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 100, MD 600, MD 610, MD 640, MultiDirect</td>
<td>ø 24 mm</td>
<td>580 nm</td>
<td>0.02 - 1.8 mg/l Fe</td>
</tr>
<tr>
<td>XD 7000, XD 7500</td>
<td>ø 24 mm</td>
<td>590 nm</td>
<td>0.02 - 1.8 mg/l Fe</td>
</tr>
<tr>
<td>SpectroDirect</td>
<td>ø 24 mm</td>
<td>590 nm</td>
<td>0.1 - 1.8 mg/l Fe</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>VARIO Iron TPTZ F10</td>
<td>Powder / 100 pc.</td>
<td>530550</td>
</tr>
</tbody>
</table>

Application List

- Waste Water Treatment
- Cooling Water
- Boiler Water
- Galvanization
- Drinking Water Treatment
- Raw Water Treatment
- Pool Water Treatment
Preparation

1. Digestion is required for the determination of total Iron. The TPTZ reagent recovers most iron oxides without digestion.

2. All glassware must first be rinsed with diluted 1:1 Hydrochloric acid solution before the analysis and then rinsed with deionised water to remove iron deposits that can cause slightly high results.

3. Strong alkaline or acidic water samples should be adjusted between pH 3 and pH 8 before the analysis (use 0.5 mol/l Sulphuric acid or 1 mol/l Sodium hydroxide).

4. Water that has been treated with organic compounds such as corrosion inhibitors, must be oxidised where necessary to break down the iron complex. 1 ml of concentrated Sulphuric acid (≥ 95 %) and 1 ml concentrated Nitric acid (≥ 65 %) is therefore added to to 100 ml water sample and boiled down to approximately half the volume. After cooling down, the digestion procedure is continued.
Digestion

Fill a suitable sample vessel with **100 ml sample**.

Add **1 ml concentrated sulfuric acid (≥ 95%)**.

The sample is to be **heated for 10 minutes**, or for as long as it takes for everything to be completely dissolved.

Allow the sample to cool to room temperature.

Adjust **pH-value of the sample with ammonia solution (10-25%) to 3-5**.

Fill the sample with **deionised water to 100 ml**.

This sample is used for the analysis of total solved and dissolved Iron.
Implementation of the provision Iron, total with Vario Powder Pack

Select the method on the device
For testing of total Iron, carry out the described digestion.

Prepare two clean 24 mm vials. Mark one as a blank.
Put 10 ml deionised water in the blank.
Put 10 ml sample in the sample vial.
Add a Vario IRON TPTZ F10 powder pack in each vial.
Close vial(s).
Mix the contents by shaking. (30 sec.).
Press the ENTER button.
Wait for 3 minute(s) reaction time.
Place blank in the sample chamber. • Pay attention to the positioning.
Zero

Press the ZERO button.
Remove the vial from the sample chamber.
Place sample vial in the sample chamber. • Pay attention to the positioning.

Test

Press the TEST (XD: START) button.
The result in mg/l Iron appears on the display.
Chemical Method
TPTZ

Appendix

Calibration function for 3rd-party photometers
Conc. = a + b\cdot{\text{Abs}} + c\cdot{\text{Abs}}^2 + d\cdot{\text{Abs}}^3 + e\cdot{\text{Abs}}^4 + f\cdot{\text{Abs}}^5

<table>
<thead>
<tr>
<th>Interference</th>
<th>from / [mg/l]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ca</td>
<td>4</td>
</tr>
<tr>
<td>Cr^{3+}</td>
<td>0,25</td>
</tr>
<tr>
<td>Cr^{4+}</td>
<td>1,2</td>
</tr>
<tr>
<td>Co</td>
<td>0,05</td>
</tr>
<tr>
<td>Cu</td>
<td>0,6</td>
</tr>
<tr>
<td>CN^-</td>
<td>2,8</td>
</tr>
<tr>
<td>Mn</td>
<td>50</td>
</tr>
<tr>
<td>Hg</td>
<td>0,4</td>
</tr>
<tr>
<td>Mo</td>
<td>4</td>
</tr>
<tr>
<td>Ni</td>
<td>1</td>
</tr>
<tr>
<td>NO_2^-</td>
<td>0,8</td>
</tr>
</tbody>
</table>

Bibliography