**Fluoride L**

**M170**

**0.05 - 2 mg/l F⁻**

**SPADNS**

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**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, SpectroDirect, XD 7000, XD 7500</td>
<td>ø 24 mm</td>
<td>580 nm</td>
<td>0.05 - 2 mg/l F⁻</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>Spadns Reagent Solution</td>
<td>250 ml</td>
<td>467481</td>
</tr>
<tr>
<td>Spadns Reagent Solution</td>
<td>500 ml</td>
<td>467482</td>
</tr>
<tr>
<td>Calibration Standard Fluoride</td>
<td>30 ml</td>
<td>205630</td>
</tr>
</tbody>
</table>

**Application List**

- Drinking Water Treatment
- Raw Water Treatment
Preperaton

1. A user calibration (see photometer manual) must be carried out before the measurement.

2. The same batch of SPADNS reagent solution must be used for both the user calibration and test (see photometer description). The user calibration process needs to be performed for each new batch of SPADNS reagent solution (see Standard methods 20th, 1998, APHA, AWWA, WEF 4500 F D., S. 4-82).

3. For the user calibration and test, the zeroing and test must be carried out with the same vial, since the vials may have small tolerances.

4. The calibration solution and the water samples to be tested should have the same temperature (± 1 °C).

5. The test result is highly dependent on exact sample and reagent volumes. Sample and reagent volumes should always be measured using a 10 ml or 2 ml volumetric pipette (class A).

6. Seawater and waste water samples must be distilled.

7. It is better practice to use special vials with a larger volume.
Implementation of the provision Fluoride with liquid reagent

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
Pay attention to the notes!

Add exactly 10 ml sample to the 450 mm vial.

Close vial(s).

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

Press the ZERO button.

Remove the vial from the sample chamber.

For devices that require no ZERO measurement, start here.

Add exactly 2 ml to the 24 mm vial.

Note: Vial is filled to the top!

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.

The result in mg/l Fluorid appears on the display.
Chemical Method

SPADNS

Appendix

Calibration function for 3rd-party photometers

Conc. = a + b\cdot Abs + c\cdot Abs^2 + d\cdot Abs^3 + e\cdot Abs^4 + f\cdot Abs^5

<table>
<thead>
<tr>
<th></th>
<th>ø 24 mm</th>
<th>□ 10 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>8.44253 \times 10^0</td>
<td>8.44253 \times 10^0</td>
</tr>
<tr>
<td>b</td>
<td>-1.41844 \times 10^{-1}</td>
<td>-3.04965 \times 10^{-1}</td>
</tr>
<tr>
<td>c</td>
<td>9.24803 \times 10^0</td>
<td>4.2749 \times 10^1</td>
</tr>
<tr>
<td>d</td>
<td>-2.3046 \times 10^0</td>
<td>-2.2904 \times 10^{-1}</td>
</tr>
<tr>
<td>e</td>
<td></td>
<td></td>
</tr>
<tr>
<td>f</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Interferences

Persistant Interferences
1. The accuracy decreases above a level of 1.2 mg/l Fluoride Although the results are sufficiently accurate for most applications, even more exact results can be achieved by a 1:1 dilution of the sample before use and by the subsequent multiplication of the result by 2.

<table>
<thead>
<tr>
<th>Interference</th>
<th>from / [mg/l]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cl₂</td>
<td>5</td>
</tr>
</tbody>
</table>

Bibliography

Standard Methods 20th, 1992, APHA, AWWA, WEF 4500 F D, S. 4-82

According to

US EPA 13A
APHA Method 4500 F D