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>
<tbody>
<tr>
<td>MD 600, MD 610, MD 640,</td>
<td>ø 16 mm</td>
<td>610 nm</td>
<td>50 - 800 mg/l TOC</td>
</tr>
<tr>
<td>Multidirect, XD 7000, XD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7500</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SpectroDirect</td>
<td>ø 16 mm</td>
<td>596 nm</td>
<td>50 - 800 mg/l TOC</td>
</tr>
</tbody>
</table>

Material

Required material (partly optional):

<table>
<thead>
<tr>
<th>Reagents</th>
<th>Packaging Unit</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOC Spectroquant 1.14879.0001 tube test</td>
<td>25 pc.</td>
<td>420756</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>
<tr>
<td>Screw caps TOC</td>
<td>1 Set</td>
<td>420757</td>
</tr>
</tbody>
</table>

Application List

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

Preperation

1. Before performing the test, you must read through the original instructions and safety advice that is delivered with the test kit (MSDS are available on the homepage of www.merckmillipore.com).
Notes

1. This method is adapted from MERCK.
2. Spectroquant® is a registered trademark of the company MERCK KGaA.
3. Appropriate safety precautions and good laboratory technique should be used during the whole procedure.
4. Sample volume should always be metered by using a volumetric pipette (class A).
5. TOC = Total Organic Carbon.
6. Aluminium caps can be reused (see Merck).
Implementation of the provision TOC HR with MERCK Spectroquant® Cell Test, No. 1.14879.0001

Select the method on the device
For this method, no ZERO measurements are to be carried out with the following devices: XD 7000, XD 7500
Skip steps with Blank.

• Use two clean suitable glass vessels. • Mark one glass vessel for zeroing.

1. Put **10 ml deionised water** in the zero sample.
2. Put **1 ml sample and 9 ml deionised water** in the sample vessel and mix.
3. Add **2 drops of reagent TOC-1K** and mix.
4. The pH value of the sample should be under 2.5. If necessary, add sulphuric acid.
5. Stir for **10 minutes** at a medium speed. (Magnetic stirrer, stirring stick)

![Diagram of the procedure]

Prepare two **reaction vials**. Mark one as a blank.
Place **3 ml of prepared zero sample** in the blank.
Place **3 ml of prepared sample** in the sample vial.

Add exactly **one level microspoon** TOC-2K.
Close the vial(s) immediately with the aluminium caps
Warm vial for **120 minutes** at **120 °C** in a pre-heated thermoreactor in inverted position.
Zero

Allow vial to stand inverted for 1 hour and to cool. **Do not cool it with water!** After cooling down, rotate it and measure in the photometer **within 10 min**.

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

Press the **ZERO** button.

Test

Remove **vial** from the sample chamber.

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

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

The result in mg/l TOC appears on the display.
Chemical Method
H₂SO₄ / Persulphate / Indicator

Appendix

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

<table>
<thead>
<tr>
<th>ø 16 mm</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>9.90014 \cdot 10^{-2}</td>
</tr>
<tr>
<td>b</td>
<td>-3.44796 \cdot 10^{-2}</td>
</tr>
<tr>
<td>c</td>
<td>-2.08152 \cdot 10^{-2}</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

<table>
<thead>
<tr>
<th>Interference</th>
<th>from / [mg/l]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ca</td>
<td>1000</td>
</tr>
<tr>
<td>Mg</td>
<td>1000</td>
</tr>
<tr>
<td>NH₄-N</td>
<td>1000</td>
</tr>
<tr>
<td>TIC (total inorganic carbon)</td>
<td>250</td>
</tr>
<tr>
<td>NaCl</td>
<td>25</td>
</tr>
<tr>
<td>NaNO₃</td>
<td>100</td>
</tr>
<tr>
<td>Na₂SO₄</td>
<td>100</td>
</tr>
</tbody>
</table>

Derived from
EN 1484:1997
Standard Method 5310 C

b) Reactor is necessary for COD (150 °C), TOC (120 °C) and total -chromium, - phosphate, -nitrogen, (100 °C) | d) Spectroquant® is a Merck KGaA Trademark