

**Fluoride L****170****0.05 - 2 mg/l F⁻****F****SPADNS**

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.

Instrument Type	Cuvette	λ	Measuring Range
MD 100, MD 600, MD 610, MD 640, MultiDirect, SpectroDirect, XD 7000, XD 7500	ø 24 mm	580 nm	0.05 - 2 mg/l F ⁻

Material

Required material (partly optional):

Reagents	Packaging Unit	Part Number
Spadns Reagent Solution	Liquid / 250 ml	467481
Spadns Reagent Solution	Liquid / 500 ml	467482
Calibration Standard Fluoride	Liquid / 30 ml	205630

Application List

- Drinking Water Treatment
- Raw Water Treatment

Preperation

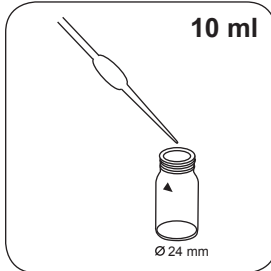
1. The same batch of SPADNS reagent solution must be used for both the adjustment and test. The adjustment process needs to be performed for each new batch of SPADNS reagent solution (see Standard methods 20th, 1998, APHA, AWWA, WEF 4500 F D., S. 4-82).
2. For the adjustment and test, the zeroing and test must be carried out with the same vial, since the vials may have small tolerances.
3. The calibration solution and the water samples to be tested should have the same temperature ($\pm 1^\circ\text{C}$).
4. 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).
5. Seawater and waste water samples must be distilled.
6. It is better practice to use special vials with a larger volume.

Implementation of the provision Fluoride with liquid reagent

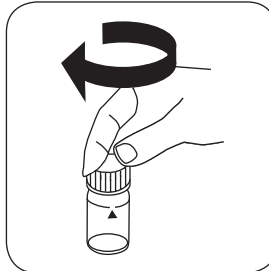
Select the method on the device

For this method, no ZERO measurements are to be carried out with the following devices: XD 7000, XD 7500

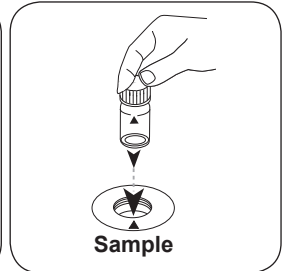
Pay attention to the notes!



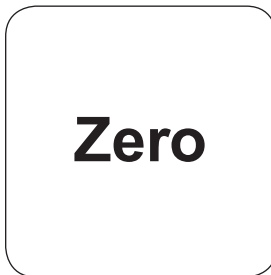
Add **exactly 10 ml sample** to the 450 mm vial.



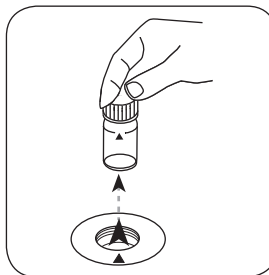
Close vial(s).



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

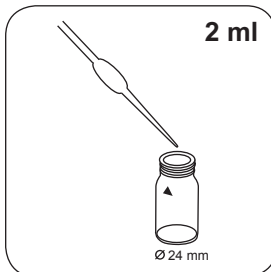


Press the **ZERO** button.

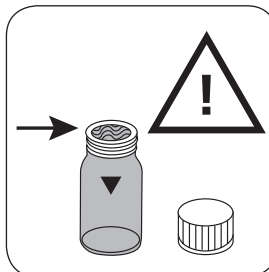


Remove the vial from the sample chamber.

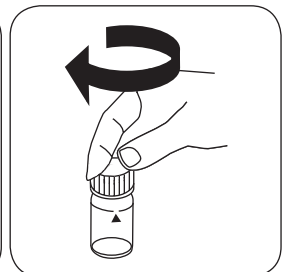
For devices that require **no ZERO measurement**, start here.



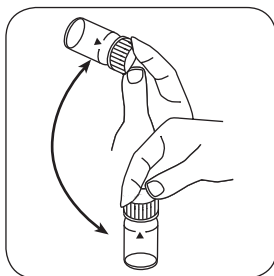
Add **exactly 2 ml SPADNS reagent solution** to the 24 mm vial.



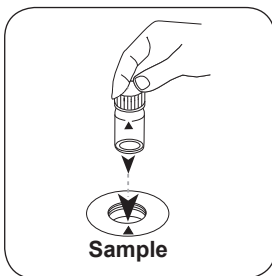
Note: Vial is filled to the top!



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

Interferences

Persistent 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.

Interference	from / [mg/l]
Cl ₂	5

Bibliography

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

According to

US EPA 13A

APHA Method 4500 F D

^{a)} determination of free, combined and total | ^{b)} Reactor is necessary for COD (150 °C), TOC (120 °C) and total -chromium, - phosphate, -nitrogen, (100 °C) | ^{c)} MultiDirect: Adapter is necessary for Vacu-vials® (Order code 19 20 75) | ^{d)} Spectroquant® is a Merck KGaA Trademark | ^{e)} alternative reagent, used instead of DPD No.1/No.3 in case of turbidity in the water sample caused by high concentration of calcium and/or high conductivity | ^{f)} additionally required for determination of bromine, chlorine dioxide and ozone in the presence of chlorine | ^{g)} Reagent recovers most insoluble iron oxides without digestion | ^{h)} additionally required for samples with hardness values above 300 mg/l CaCO₃ | ⁱ⁾ high range by dilution | ^{j)} including stirring rod, 10 cm