**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>SpectroDirect, XD 7000, XD 7500</td>
<td>ø 24 mm</td>
<td>443 nm</td>
<td>0.2 - 7 mg/l Ni</td>
</tr>
<tr>
<td>MD 600, MD 610, MD 640, MultiDirect</td>
<td>ø 24 mm</td>
<td>430 nm</td>
<td>0.2 - 7 mg/l Ni</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>Nickel Reagent Test</td>
<td>1 pc.</td>
<td>2419033</td>
</tr>
</tbody>
</table>

**Application List**

- Galvanization
- Raw Water Treatment
- Waste Water Treatment

**Preperation**

1. The test sample and the reagents should be at room temperature when undertaking the test.
2. The pH value of the sample must be between 3 and 10.
Implementation of the provision Nickel with Reagents test

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

Put 3 ml sample in the vial.
Fill 24 mm vial with 7 ml deionised water.
Close vial(s).

Place sample vial in the sample chamber. • Pay attention to the positioning.
For devices that require no ZERO measurement, start here.

Press the ZERO button.
Remove the vial from the sample chamber.

Add 4 level measuring scoop No. 8 (black) Nickel-51.
Close vial(s).
Mix the contents by shaking.
Add **0.4 ml Nickel-52**.

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 Nickel appears on the display.

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

Wait for **3 minute(s) reaction time**.

**Test**
Chemical Method
Dimethylglyoxime

Appendix

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

\[
\begin{array}{cc}
\text{ø 24 mm} & \text{□ 10 mm} \\
\hline
a & -1.53212 \cdot 10^{-1} \\
b & 7.07103 \cdot 10^{0} \\
c & 1.52027 \cdot 10^{-1} \\
d & e & f
\end{array}
\]

Interferences

Removeable Interferences
1. If large amounts of these metals should be present, nickel must be insulated before the test determination. The insulation is performed with a solution of Dimethylglyoxim in chloroform. Al, Co, Cu, Fe, Mn, Zn and phosphates do not pose an obstacle in biologically normal quantities. In most cases, the biological samples are first of all mineralised with a mixture of sulphuric acid and nitric acid.

Bibliography
Photometrische Analyseverfahren, Schwedt, Wissenschaftliche Verlagsgesellschaft mbH, Stuttgart 1989