<sub>3</sub>-N  
0652 1.3 - 35.0 mg/l NO<sub>3</sub><sup>-</sup>

**Test 0-65**

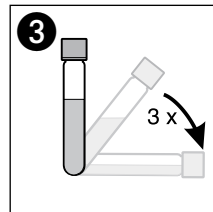
REF 985 065



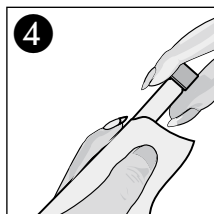
**1**  
500 µl Probe  
Sample  
Echantillon  
Muestra



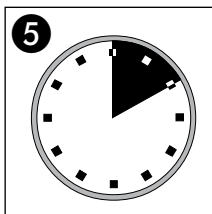
**2**  
500 µl R2



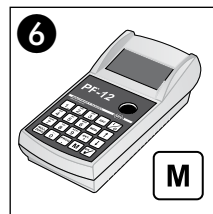
**3**  
Umschwenken  
Shake gently  
Secouer légèrement  
Mezclar volteándolo



**4**  
Säubern  
Clean  
Nettoyer  
Limpiar



**5**  
10'00 min



**6**  
Messung  
Measurement  
Mesure  
Medición



Meerwasser  
Sea water  
Eau de mer  
Agua de mar

# NANOCOLOR® Nitrat 250

Nitrate / Nitrato

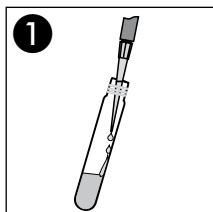
345 nm

Method(e) / Método

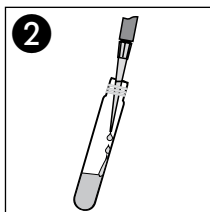
0661 4 - 60 mg/l NO<sub>3</sub>-N  
0662 20 - 250 mg/l NO<sub>3</sub>

**Test 0-66**

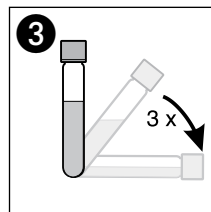
REF 985 066



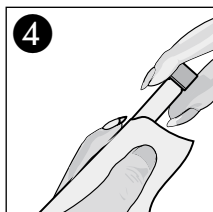
**200 µl** Probe  
Sample  
Echantillon  
Muestra



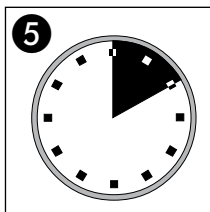
**500 µl** R2



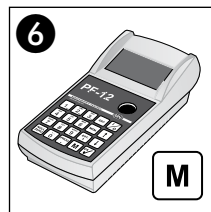
Umschwenken  
Shake gently  
Secouer légèrement  
Mezclar volteándolo



Säubern  
Clean  
Nettoyer  
Limpiar



**10'00 min**



Messung  
Measurement  
Mesure  
Medición



Meerwasser  
Sea water  
Eau de mer  
Agua de mar



# NANOCOLOR® Nitrit 2

Nitrite / Nitrito

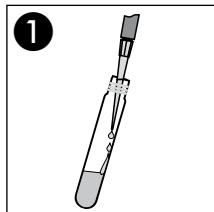
540 nm

Method(e) / Método

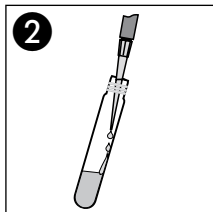
0681 0.003 - 0.460 mg/l NO<sub>2</sub>-N  
0682 0.02 - 1.50 mg/l NO<sub>2</sub><sup>-</sup>

**Test 0-68**

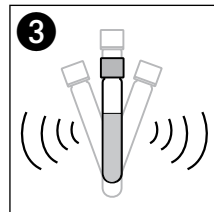
REF 985 068



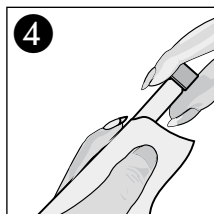
**1**  
4.0 ml Probe  
Sample  
Echantillon  
Muestra



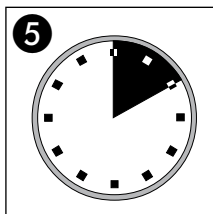
**2**  
500 µl R2



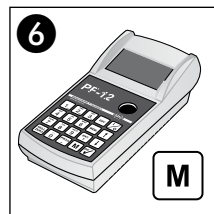
**3**  
Schütteln  
Shake  
Agiter  
Agitar



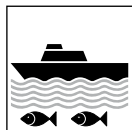
**4**  
Säubern  
Clean  
Nettoyer  
Limpiar



**5**  
10'00 min



**6**  
Messung  
Measurement  
Mesure  
Medición



Meerwasser  
Sea water  
Eau de mer  
Agua de mar

# NANOCOLOR® Nitrit 4

Nitrite / Nitrito

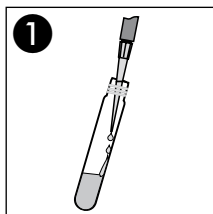
540 nm

Method(e) / Método

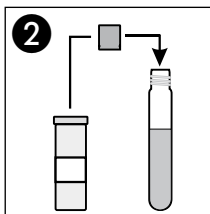
0691 0.1 - 4.0 mg/l  $\text{NO}_2\text{-N}$   
0692 0.3 - 13.0 mg/l  $\text{NO}_2^-$

**Test 0-69**

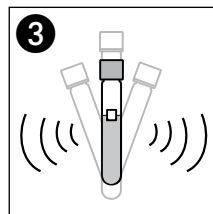
REF 985 069



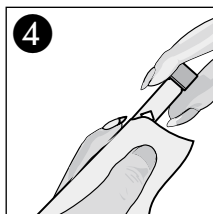
**1**  
200 µl Probe  
Sample  
Echantillon  
Muestra



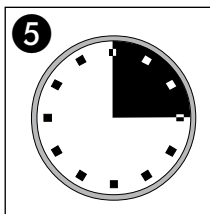
**2**  
1 x NANOFIX R2



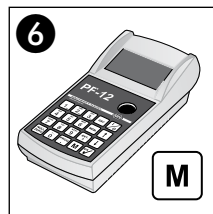
**3**  
Schütteln  
Shake  
Agiter  
Agitar



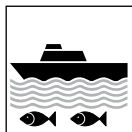
**4**  
Säubern  
Clean  
Nettoyer  
Limpiar



**5**  
15'00 min



**6**  
Messung  
Measurement  
Mesure  
Medición



Meerwasser  
Sea water  
Eau de mer  
Agua de mar

# NANOCOLOR® POC 200

Polyoxycarbonsäuren / Polyoxycarboxylic acids

Acides polyoxycarboxyliques / Acidos polioxicarboxílicos

436 nm

Method(e) / Método

**0701** 20 - 200 mg/l POC AS 2020

**0702** 20 - 200 mg/l POC HS 2020

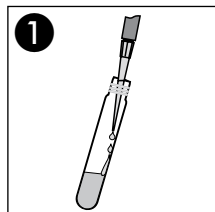
**0703** 20 - 200 mg/l Polystabil® DK

**Test 0-70**

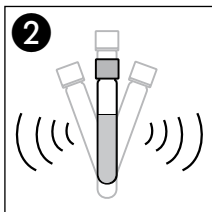
REF 985 070

Anwendung im Dampfkessel / Application for steam boilers

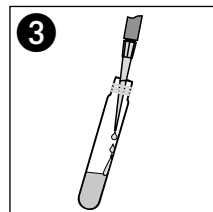
Application en chaudière / Aplicación en caldera de vapor



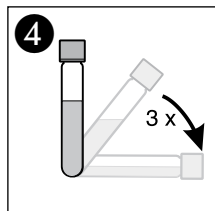
**1**  
1.0 ml Probe  
Sample  
Echantillon  
Muestra



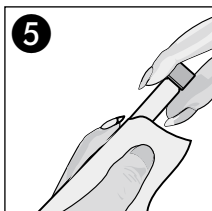
**2**  
Schütteln  
Shake  
Agiter  
Agitar



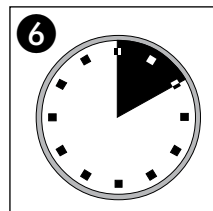
**3**  
1.0 ml R2



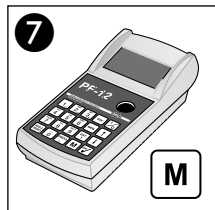
**4**  
Umschwenken  
Shake gently  
Secouer légèrement  
Mezclar volteándolo



**5**  
Säubern  
Clean  
Nettoyer  
Limpiar

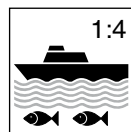


**6**  
10'00 min



**7**  
Messung  
Measurement  
Mesure  
Medición

Meerwasser  
Sea water  
Eau de mer  
Agua de mar



# NANOCOLOR® POC 200

Polyoxycarbonsäuren / Polyoxycarboxylic acids

Acides polyoxycarboxyliques / Acidos polioxicarboxílicos

436 nm

Method(e) / Método

0704

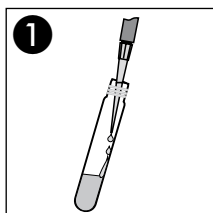
2 - 40 mg/l Polystabil® KWI

**Test 0-70**

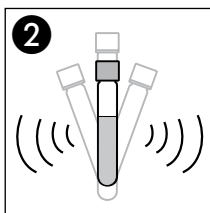
REF 985 070

**Anwendung im Kühlwasser / Application for cooling water**

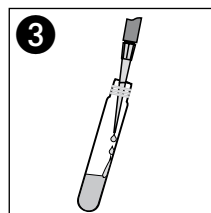
**Application dans l'eau de circulation / Aplicación en agua de circulación**



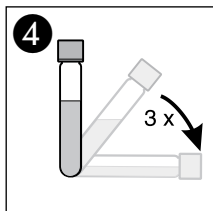
**1**  
4.0 ml Probe  
Sample  
Echantillon  
Muestra



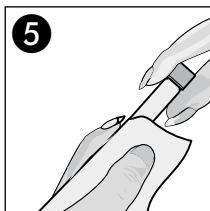
**2**  
Schütteln  
Shake  
Agiter  
Agitar



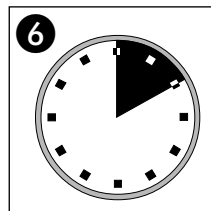
**3**  
1.0 ml R2



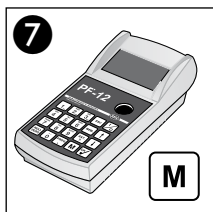
**4**  
Umschwenken  
Shake gently  
Secouer légèrement  
Mezclar volteándolo



**5**  
Säubern  
Clean  
Nettoyer  
Limpiar

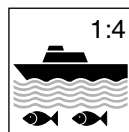


**6**  
10'00 min



**7**  
Messung  
Measurement  
Measure  
Medición

Meerwasser  
Sea water  
Eau de mer  
Agua de mar



# NANOCOLOR® Peroxid 2

Peroxide / Peroxyde / Peróxido

620 nm

Method(e) / Método

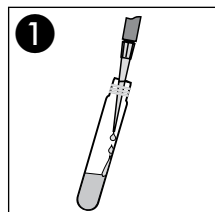
8711

0.03 - 2.00 mg/l H<sub>2</sub>O<sub>2</sub>

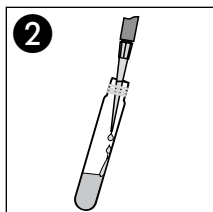
**Test 8-71**

REF 985 871

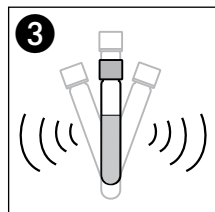
## Nullwert / Blanc value / Zéro / Cero



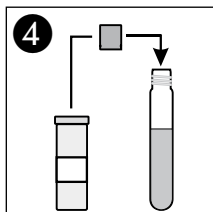
4.0 ml dest. Wasser  
dist. water  
d'eau distillée  
agua dest.



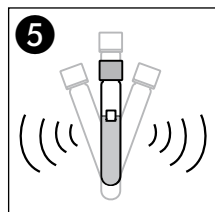
200 µl R2



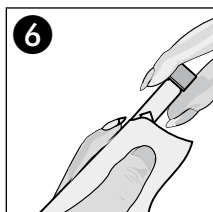
Schütteln  
Shake  
Agiter  
Agitar



1 x **NANOFIX R3**

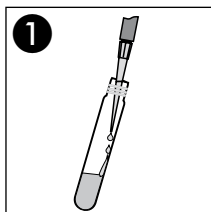


Schütteln  
Shake  
Agiter  
Agitar

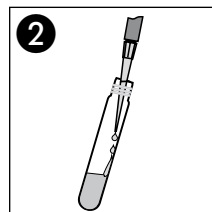


Säubern  
Clean  
Nettoyer  
Limpiar

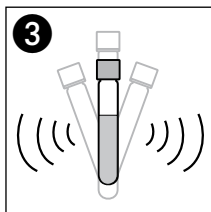
## Messwert / Sample / Echantillon / Muestra



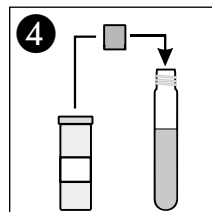
4.0 ml Probe  
Sample  
Echantillon  
Muestra



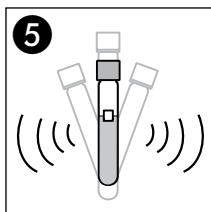
200 µl R2



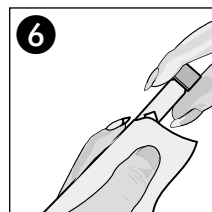
Schütteln  
Shake  
Agiter  
Agitar



1 x **NANOFIX R3**



Schütteln  
Shake  
Agiter  
Agitar



Säubern  
Clean  
Nettoyer  
Limpiar

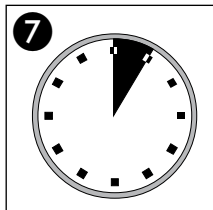
# NANOCOLOR® Peroxid 2

Peroxide / Peroxyde / Peróxido

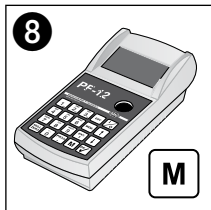
**Test 8-71**

REF 985 871

## Nullwert / Blanc value / Zéro / Cero

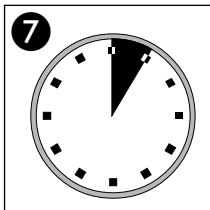


5'00 min

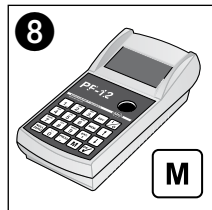


Messung  
Measurement  
Mesure  
Medición

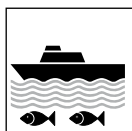
## Messwert / Sample / Echantillon / Muestra



5'00 min



Messung  
Measurement  
Mesure  
Medición



Meerwasser  
Sea water  
Eau de mer  
Agua de mar

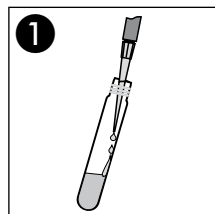
436 / 540 nm

Method(e) / Método

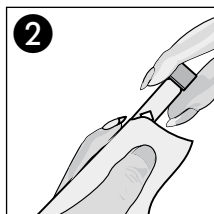
0721

pH 6.5 - 8.2

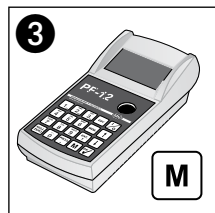
### Nullwert / Blanc value / Zéro / Cero



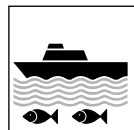
10 ml Probe  
Sample  
Echantillon  
Muestra



Säubern  
Clean  
Nettoyer  
Limpiar

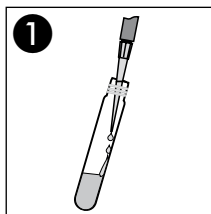


Messung  
Measurement  
Mesure  
Medición

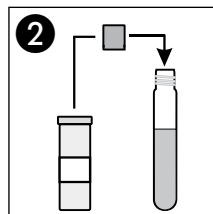


Meerwasser  
Sea water  
Eau de mer  
Agua de mar

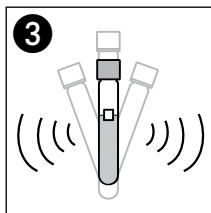
### Messwert / Sample / Echantillon / Muestra



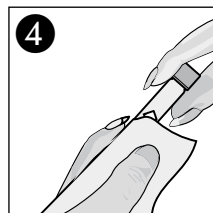
10 ml Probe  
Sample  
Echantillon  
Muestra



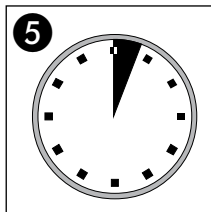
1 x NANOFIX pH



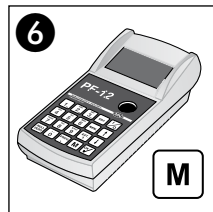
Schütteln  
Shake  
Agiter  
Agitar



Säubern  
Clean  
Nettoyer  
Limpiar



3'00 min



Messung  
Measurement  
Mesure  
Medición

# NANOCOLOR® Sulfid 3

Sulphide / Sulfure / Sulfuro

620 nm

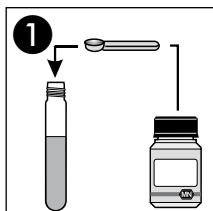
Method(e) / Método

0731

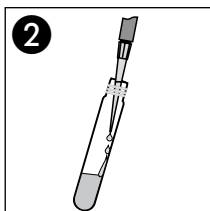
0.05 - 3.00 mg/l S<sup>2-</sup>

**Test 0-73**

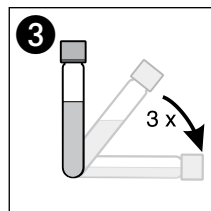
REF 985 073



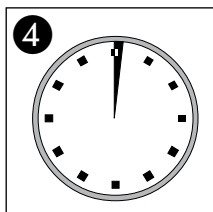
1 x R2



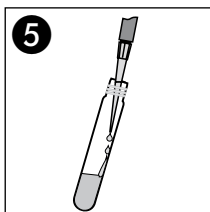
4.0 ml Probe  
Sample  
Echantillon  
Muestra



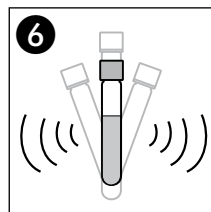
Umschwenken  
Shake gently  
Secouer légèrement  
Mezclar volteándolo



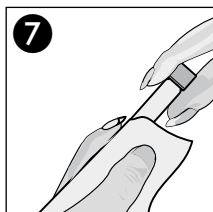
1'00 min



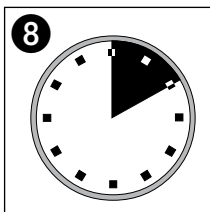
200 µl R2



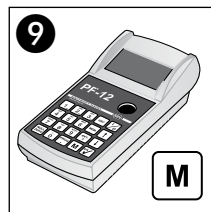
Schütteln  
Shake  
Agiter  
Agitar



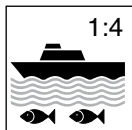
Säubern  
Clean  
Nettoyer  
Limpiar



10'00 min



Messung  
Measurement  
Mesure  
Medición



1:4  
Meerwasser  
Sea water  
Eau de mer  
Agua de mar



# NANOCOLOR® Phenol(ic)-Index 5

Indice phénol / Indice fenolico

470 nm

Method(e) / Método

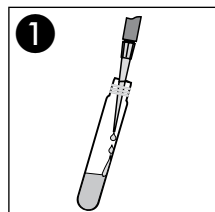
0741

0.2 - 5.0 mg/l

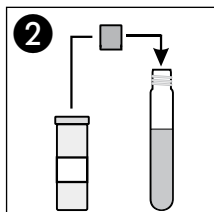
**Test 0-74**

REF 985 074

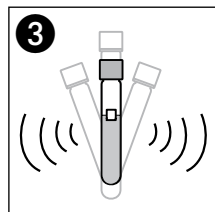
## Nullwert / Blanc value / Zéro / Cero



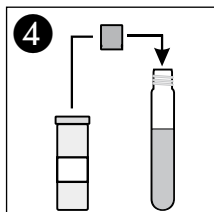
**1**  
4.0 ml dest. Wasser  
dist. water  
d'eau distillée  
agua dest.



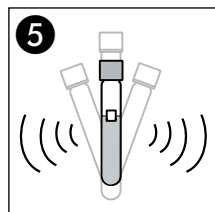
**2**  
1 x **NANOFIX R2**



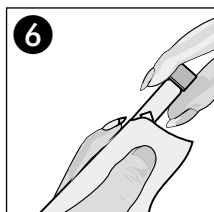
**3**  
Schütteln  
Shake  
Agiter  
Agitar



**4**  
1 x **NANOFIX R3**

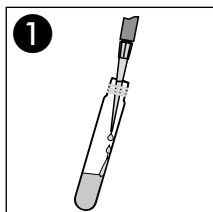


**5**  
Schütteln  
Shake  
Agiter  
Agitar

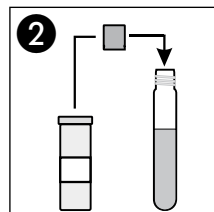


**6**  
Säubern  
Clean  
Nettoyer  
Limpiar

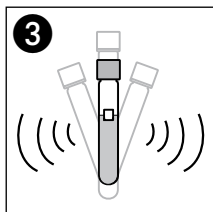
## Messwert / Sample / Echantillon / Muestra



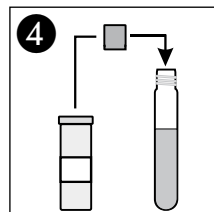
**1**  
4.0 ml Probe  
Sample  
Echantillon  
Muestra



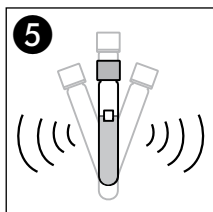
**2**  
1 x **NANOFIX R2**



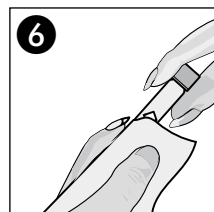
**3**  
Schütteln  
Shake  
Agiter  
Agitar



**4**  
1 x **NANOFIX R3**

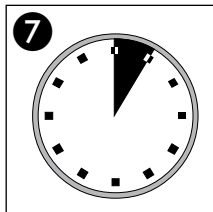


**5**  
Schütteln  
Shake  
Agiter  
Agitar

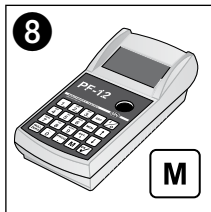


**6**  
Säubern  
Clean  
Nettoyer  
Limpiar

### Nullwert / Blanc value / Zéro / Cero

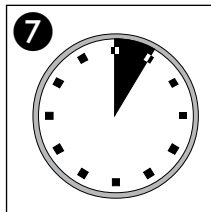


5'00 min

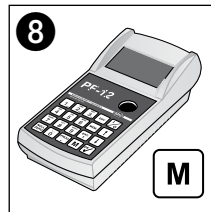


Messung  
Measurement  
Mesure  
Medición

### Messwert / Sample / Echantillon / Muestra



5'00 min



Messung  
Measurement  
Mesure  
Medición



Meerwasser  
Sea water  
Eau de mer  
Agua de mar

# NANOCOLOR® *gesamt-Phosphat 1*

*total Phosphate(s) / Fosfato total*

**Test 0-76**

REF 985 076

690 nm

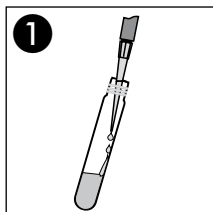
Method(e) / Método

0761

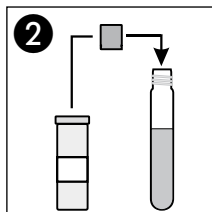
0.05 - 1.50 mg/l P

0762

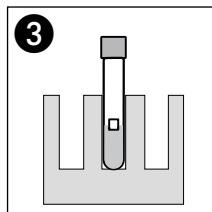
0.2 - 5.0 mg/l PO<sub>4</sub><sup>3-</sup>



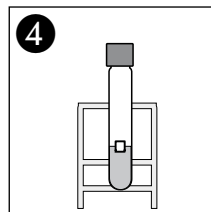
**4.0 ml** Probe  
Sample  
Echantillon  
Muestra



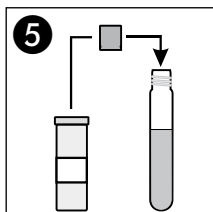
**1 x NANOFIX R2**



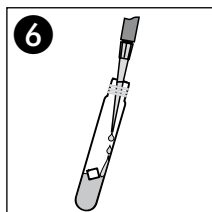
**120 °C / 30 min**  
oder / or / ou / o  
**100 °C / 1 h**



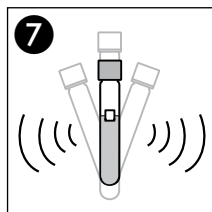
Abkühlen lassen  
Allow to cool  
Laisser refroidir  
Dejar enfriar



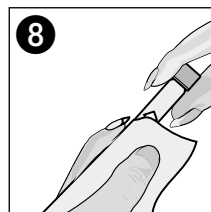
**1 x NANOFIX R3**



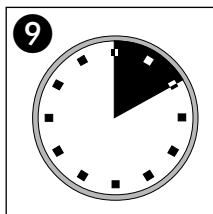
**200 µl R4**



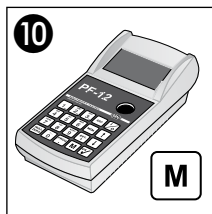
Schütteln  
Shake  
Agiter  
Agitar



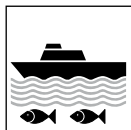
Säubern  
Clean  
Nettoyer  
Limpiar



**10'00 min**



Messung  
Measurement  
Mesure  
Medición



Meerwasser  
Sea water  
Eau de mer  
Agua de mar

# NANOCOLOR® ortho-Phosphat 1

ortho Phosphate(s) / orto Fosfato

**Test 0-76A**

REF 985 076

690 nm

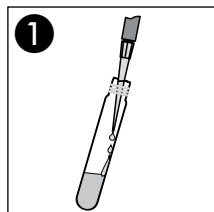
Method(e) / Método

0765

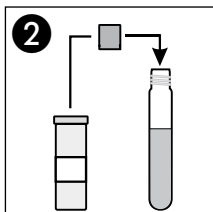
0.05 - 1.50 mg/l PO<sub>4</sub>-P

0766

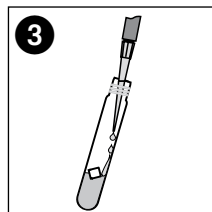
0.2 - 5.0 mg/l PO<sub>4</sub><sup>3-</sup>



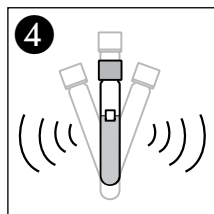
4.0 ml Probe  
Sample  
Echantillon  
Muestra



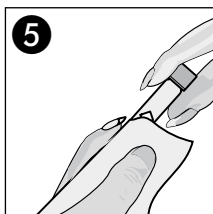
1 x NANOFIX R3



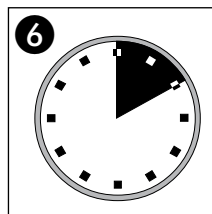
200 µl R4



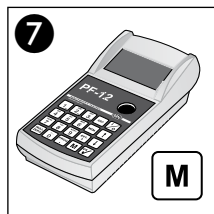
Schütteln  
Shake  
Agiter  
Agitar



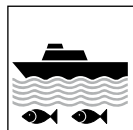
Säubern  
Clean  
Nettoyer  
Limpiar



10'00 min



Messung  
Measurement  
Mesure  
Medición



Meerwasser  
Sea water  
Eau de mer  
Agua de mar

# NANOCOLOR® gesamt-Phosphat 50

## Test 0-79

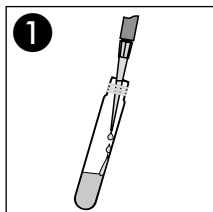
total Phosphate(s) / Fosfato total

REF 985 079

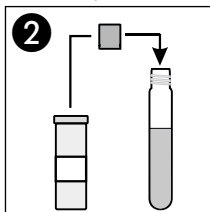
436 nm

Method(e) / Método

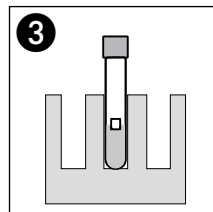
0791	10.0 - 50.0 mg/l P
0791	30 - 150 mg/l $\text{PO}_4^{3-}$
0793	23 - 110 mg/l $\text{P}_2\text{O}_5$



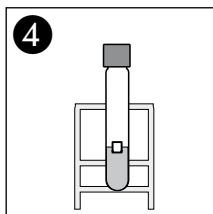
**4.0 ml** Probe  
Sample  
Echantillon  
Muestra



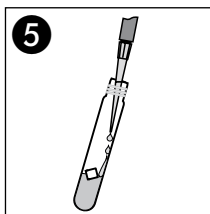
**1 x NANOFIX R2**



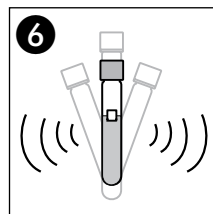
**120 °C / 30 min**  
oder / or / ou / o  
**100 °C / 1 h**



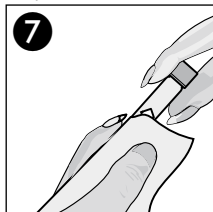
Abkühlen lassen  
Allow to cool  
Laisser refroidir  
Dejar enfriar



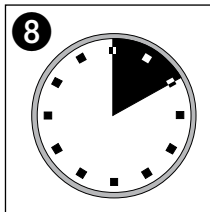
**1.0 ml R3**



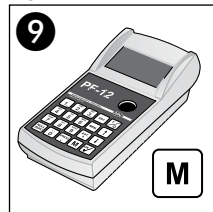
Schütteln  
Shake  
Agiter  
Agitar



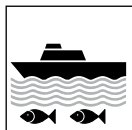
Säubern  
Clean  
Nettoyer  
Limpiar



**10'00 min**



Messung  
Measurement  
Mesure  
Medición



Meerwasser  
Sea water  
Eau de mer  
Agua de mar

# NANOCOLOR® ortho-Phosphat 50

ortho Phosphate(s) / orto Fosfato

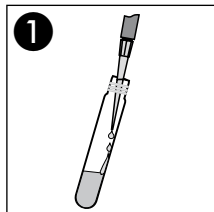
**Test 0-79A**

REF 985 079

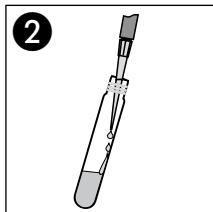
436 nm

Method(e) / Método

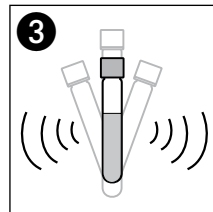
<b>0794</b>	10.0 - 50.0 mg/l PO <sub>4</sub> -P
<b>0795</b>	30 - 150 mg/l PO <sub>4</sub> <sup>3-</sup>
<b>0796</b>	23 - 110 mg/l P <sub>2</sub> O <sub>5</sub>



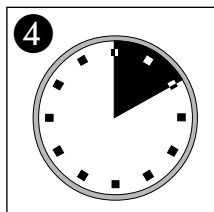
**4.0 ml** Probe  
Sample  
Echantillon  
Muestra



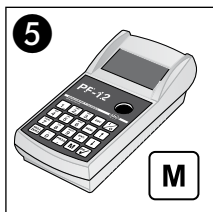
**1.0 ml** R3



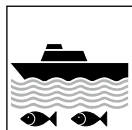
Schütteln  
Shake  
Agiter  
Agitar



**10'00** min



Messung  
Measurement  
Mesure  
Medición



Meerwasser  
Sea water  
Eau de mer  
Agua de mar

# NANOCOLOR® gesamt-Phosphat 15

**Test 0-80**

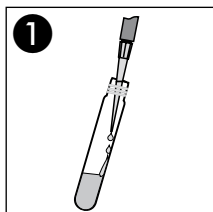
**total Phosphate(s) / Fosfato total**

REF 985 080

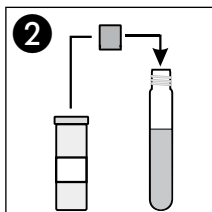
690 nm

Method(e) / Método

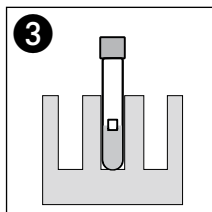
<b>0801</b>	0.30 - 15.00 mg/l P
<b>0802</b>	1.0 - 45.0 mg/l $\text{PO}_4^{3-}$
<b>0803</b>	0.7 - 34.5 mg/l $\text{P}_2\text{O}_5$



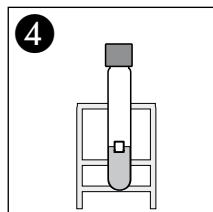
**500 µl** Probe  
Sample  
Echantillon  
Muestra



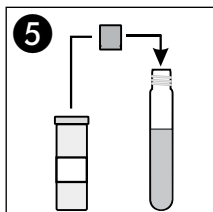
**1 x NANOFIX R2**



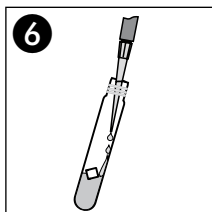
**120 °C / 30 min**  
oder / or / ou / o  
**100 °C / 1 h**



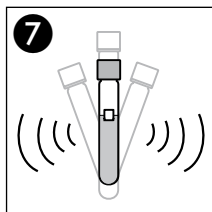
Abkühlen lassen  
Allow to cool  
Laisser refroidir  
Dejar enfriar



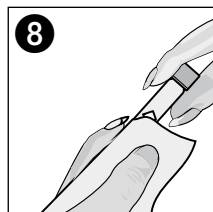
**1 x NANOFIX R3**



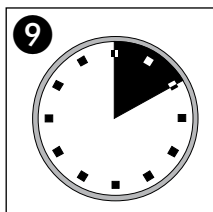
**200 µl R4**



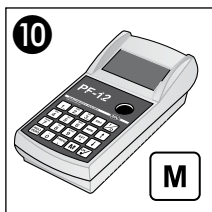
Schütteln  
Shake  
Agiter  
Agitar



Säubern  
Clean  
Nettoyer  
Limpiar

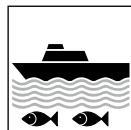


**10'00 min**



Messung  
Measurement  
Mesure  
Medición

Meerwasser  
Sea water  
Eau de mer  
Agua de mar



# NANOCOLOR® ortho-Phosphat 15

ortho Phosphate(s) / orto Fosfato

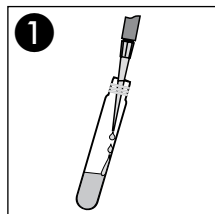
**Test 0-80A**

REF 985 080

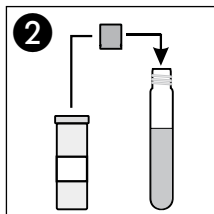
690 nm

Method(e) / Método

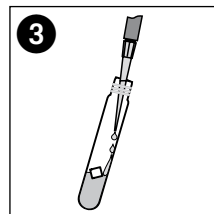
<b>0805</b>	0.30 - 15.00 mg/l $\text{PO}_4\text{-P}$
<b>0806</b>	1.0 - 45.0 mg/l $\text{PO}_4^{3-}$
<b>0804</b>	0.7 - 34.5 mg/l $\text{P}_2\text{O}_5$



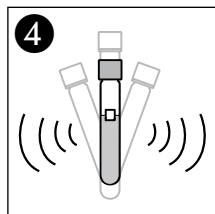
**1**  
500 µl Probe  
Sample  
Echantillon  
Muestra



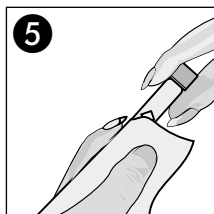
**2**  
1 x NANOFIX R3



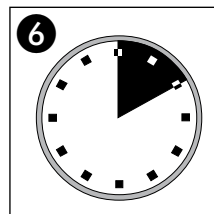
**3**  
200 µl R4



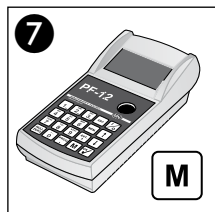
**4**  
Schütteln  
Shake  
Agiter  
Agitar



**5**  
Säubern  
Clean  
Nettoyer  
Limpiar

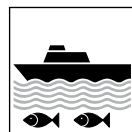


**6**  
10'00 min



Messung  
Measurement  
Mesure  
Medición

Meerwasser  
Sea water  
Eau de mer  
Agua de mar





# NANOCOLOR® gesamt-Phosphat 5

total Phosphate(s) / Fosfato total

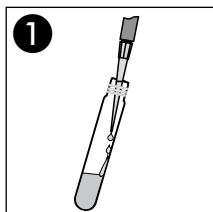
**Test 0-81**

REF 985 081

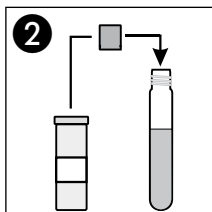
690 nm

Method(e) / Método

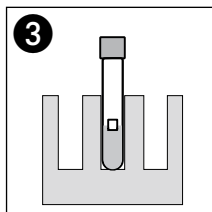
0811 0.20 - 5.00 mg/l P  
0812 0.5 - 15.0 mg/l PO<sub>4</sub><sup>3-</sup>



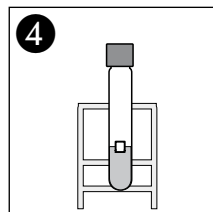
**1**  
1.0 ml Probe  
Sample  
Echantillon  
Muestra



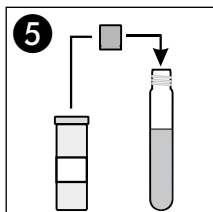
**2**  
1 x NANOFIX R2



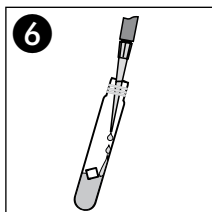
**3**  
120 °C / 30 min  
oder / or / ou / o  
100 °C / 1 h



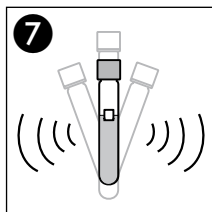
**4**  
Abkühlen lassen  
Allow to cool  
Laisser refroidir  
Dejar enfriar



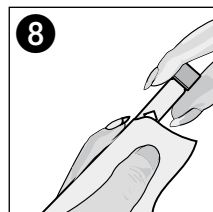
**5**  
1 x NANOFIX R3



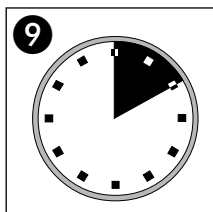
**6**  
200 µl R4



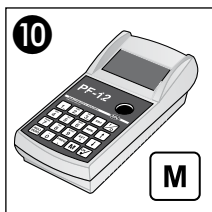
**7**  
Schütteln  
Shake  
Agiter  
Agitar



**8**  
Säubern  
Clean  
Nettoyer  
Limpiar

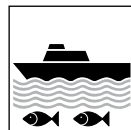


**9**  
10'00 min



**10**  
Messung  
Measurement  
Mesure  
Medición

Meerwasser  
Sea water  
Eau de mer  
Agua de mar



# NANOCOLOR® ortho-Phosphat 5

ortho Phosphate(s) / orto Fosfato

**Test 0-81A**

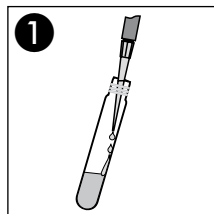
REF 985 081

690 nm

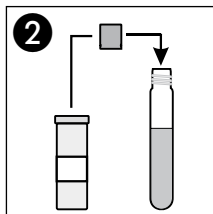
Method(e) / Método

0815 0.20 - 5.00 mg/l  $\text{PO}_4\text{-P}$

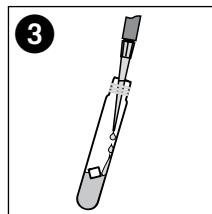
0816 0.5 - 15.0 mg/l  $\text{PO}_4^{3-}$



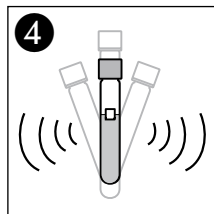
**1**  
1.0 ml Probe  
Sample  
Echantillon  
Muestra



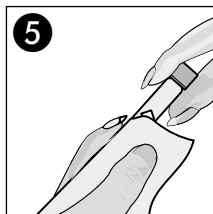
**2**  
1 x NANOFIX R3



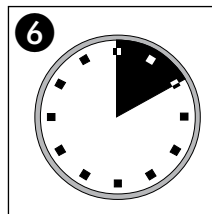
**3**  
200 µl R4



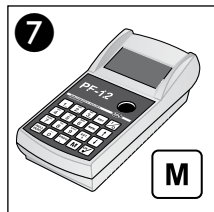
**4**  
Schütteln  
Shake  
Agiter  
Agitar



**5**  
Säubern  
Clean  
Nettoyer  
Limpiar

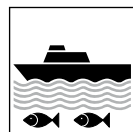


**6**  
10'00 min



**7**  
Messung  
Measurement  
Mesure  
Medición

Meerwasser  
Sea water  
Eau de mer  
Agua de mar



# NANOCOLOR® Sauerstoff 12

Oxygen / Oxygène / Oxígeno

436 nm

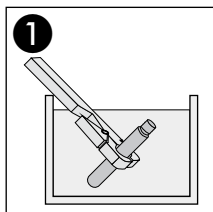
Method(e) / Método

0821

0.5 - 12.0 mg/l O<sub>2</sub>

**Test 0-82**

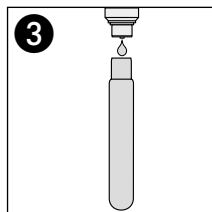
REF 985 082



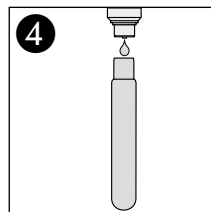
Probe  
Sample  
Echantillon  
Muestra



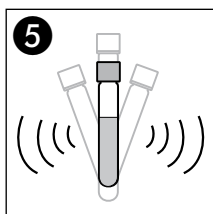
Nullwert  
Blank value  
Zéro  
Cero



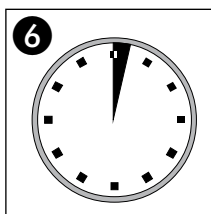
2 x ◊ R1



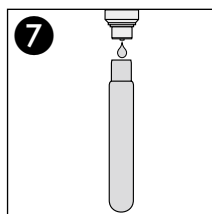
2 x ◊ R2



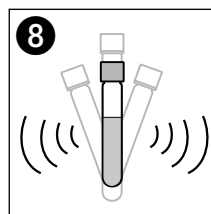
Schütteln  
Shake  
Agiter  
Agitar



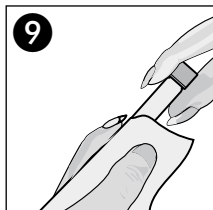
2'00 min



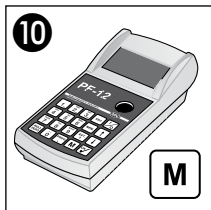
5 x ◊ R3



Schütteln  
Shake  
Agiter  
Agitar

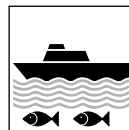


Säubern  
Clean  
Nettoyer  
Limpiar



Messung  
Measurement  
Mesure  
Medición

Meerwasser  
Sea water  
Eau de mer  
Agua de mar



# NANOCOLOR® *gesamt-Stickstoff TN<sub>b</sub> 22* *total Nitrogen / Azote total / Nitrogeno total*

**Test 0-83**

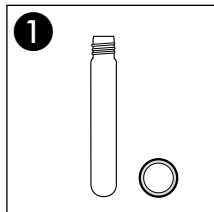
REF 985 083

345 nm

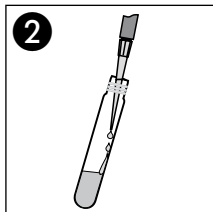
Method(e) / Método

**0831**

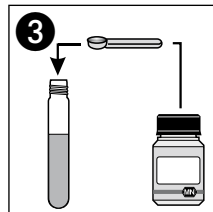
0.5 - 22.0 mg/l N



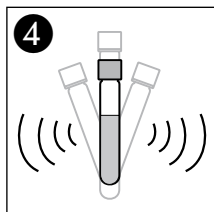
**1**  
**leere** Rundküvette  
**empty** test tube  
**cuve** ronde **vide**  
tubo de test **vacío**



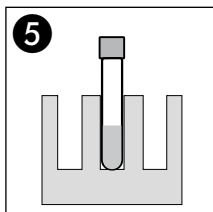
**2**  
**5.0 ml** Probe  
Sample  
Echantillon  
Muestra



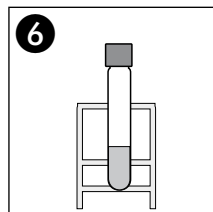
**3**  
**1 x orange / naranja**  
Aufschlussreagenz  
Decomposition reagent  
Réactif de minéralisation  
Reactivo de descomposición



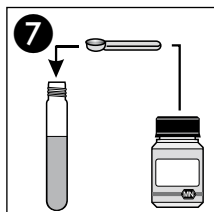
**4**  
Schütteln  
Shake  
Agiter  
Agitar



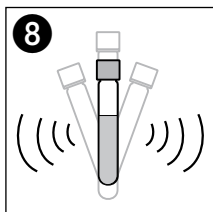
**5**  
**120 °C / 30 min**  
oder / or / ou / o  
**100 °C / 1 h**



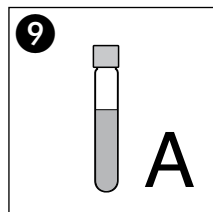
**6**  
Abkühlen lassen  
Allow to cool  
Laisser refroidir  
Dejar enfriar



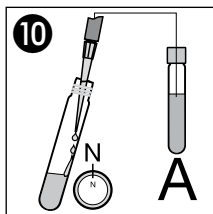
**7**  
**1 x schwarz / black / noir / negro**  
Kompensationsreagenz  
Compensation reagent  
Réactif de compensation  
Reactivo de compensación



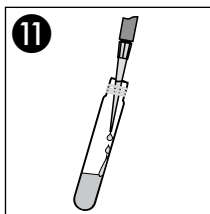
**8**  
Schütteln  
Shake  
Agiter  
Agitar



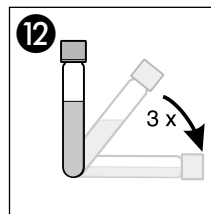
**9**  
Aufschlusslösung **A**  
Decomposed solution **A**  
Solution de minéralisation **A**  
Solución de descomposición **A**



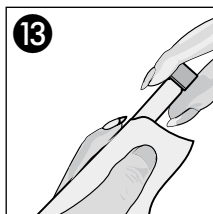
500 µl A



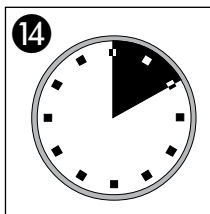
500 µl R2



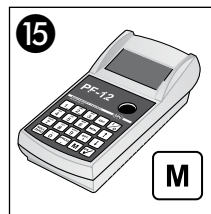
Umschwenken  
Shake gently  
Secouer légèrement  
Mezclar volteándolo



Säubern  
Clean  
Nettoyer  
Limpiar



10'00 min



Messung  
Measurement  
Mesure  
Medición



Meerwasser  
Sea water  
Eau de mer  
Agua de mar

# NANOCOLOR® Resthärte 1

Residual Hardness / Dureté résiduelle  
Dureza residual

540 nm

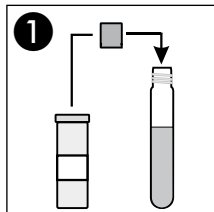
Method(e) / Método

0841/2 0.02 - 1.00 °d / 0.004 - 0.180 mmol/l

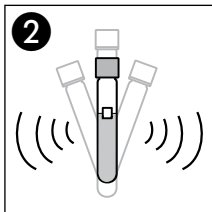
0843/4 0.03 - 1.25 °e / 0.04 - 1.78 °f

**Test 0-84**

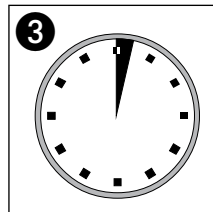
REF 985 084



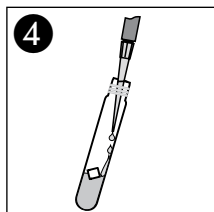
1 x NANOFIX R2



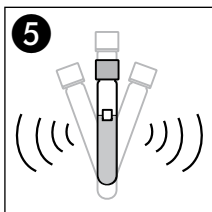
Kräftig Schütteln  
Shake well  
Bien Agiter  
Agitar intensamente



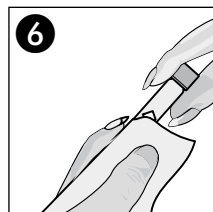
2'00 min



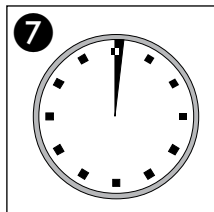
5.0 ml Probe  
Sample  
Echantillon  
Muestra



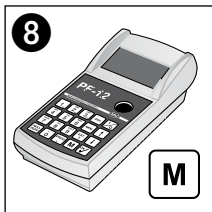
Schütteln  
Shake  
Agiter  
Agitar



Säubern  
Clean  
Nettoyer  
Limpiar



1'00 min



Messung  
Measurement  
Mesure  
Medición

Meerwasser  
Sea water  
Eau de mer  
Agua de mar



# NANOCOLOR® Stärke 100

Starch / Amidon / Almidó

540 nm

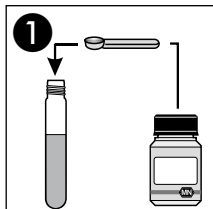
Method(e) / Método

0851

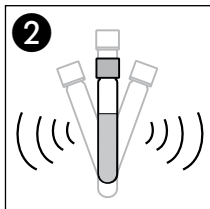
5 - 100 mg/l

**Test 0-85**

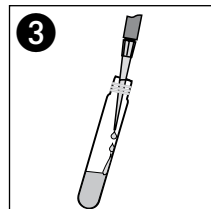
REF 985 085



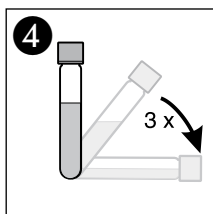
1 x R2



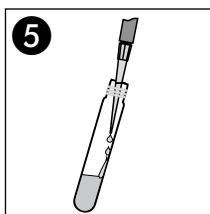
Schütteln  
Shake  
Agiter  
Agitar



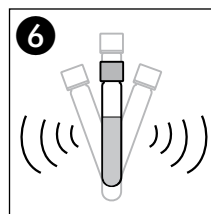
1.0 ml R3



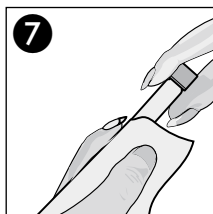
Umschwenken  
Shake gently  
Secouer légèrement  
Mezclar volteándolo



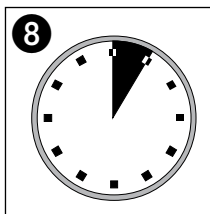
4.0 ml Probe  
Sample  
Echantillon  
Muestra



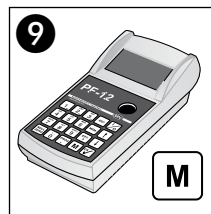
Schütteln  
Shake  
Agiter  
Agitar



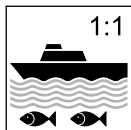
Säubern  
Clean  
Nettoyer  
Limpiar



5'00 min



Messung  
Measurement  
Mesure  
Medición



Meerwasser  
Sea water  
Eau de mer  
Agua de mar

# NANOCOLOR® Sulfat 200

Sulphate / Sulfate / Sulfato

436 nm

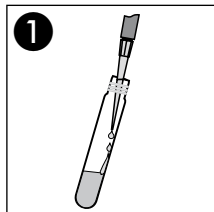
Method(e) / Método

0861

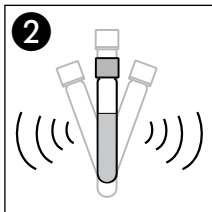
10 - 200 mg/l  $\text{SO}_4^{2-}$

**Test 0-86**

REF 985 086



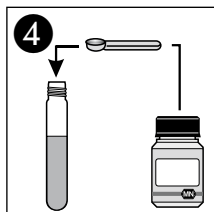
**1**  
4.0 ml Probe  
Sample  
Echantillon  
Muestra



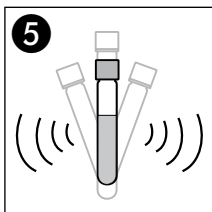
**2**  
Schütteln  
Shake  
Agiter  
Agitar



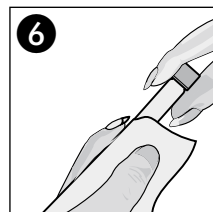
**3**  
Nullwert  
Blank value  
Zéro  
Cero



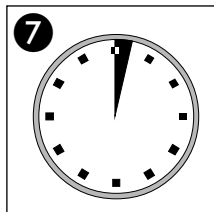
**4**  
1 x R2



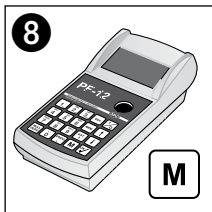
**5**  
10 s Schütteln  
Shake  
Agiter  
Agitar



**6**  
Säubern  
Clean  
Nettoyer  
Limpiar



**7**  
2'00 min



**8**  
Messung  
Measurement  
Mesure  
Medición

Meerwasser  
Sea water  
Eau de mer  
Agua de mar





# NANOCOLOR® Sulfat 1000

Sulphate / Sulfate / Sulfato

436 nm

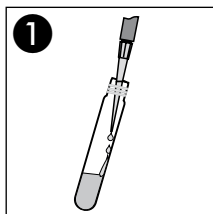
Method(e) / Método

0871

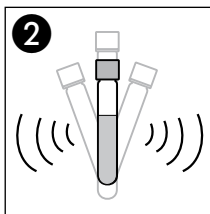
200 - 1000 mg/l  $\text{SO}_4^{2-}$

**Test 0-87**

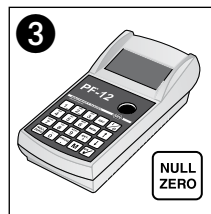
REF 985 087



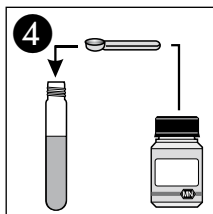
**1**  
1.0 ml Probe  
Sample  
Echantillon  
Muestra



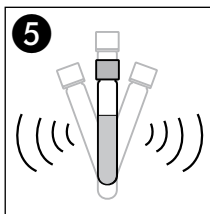
**2**  
Schütteln  
Shake  
Agiter  
Agitar



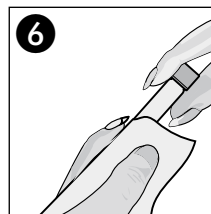
**3**  
Nullwert  
Blank value  
Zéro  
Cero



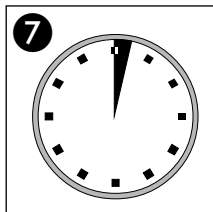
**4**  
1 x R2



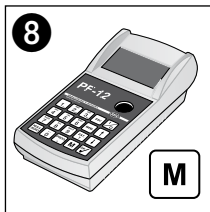
**5**  
10 s Schütteln  
Shake  
Agiter  
Agitar



**6**  
Säubern  
Clean  
Nettoyer  
Limpiar



**7**  
2'00 min



**8**  
Messung  
Measurement  
Mesure  
Medición

Meerwasser  
Sea water  
Eau de mer  
Agua de mar



# NANOCOLOR® *gesamt-Stickstoff TN<sub>b</sub> 220* *total Nitrogen / Azote total / Nitrogeno total*

**Test 0-88**

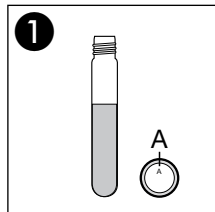
REF 985 088

345 nm

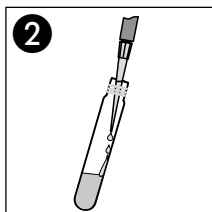
Method(e) / Método

0881

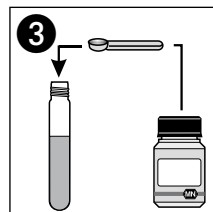
5 - 220 mg/l N



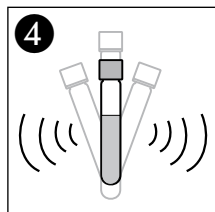
**1**  
Aufschlussküvette  
Decomposition tube  
Cuve ronde de minéralisation  
Tubo de descomposición



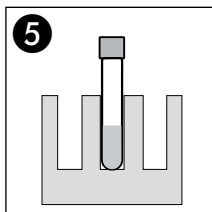
**2**  
500 µl Probe  
Sample  
Echantillon  
Muestra



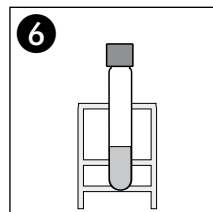
**3**  
1 x orange / naranja  
Aufschlussreagenz  
Decomposition reagent  
Réactif de minéralisation  
Reactivo de descomposición



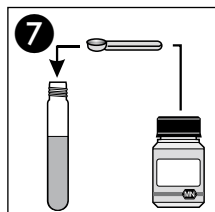
**4**  
Schütteln  
Shake  
Agiter  
Agitar



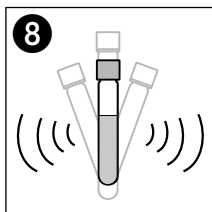
**5**  
120 °C / 30 min  
oder / or / ou / o  
100 °C / 1 h



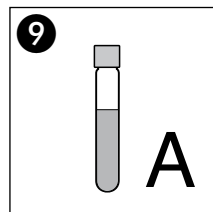
**6**  
Abkühlen lassen  
Allow to cool  
Laisser refroidir  
Dejar enfriar



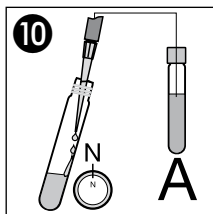
**7**  
1 x schwarz / black / noir / negro  
Kompensationsreagenz  
Compensation reagent  
Réactif de compensation  
Reactivo de compensación



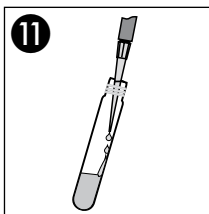
**8**  
Schütteln  
Shake  
Agiter  
Agitar



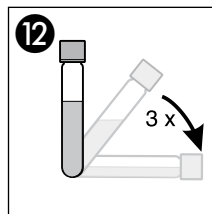
**9**  
Aufschlusslösung **A**  
Decomposed solution **A**  
Solution de minéralisation **A**  
Solución de descomposición **A**



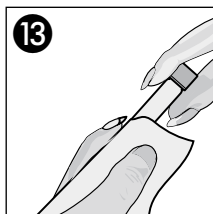
500 µl A



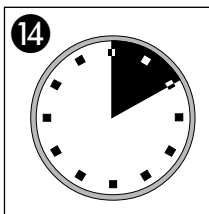
500 µl R2



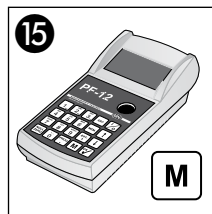
Umschwenken  
Shake gently  
Secouer légèrement  
Mezclar volteándolo



Säubern  
Clean  
Nettoyer  
Limpiar



10'00 min



Messung  
Measurement  
Mesure  
Medición



Meerwasser  
Sea water  
Eau de mer  
Agua de mar

# NANOCOLOR® Sulfit 10

Sulphite / Sulfite / Sulfito

436 nm

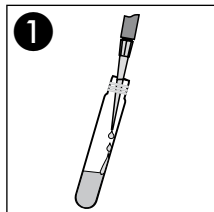
Method(e) / Método

0891

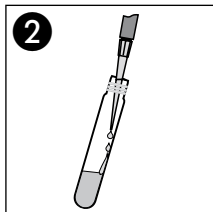
0.2 - 10.0 mg/l  $\text{SO}_3^{2-}$

**Test 0-89**

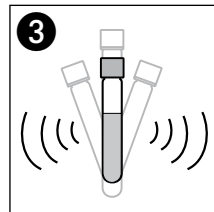
REF 985 089



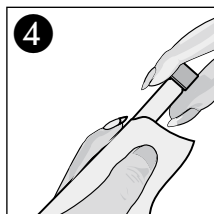
**1**  
4.0 ml Probe  
Sample  
Echantillon  
Muestra



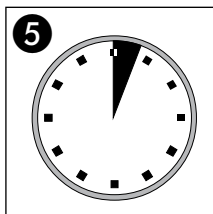
**2**  
200 ml R2



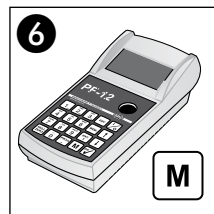
**3**  
Schütteln  
Shake  
Agiter  
Agitar



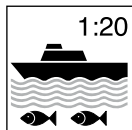
**4**  
Säubern  
Clean  
Nettoyer  
Limpiar



**5**  
5'00 min



**6**  
Messung  
Measurement  
Mesure  
Medición



1:20  
Meerwasser  
Sea water  
Eau de mer  
Agua de mar

# NANOCOLOR® Sulfit 100

Sulphite / Sulfite / Sulfito

470 nm

Method(e) / Método

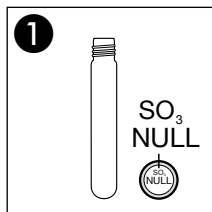
0901

5 - 100 mg/l  $\text{SO}_3^{2-}$

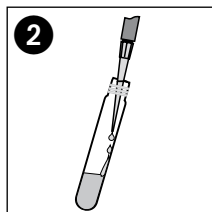
**Test 0-90**

REF 985 090

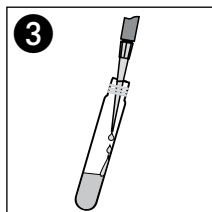
## Nullwert / Blanc value / Zéro / Cero



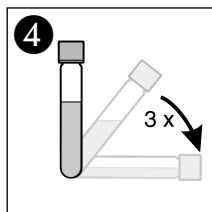
**Leere Rundküvette**  
**Empty test tube**  
Cuve ronde **vide**  
Tubo de test **vacío**



1.0 ml R1

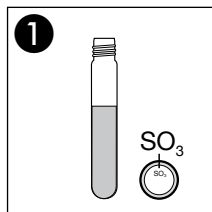


200 µl R2

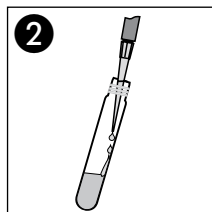


Umschwenken  
Shake gently  
Secouer légèrement  
Mezclar volteándolo

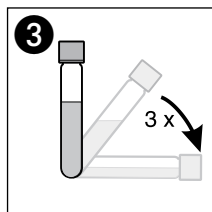
## Messwert / Sample / Echantillon / Muestra



**Sulfit-Rundküvette**  
Test tube **Sulphite**  
Cuve ronde **Sulfite**  
Tubo de test **Sulfito**

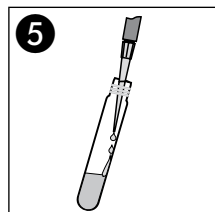


200 µl R2

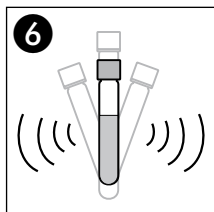


Umschwenken  
Shake gently  
Secouer légèrement  
Mezclar volteándolo

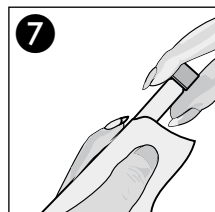
**Nullwert / Blanc value / Zéro / Cero**



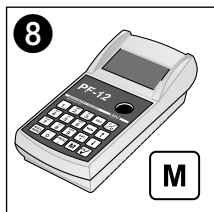
**5**  
4.0 ml Probe  
Sample  
Echantillon  
Muestra



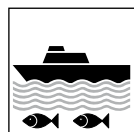
**6**  
Schütteln  
Shake  
Agiter  
Agitar



**7**  
Säubern  
Clean  
Nettoyer  
Limpiar

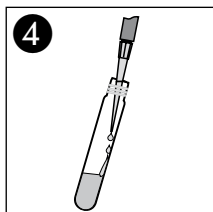


**8**  
Messung  
Measurement  
Mesure  
Medición

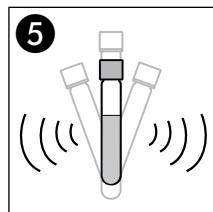


Meerwasser  
Sea water  
Eau de mer  
Agua de mar

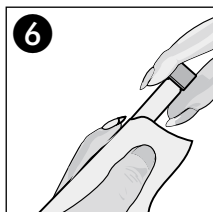
**Messwert / Sample / Echantillon / Muestra**



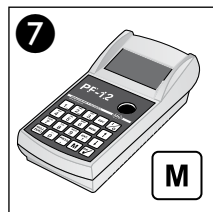
**4**  
4.0 ml Probe  
Sample  
Echantillon  
Muestra



**5**  
Schütteln  
Shake  
Agiter  
Agitar



**6**  
Säubern  
Clean  
Nettoyer  
Limpiar



**7**  
Messung  
Measurement  
Mesure  
Medición

## Rundküvettest

Methode: Bestimmung der biochemischen Aktivität von Schlämmen (z. B. Belebtschlamm) an Hand der Dehydrogenaseaktivität mit Hilfe von 2,3,5-Triphenyltetrazoliumchlorid (TTC). Farbloses TTC wird durch Dehydrogenasen zu rotem Triphenylformazan (TPF) umgesetzt. Das gebildete, wasserunlösliche TPF wird in Ethanol überführt und photometrisch bestimmt.

Messbereiche: 5 - 150 µg TPF  
0,050 - 2,300 E

Methode  
**8901**  
**8902**

NANOCOLOR®  
Reagenziensatz: TTC / Schlammaktivität 150 (REF 985 890)

Wellenlänge: **470 nm**

Störungen: Das gebildete Triphenylformazan (TPF) ist sehr lichtempfindlich. Sauerstoff, NO<sub>3</sub><sup>-</sup>, Fe<sup>3+</sup> und NO<sub>2</sub><sup>-</sup> hemmen die TTC-Reduktion. P<sub>i</sub>, Fe<sup>2+</sup>, SO<sub>4</sub><sup>2-</sup>, Cl<sup>-</sup> und Mn(IV) wirken stimulierend.

Benötigtes Zubehör: Kolbenhubpipetten mit Spitzen, Bechergläser

## Ausführung:

### Methode 8901: Bestimmung der biochemischen Aktivität von Schlämmen (A<sub>S</sub>)

5-ml-Spritze über Luer-Lock-Verbindungsstück mit Spritzenhülse verbinden und in Spritzenhülse <b>4,5 ml Belebtschlammprobe</b> und <b>0,5 ml Reagenz R1</b> pipettieren.
Inhalt der Spritzenhülse <b>luftblasenfrei</b> in 5-ml-Spritze überführen und mit Luer-Lock-Verschlußstopfen luftblasenfrei verschließen. Inkubation für <b>1 h</b> bei <b>Raumtemperatur</b> im <b>Dunkeln</b> .
Verschlußstopfen entfernen, Membranfilter (Farbcode rot) aufschrauben und Testansatz filtrieren. Filtrat verwerfen.
Schraubverschluss mit Ansaugrohr <b>lose</b> auf Flasche mit Reagenz R2 aufschrauben. Anschließend Spritze mit Membranfilter auf Flasche aufschrauben.
<b>Reagenz R2</b> langsam über den Membranfilter in die Spritze bis zur <b>4,6-ml-Markierung</b> ansaugen. Inkubation für <b>10 min</b> bei <b>Raumtemperatur</b> im <b>Dunkeln</b> .
Spritzeninhalt vorsichtig in leere Rundküvette drücken. Rundküvette verschließen und außen säubern.

Messung: Methode **8901** aufrufen. Messung durchführen. Angezeigtes Ergebnis als C<sub>TPF</sub> in Auswertebogen eintragen.

Auswertung: Schlammtrockenmasse C<sub>S</sub> bei 105 °C bestimmen und in Auswertebogen eintragen. Biochemische Aktivität A<sub>S</sub> berechnen: **A<sub>S</sub> [µg TPF/mg] = C<sub>TPF</sub> : C<sub>S</sub>**

### Tube test

**Method:** Determination of the biochemical activity of sludge (e.g. activated sludge) by means of the dehydrogenase activity using 2,3,5-triphenyltetrazoliumchloride (TTC). Colourless TTC is converted into red triphenylformazane (TPF) by dehydrogenases. The formed, water-insoluble TPF is dissolved in ethanol and is determined photometrically.

**Ranges:** 5 - 150 µg TPF  
0.050 - 2.300 E

Method  
**8901**  
**8902**

**NANOCOLOR®**

reagent set: TTC / Sludge activity 150 (REF 985 890)

Wavelength: **470 nm**

**Interferences:** The triphenylformazane (TPF) which is formed is very light sensitive. Oxygen,  $\text{NO}_3^-$ ,  $\text{Fe}^{3+}$  and  $\text{NO}_2^-$  hinder the TTC reduction.  $\text{P}_i$ ,  $\text{Fe}^{2+}$ ,  $\text{SO}_4^{2-}$ ,  $\text{Cl}^-$  and  $\text{Mn(IV)}$  have a stimulating effect.

**Requ. accessories:** piston pipettes with tips, beaker

### Procedure:

#### Method 8901:

#### Determination of the biochemical activity of sludge ( $A_s$ )

<p>Connect a 5 ml syringe with a syringe tube by using a Luer-Lock connecting adapter female/female. Add into the syringe tube <b>4.5 ml activated sludge sample</b> and <b>0.5 ml reagent R1.</b></p>
<p>The content of the syringe tube is subsequently transferred into the 5 ml syringe <b>without air bubbles</b>. Seal syringe with a Luer-Lock seal plug (female) without air bubbles, shake and place in a test tube rack. Incubation for <b>1 h at room temperature in the dark.</b></p>
<p>Remove the seal plug and screw on the membrane filter, colour code red. Filter the test sample and discard the filtrate.</p>
<p>Screw on the screw plug with the suction pipe <b>loosely</b> to the bottle with the reagent R2. Following this screw on the syringe with the membrane filter onto the bottle.</p>
<p>Slowly draw off the <b>reagent R2</b> via the membrane filter into the syringe up to the <b>4.6 ml marking</b>. Incubation for <b>10 min at room temperature in the dark.</b></p>
<p>Following this press the contents of the syringes carefully into an empty test tube. Seal the test tube, clean it on the outside.</p>

**Measurement:** Call up method **8901** and perform measurement. Fill in displayed result as  $C_{\text{TPF}}$  into evaluation sheet.

**Evaluation:** Determine dry sludge mass  $C_s$  at 105 °C and enter into evaluation sheet. Calculate biochemical activity  $A_s$ :  $A_s [\mu\text{g TPF/mg}] = C_{\text{TPF}} : C_s$



**Methode 8902: Bestimmung der relativen Änderung der Dehydrogenaseaktivität (DHA) durch Abwasser und Abwasserinhaltsstoffe**

Bezugswert	Probe
In geeignetem Laborgefäß <b>Belebtschlamm 30 min sedimentieren</b> lassen. Anschließend Überstand mit Transferpipette in ein Becherglas überführen.	
5-ml-Spritze über Luer-Lock-Verbindungsstück mit Spritzenhülse verbinden und in Spritzenhülse <b>0,5 ml Belebtschlamm,</b> <b>4,0 ml Überstandslösung</b> und <b>0,5 ml Reagenz R1</b> pipettieren.	5-ml-Spritze über Luer-Lock-Verbindungsstück mit Spritzenhülse verbinden und in Spritzenhülse <b>0,5 ml Belebtschlamm,</b> <b>4,0 ml Probe</b> und <b>0,5 ml Reagenz R1</b> pipettieren.
Inhalt der Spritzenhülse <b>luftblasenfrei</b> in 5-ml-Spritze überführen und mit Luer-Lock-Verschlussstopfen luftblasenfrei verschließen. Inkubation für <b>2 h</b> bei <b>Raumtemperatur</b> im <b>Dunkeln</b> .	Inhalt der Spritzenhülse <b>luftblasenfrei</b> in 5-ml-Spritze überführen und mit Luer-Lock-Verschlussstopfen luftblasenfrei verschließen. Inkubation für <b>2 h</b> bei <b>Raumtemperatur</b> im <b>Dunkeln</b> .
Verschlussstopfen entfernen, Membranfilter (Farbcode rot) aufschrauben und Testansatz filtrieren. Filtrat verwerfen.	Verschlussstopfen entfernen, Membranfilter (Farbcode rot) aufschrauben und Testansatz filtrieren. Filtrat verwerfen.
Schraubverschluss mit Ansaugrohr <b>lose</b> auf Flasche mit Reagenz R2 aufschrauben. Anschließend Spritze mit Membranfilter auf Flasche aufschrauben.	Schraubverschluss mit Ansaugrohr <b>lose</b> auf Flasche mit Reagenz R2 aufschrauben. Anschließend Spritze mit Membranfilter auf Flasche aufschrauben.
<b>Reagenz R2</b> langsam über den Membranfilter in die Spritze bis hin zur <b>Markierung 4,6 ml</b> ansaugen. Inkubation für <b>10 min</b> bei <b>Raumtemperatur</b> im <b>Dunkeln</b> .	<b>Reagenz R2</b> langsam über den Membranfilter in die Spritze bis hin zur <b>Markierung 4,6 ml</b> ansaugen. Inkubation für <b>10 min</b> bei <b>Raumtemperatur</b> im <b>Dunkeln</b> .
Spritzeninhalt vorsichtig in leere Rundkuvette drücken. Rundkuvette verschließen und außen säubern.	Spritzeninhalt vorsichtig in leere Rundkuvette drücken. Rundkuvette verschließen und außen säubern.

Messung: Methode **8902** aufrufen. Gemessen werden die Extinktionen bei 470 nm.

Rundkuvette mit dest. Wasser einsetzen und Taste <input type="button" value="Nul"/> drücken.
Kuvette mit <b>Bezugswert</b> einsetzen und durch Drücken von Taste <input type="button" value="M"/> die Extinktion <b>E<sub>B</sub></b> messen.
Kuvette mit <b>Probewert</b> einsetzen und durch Drücken von Taste <input type="button" value="M"/> die Extinktion <b>E<sub>P</sub></b> messen.

Auswertung: Die Extinktion **E<sub>B</sub>** und **E<sub>P</sub>** in Auswertebogen eintragen und Dehydrogenaseaktivität DHA berechnen.

$$\text{Dehydrogenaseaktivität DHA [\%]} = [(E_P - E_B) : E_B] \times 100$$




Lagerung: Der Reagenziensatz ist bei **2–8 °C** kühl und trocken zu lagern. Das aufgedruckte Verfalldatum beachten!

Literatur: Deutsche Einheitsverfahren zur Wasser-, Abwasser- und Schlammuntersuchung (DEV– L3 und DEV – L4).

**Method 8902:** Determination of the relative change of the dehydrogenase activity DHA (biochemical sludge activity) due to waste water and waste water compounds

Reference	Sample
Sediment the activated sludge in a suitable laboratory vessel for <b>30 min</b> . Following this transfer the supernatant with a transfer pipette into a beaker.	
Connect a 5 ml syringe with a syringe tube by using a Luer-Lock connecting adapter female/female. Add into the syringe tube <b>0.5 ml activated sludge</b> suspension, <b>4.0 ml supernatant</b> and <b>0.5 ml reagent R1</b> .	Connect a 5 ml syringe with a syringe tube by using a Luer-Lock connecting adapter female/female. Add into the syringe tube <b>0.5 ml activated sludge</b> suspension, <b>4.0 ml sample</b> and <b>0.5 ml reagent R1</b> .
Transfer the contents into the syringe <b>without air bubbles</b> . Seal the syringes with Luer-Lock seal plugs (female). Incubation for <b>2 h at room temperature in the dark</b> .	Transfer the contents into the syringe <b>without air bubbles</b> . Seal the syringes with Luer-Lock seal plugs (female). Incubation for <b>2 h at room temperature in the dark</b> .
Remove the seal plug and screw on the membrane filter, colour code red. Filter the sample and discard the filtrate.	Remove the seal plug and screw on the membrane filter, colour code red. Filter the sample and discard the filtrate.
Screw on the screw plug with the suction pipe <b>loosely</b> to the bottle with the reagent R2. Following this screw on the syringe with the membrane filter onto the bottle.	Screw on the screw plug with the suction pipe <b>loosely</b> to the bottle with the reagent R2. Following this screw on the syringe with the membrane filter onto the bottle.
<b>Slowly</b> draw off the <b>reagent R2</b> via the membrane filter into the syringe up to the <b>4.6 ml marking</b> . Incubation for <b>10 min at room temperature in the dark</b> .	<b>Slowly</b> draw off the <b>reagent R2</b> via the membrane filter into the syringe up to the <b>4.6 ml marking</b> . Incubation for <b>10 min at room temperature in the dark</b> .
Following this press the contents of the syringe carefully into an empty test tube, seal the test tube, clean it on the outside.	Following this press the contents of the syringe carefully into an empty test tube, seal the test tube, clean it on the outside.

Measurement: Call up method **8902**. Extinctions are measured at 470 nm.

Place a test tube with distilled water in the cuvette slot and press key  .
Insert test tube with <b>reference</b> in the cuvette slot and measure the extinction $E_R$ by pressing key  .
Insert test tube with <b>sample</b> in the cuvette slot and measure the extinction $E_S$ by pressing key  .

Evaluation: Enter the extinctions  $E_R$  and  $E_S$  in the evaluation sheet. Calculate dehydrogenase activity DHA.

$$\text{Dehydrogenase activity DHA [\%]} = [(E_S - E_R) : E_R] \times 100$$

Storage: Store the reagent set dry and cool at **2–8 °C**. Please observe the expiry date!

Reference: German standard methods for the examination of water, waste water and sludge (DEV – L3 and DEV – L4)

# NANOCOLOR® Thiocyanat 50

Thiocyanate / Tiocianato

470 nm

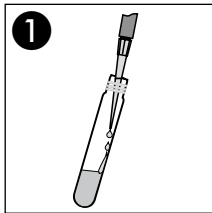
Method(e) / Método

0911

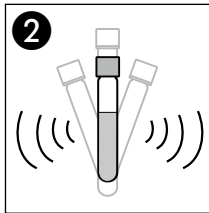
0.5 - 50.0 mg/l SCN<sup>-</sup>

**Test 0-91**

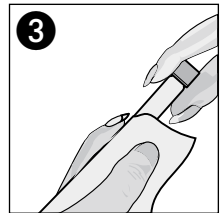
REF 985 091



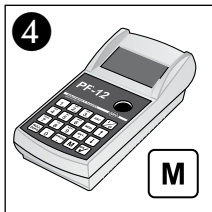
**1**  
4.0 ml Probe  
Sample  
Echantillon  
Muestra



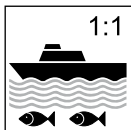
**2**  
Schütteln  
Shake  
Agiter  
Agitar



**3**  
Säubern  
Clean  
Nettoyer  
Limpiar



**4**  
Messung  
Measurement  
Mesure  
Medición



1:1  
Meerwasser  
Sea water  
Eau de mer  
Agua de mar

# NANOCOLOR® TOC 25

## COT

585 nm

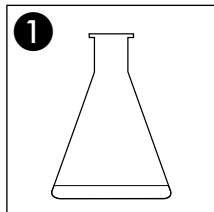
Method(e) / Método

0931

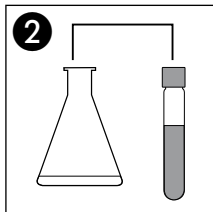
2.0 - 25.0 mg/l C

**Test 0-93**

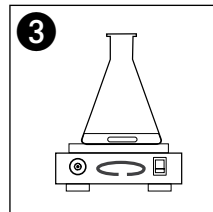
REF 985 093



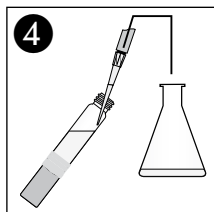
**10.0 ml** Probe  
Sample  
Echantillon  
Muestra



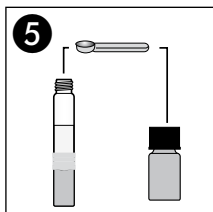
**500 µl R0**



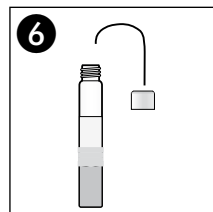
**10 min** Rühren  
Stirr  
Agiter  
Agitar



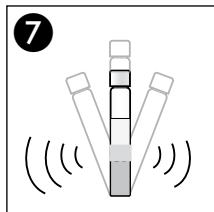
**5.0 ml** in TOC-Küvette  
into tube TOC  
dans cuve COT  
en tubo TOC



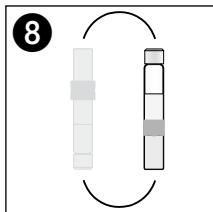
**1 x R2**



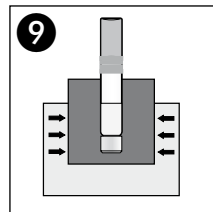
Thermokappe aufschrauben  
Close with thermo cap  
Fermer avec thermo cap  
Cerrar con thermo cap



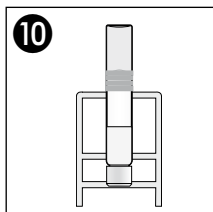
Schütteln  
Shake  
Agiter  
Agitar



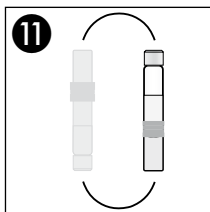
Küvette um 180° drehen  
Turn tube upside down  
Retourner tube  
Girar tubo



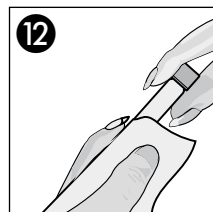
**120 °C / 2 h**



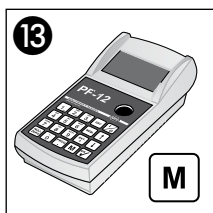
**10**  
**60 min** Abkühlen lassen  
Allow to cool  
Laisser refroidir  
Dejar enfriar



**11**  
Küvette um 180° drehen  
Turn tube upside down  
Retourner tube  
Girar tubo



**12**  
Säubern  
Clean  
Nettoyer  
Limpiar



**13**  
Messung  
Measurement  
Mesure  
Medición



Meerwasser  
Sea water  
Eau de mer  
Agua de mar

# NANOCOLOR® TOC 60 COT

585 nm

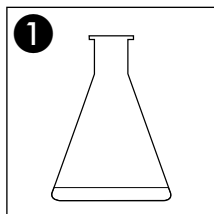
Method(e) / Método

0941

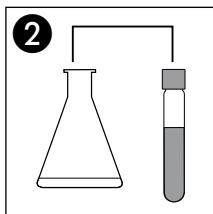
10 - 60 mg/l C

**Test 0-94**

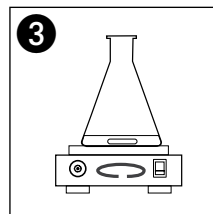
REF 985 094



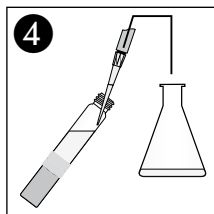
**1**  
10.0 ml Probe  
Sample  
Echantillon  
Muestra



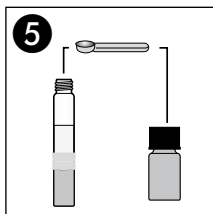
**2**  
500 µl R0



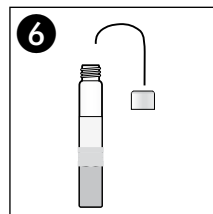
**3**  
10 min Rühren  
Stirr  
Agiter  
Agitar



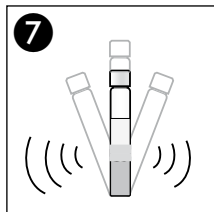
**4**  
4.0 ml in TOC-Küvette  
into tube TOC  
dans cuve COT  
en tubo TOC



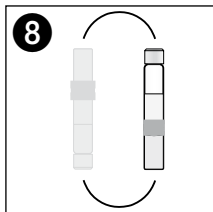
**5**  
1 x R2



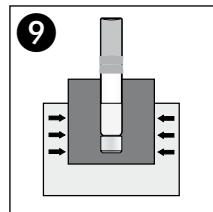
**6**  
Thermokappe aufschrauben  
Close with thermo cap  
Fermer avec thermo cap  
Cerrar con thermo cap



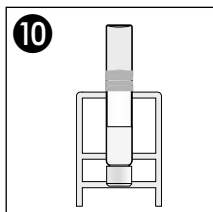
**7**  
Schütteln  
Shake  
Agiter  
Agitar



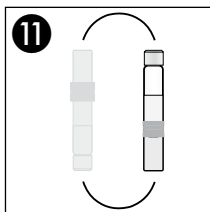
**8**  
Küvette um 180° drehen  
Turn tube upside down  
Retourner tube  
Girar tubo



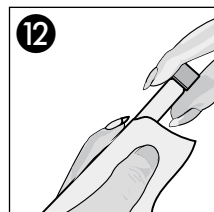
**9**  
120 °C / 2 h



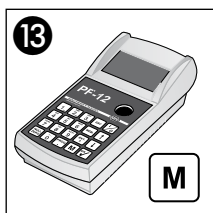
**60 min** Abkühlen lassen  
Allow to cool  
Laisser refroidir  
Dejar enfriar



Küvette um 180° drehen  
Turn tube upside down  
Retourner tube  
Girar tubo



Säubern  
Clean  
Nettoyer  
Limpiar



Messung  
Measurement  
Mesure  
Medición



Meerwasser  
Sea water  
Eau de mer  
Agua de mar

# NANOCOLOR® Zink 4

Zinc

620 nm

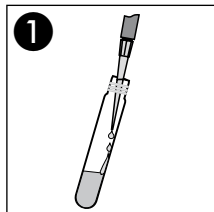
Method(e) / Método

0961

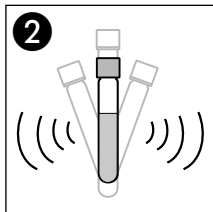
0.10 - 4.00 mg/l Zn<sup>2+</sup>

**Test 0-96**

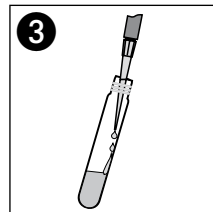
REF 985 096



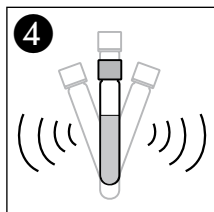
**1**  
4.0 ml Probe  
Sample  
Echantillon  
Muestra



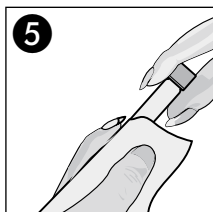
**2**  
Schütteln  
Shake  
Agiter  
Agitar



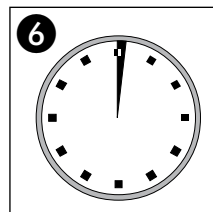
**3**  
200 µl R2



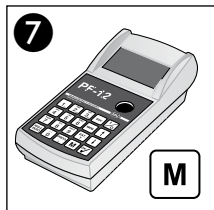
**4**  
Schütteln  
Shake  
Agiter  
Agitar



**5**  
Säubern  
Clean  
Nettoyer  
Limpiar

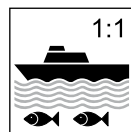


**6**  
1'00 min



Messung  
Measurement  
Mesure  
Medición

Meerwasser  
Sea water  
Eau de mer  
Agua de mar





# NANOCOLOR® Zinn 3

Tin / Etain / Estaño

436 nm

Method(e) / Método

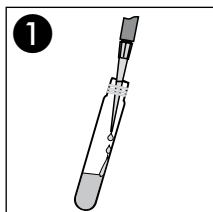
0971

0.10 - 3.00 mg/l Sn

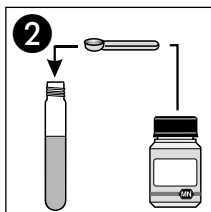
**Test 0-97**

REF 985 097

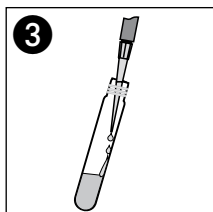
## Nullwert / Blanc value / Zéro / Cero



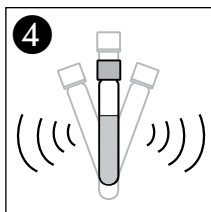
**4.0 ml** dest. Wasser  
dist. water  
d'eau distillée  
agua dest.



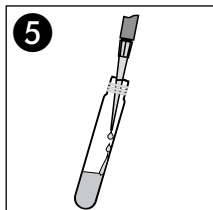
**1 x R2**



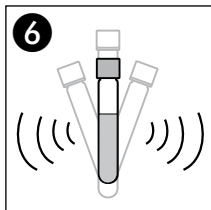
**500 µl R3**



Schütteln  
Shake  
Agiter  
Agitar

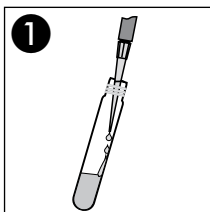


**1.0 ml x R4**

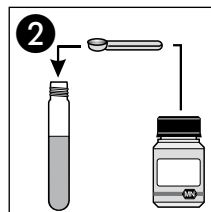


Schütteln  
Shake  
Agiter  
Agitar

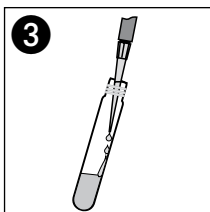
## Messwert / Sample / Echantillon / Muestra



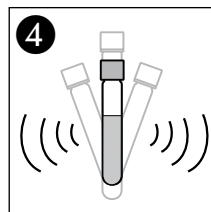
**4.0 ml** Probe  
Sample  
Echantillon  
Muestra



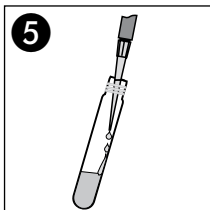
**1 x R2**



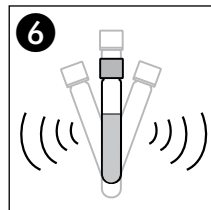
**500 µl R3**



Schütteln  
Shake  
Agiter  
Agitar

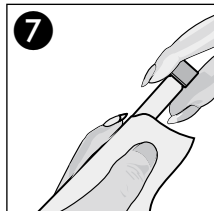


**1.0 ml x R4**

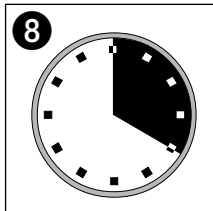


Schütteln  
Shake  
Agiter  
Agitar

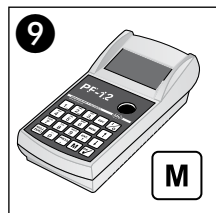
**Nullwert / Blanc value / Zéro / Cero**



Säubern  
Clean  
Nettoyer  
Limpiar

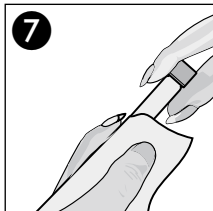


20'00 min

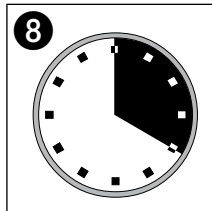


Messung  
Measurement  
Mesure  
Medición

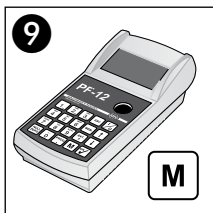
**Messwert / Sample / Echantillon / Muestra**



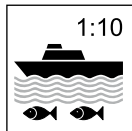
Säubern  
Clean  
Nettoyer  
Limpiar



20'00 min



Messung  
Measurement  
Mesure  
Medición



1:10  
Meerwasser  
Sea water  
Eau de mer  
Agua de mar

# NANOCOLOR® Aluminium 07

Aluminio

540 nm

Method(e) / Método

0981

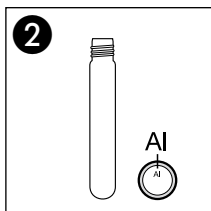
0.02 - 0.70 mg/l Al<sup>3+</sup>

**Test 0-98**

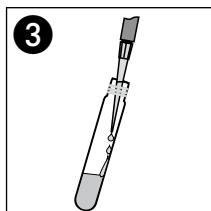
REF 985 098



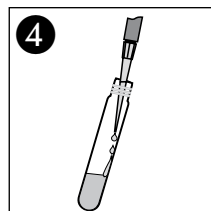
Null Messung  
Measure blank  
Lecture blanc  
Lectura blanco



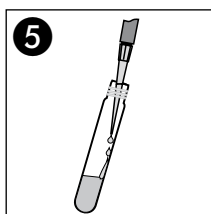
Aluminium-Rundküvette  
Test tube Aluminium  
Cuve ronde Aluminium  
Tubo de test Aluminio



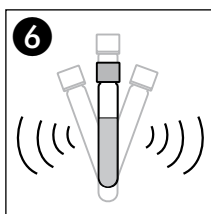
500 µl R2



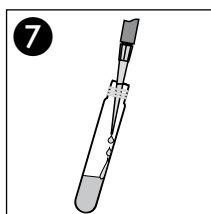
500 µl R3



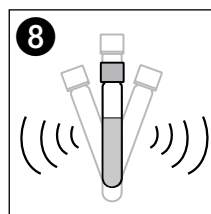
4.0 ml Probe  
Sample  
Echantillon  
Muestra



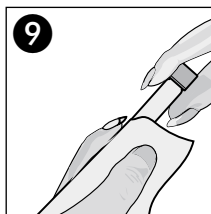
Schütteln  
Shake  
Agiter  
Agitar



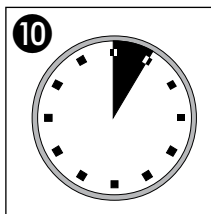
500 µl R4



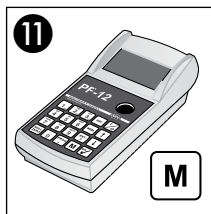
Schütteln  
Shake  
Agiter  
Agitar



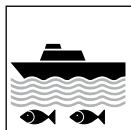
Säubern  
Clean  
Nettoyer  
Limpiar



5'00 min



Messung  
Measurement  
Mesure  
Medición



Meerwasser  
Sea water  
Eau de mer  
Agua de mar

# NANOCOLOR® TOC 600 COT

585 nm

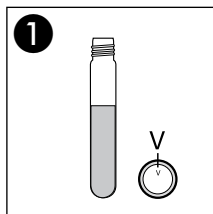
Method(e) / Método

0991

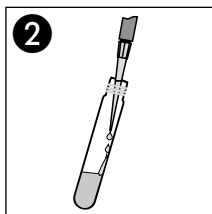
40 - 600 mg/l C

**Test 0-99**

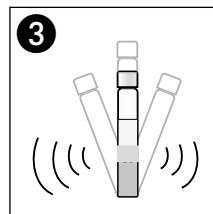
REF 985 099



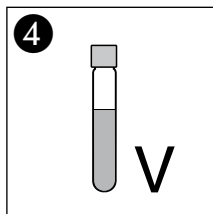
**1**  
Verdünnungsküvette  
Dilution test tube  
Cuve ronde de dilution  
Tubo de dilución



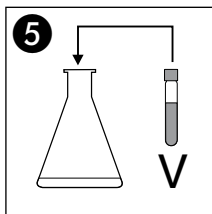
**2**  
1.0 ml Probe  
Sample  
Echantillon  
Muestra Agitar



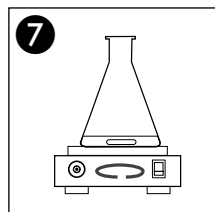
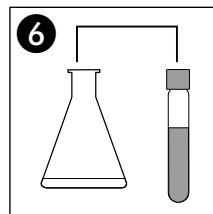
**3**  
Schütteln  
Shake  
Agiter  
Agitar



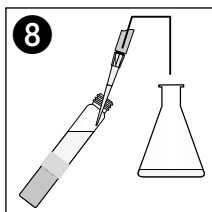
**4**  
Verdünnungslösung V  
Diluted solution V  
Solution de dilution V  
Solución de dilución V



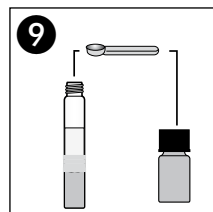
**5**  
Verdünnungslösung  
Diluted solution  
Solution de dilution  
Solución de dilución



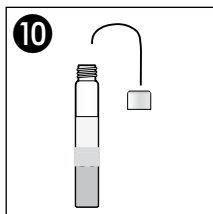
**7**  
10 min Rühren  
Stirr  
Agiter  
Agitar



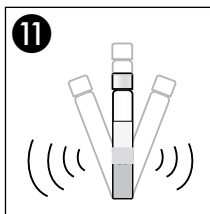
**8**  
4.0 ml in TOC-Küvette  
into tube TOC  
dans cuve COT  
en tubo TOC



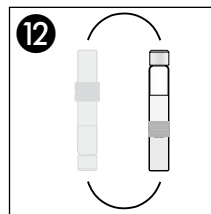
**9**  
1 x R2



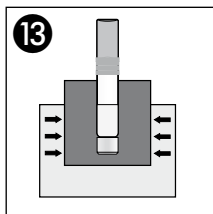
10  
Thermokappe aufschrauben  
Close with thermo cap  
Fermer avec thermo cap  
Cerrar con thermo cap



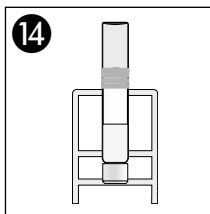
11  
Schütteln  
Shake  
Agiter  
Agitar



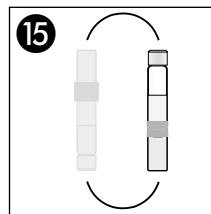
12  
Küvette um 180° drehen  
Turn tube upside down  
Retourner tube  
Girar tubo



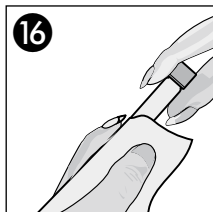
13  
120 °C / 2 h



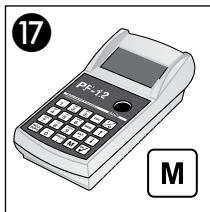
14  
60 min Abkühlen lassen  
Allow to cool  
Laisser refroidir  
Dejar enfriar



15  
Küvette um 180° drehen  
Turn tube upside down  
Retourner tube  
Girar tubo



16  
Säubern  
Clean  
Nettoyer  
Limpiar



17  
Messung  
Measurement  
Mesure  
Medición

Meerwasser  
Sea water  
Eau de mer  
Agua de mar

