Instrument specific information

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

<table>
<thead>
<tr>
<th>Instrument Type</th>
<th>Cuvette</th>
<th>λ</th>
<th>Measuring Range</th>
</tr>
</thead>
</table>
| MD 600, MD 610, MD 640, MultiDirect | ø 16 mm | 530 nm | 0.02 - 2 mg/l Cr
| SpectroDirect, XD 7000, XD 7500 | ø 16 mm | 542 nm | 0.02 - 2 mg/l Cr

Material

Required material (partly optional):

<table>
<thead>
<tr>
<th>Reagents</th>
<th>Packaging Unit</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Persulfat Reagent für CR</td>
<td>Powder / 100 pc.</td>
<td>537300</td>
</tr>
<tr>
<td>Chromium Hexavalent</td>
<td>Powder / 100 pc.</td>
<td>537310</td>
</tr>
</tbody>
</table>

The following accessories are required.

<table>
<thead>
<tr>
<th>Accessories</th>
<th>Packaging Unit</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermoreactor RD 125</td>
<td>1 pc.</td>
<td>2418940</td>
</tr>
</tbody>
</table>

Application List

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

Preparation

1. The pH value of the sample should be between 3 and 9.

Notes

1. Implementation of the first part determines concentration of total chromium. In the second part, the concentration of Chromium (VI) is measured. The concentration of Chromium (III) is the result of the difference.
Digestion Chromium with powder packs

- Fill 16 mm vial with **10 ml** sample.
- Add **PERSULFT.RGT FOR CR powder pack**.
- Close vial(s).
- Invert several times to mix the contents.
- Seal the vials in the preheated thermoreactor for **120 minutes at 100 °C**.
- Remove the vial from the thermoreactor. (Note: vial will be hot!)
- Invert several times to mix the contents.
- Allow the vial(s) to cool to room temperature.
Implementation of the provision Chromium differentiated, with powder packs

Select the method on the device
In addition, choose the test: differentiated
For testing of Chromium, differentiated, carry out the described digestion.
For this method, no ZERO measurements are to be carried out with the following devices: XD 7000, XD 7500

1. Place pre-treated vial in the sample chamber. • Pay attention to the positioning.
2. Press the ZERO button.
3. Remove vial from the sample chamber.

For devices that require no ZERO measurement, start here.

5. Close vial(s).
6. Invert several times to mix the contents.

7. Place sample vial in the sample chamber. • Pay attention to the positioning.
8. Press the TEST (XD: START) button.
9. Wait for 5 minute(s) reaction time.

Once the reaction period is finished, the measurement takes place automatically.
Fill a second vial with 10 ml sample.

Add CHROMIUM HEXA-VALENT powder pack.

Close vial(s).

Invert several times to mix the contents.

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

Press the TEST (XD: START) button.

Wait for 5 minute(s) reaction time.
Once the reaction period is finished, the measurement takes place automatically. The result in mg/l Cr(VI); Cr(III); Cr Total Chromium appears on the display.
Implementation of the provision Chromium(VI), with powder packs

Select the method on the device
In addition, choose the test: Cr(VI)
For this method, no ZERO measurements are to be carried out with the following devices: XD 7000, XD 7500

10 ml

Fill 16 mm vial with **10 ml sample**.

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

Press the **ZERO** button.

Remove **vial** from the sample chamber.

For devices that require **no ZERO measurement** , start here.

Add **CHROMIUM HEXA-VALENT powder pack**.

Close **vial(s)**.

Invert several times to mix the contents.
Place **sample vial** in the sample chamber. • Pay attention to the positioning.
Once the reaction period is finished, the measurement takes place automatically.
The result in mg/l Cr(VI) appears on the display.

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

Wait for **5 minute(s) reaction time**.
Implementation of the provision Chromium total (Cr(III) + Cr(VI)), with powder packs

Select the method on the device
In addition, choose the test: Cr(III + VI)
For testing of Chromium, total (Cr(III)+ Cr(VI)), carry out the described digestion.
For this method, no ZERO measurements are to be carried out with the following devices: XD 7000, XD 7500.

Place pre-treated vial in the sample chamber. • Pay attention to the positioning.

For devices that require no ZERO measurement, start here.

Add CHROMIUM HEXA-VALENT powder pack.

Close vial(s).

Invert several times to mix the contents.

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

Once the reaction period is finished, the measurement takes place automatically.
The result in mg/l total Chromium appears on the display.
Chemical Method
Diphenylcarbazide

Appendix

Calibration function for 3rd-party photometers
Conc. = a + b•Abs + c•Abs² + d•Abs³ + e•Abs⁴ + f•Abs⁵

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ø 16 mm</td>
<td></td>
</tr>
<tr>
<td>a</td>
<td>-2.66512 • 10²</td>
</tr>
<tr>
<td>b</td>
<td>8.73906 • 10¹</td>
</tr>
<tr>
<td>c</td>
<td>9.34973 • 10²</td>
</tr>
<tr>
<td>d</td>
<td></td>
</tr>
<tr>
<td>e</td>
<td></td>
</tr>
<tr>
<td>f</td>
<td></td>
</tr>
</tbody>
</table>

Interferences

Persistant Interferences
1. For information about interferences through metals and reductive or oxidizing agents, especially in strongly polluted water, see DIN 38 405 – D 24 and Standard Methods of Water and Wastewater, 20th Edition; 1998.

According to
DIN 3805 - D24

Derived from
DIN 18412
US EPA 218.6

¹ Reactor is necessary for COD (150 °C), TOC (120 °C) and total -chromium, -phosphate, -nitrogen, (100 °C)