

## Turbidity 24

M386

10 - 1000 FAU

Attenuated Radiation Method

### 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	$\lambda$	Measuring Range
MD 600, MD 610, MD 640, MultiDirect	ø 24 mm	530 nm	10 - 1000 FAU
XD 7000, XD 7500	ø 24 mm	860 nm	10 - 1000 FAU

### Material

Required material (partly optional):

Reagents	Packaging Unit	Part Number
no reagent required		

### Application List

- Waste Water Treatment
- Raw Water Treatment

### Sampling

1. Measure the water sample as soon as possible after sampling. It is possible to store the sample at 4 °C for 48 hours in plastic or glass containers. The measurement should take place at the same temperature as the sample, as temperature differences between measurement and sample collection can effect the turbidity of the sample.

### Notes

1. This test uses an attenuated radiation method for the reading of Formazin Attenuation Units (FAU). The results can not be used for documenting purposes, but may be used for routine measurements because the attenuated radiation method is different from the Nephelometric method.
2. The estimated detection limit is 20 FAU.





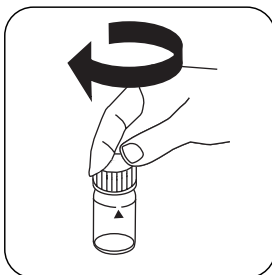
## Determination of Turbidity

Select the method on the device.

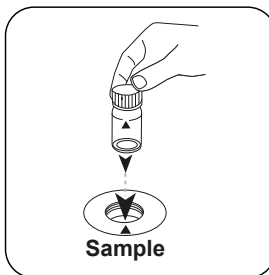
For this method, a ZERO measurement does not have to be carried out every time on the following devices: XD 7000, XD 7500



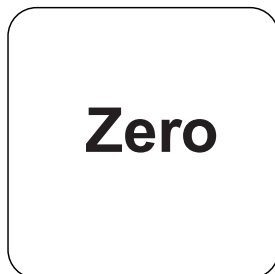
Fill 24 mm vial with **10 mL deionised water** .



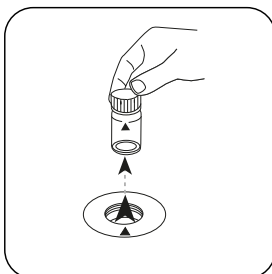
Close vial(s).



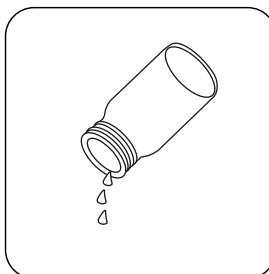
Place **sample vial** in the sample chamber. Pay attention to the positioning.



Press the **ZERO** button.

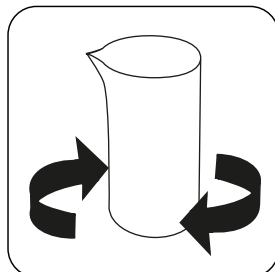


Remove the vial from the sample chamber.

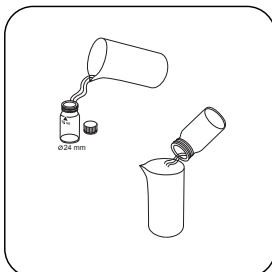


Empty vial.

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



Mix water sample thoroughly.



Pre-rinse vial with water sample.



Fill 24 mm vial with **10 mL sample**.



Close vial(s).



Invert several times to mix the contents.



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

# Test

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

The result in FAU appears on the display.



## Chemical Method

Attenuated Radiation Method

## Appendix

### Calibration function for 3rd-party photometers

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

	∅ 24 mm	□ 10 mm
a	$8.61245 \cdot 10^{+0}$	$8.61245 \cdot 10^{+0}$
b	$4.97947 \cdot 10^{+2}$	$1.07059 \cdot 10^{+3}$
c	$8.71462 \cdot 10^{+1}$	$4.02833 \cdot 10^{+2}$
d		
e		
f		

## Interferences

### Removeable Interferences

- Air bubbles interfere with turbidity measurements. These can be removed using an ultrasonic bath.
- Colour interferes if light is absorbed at 530 nm.  
For strong coloured water samples a filtrated portion of the sample can be used for zeroing instead of the deionised water.

## Method Validation

Limit of Detection	1.59 FAU
Limit of Quantification	4.76 FAU
End of Measuring Range	1000 FAU
Sensitivity	642 FAU / Abs
Confidence Intervall	4.27 FAU
Standard Deviation	1.85 FAU
Variation Coefficient	0.37 %

## Bibliography

FWPCA Methods for Chemical Analysis of Water and Wastes, 275 (1969)