



pH-value T

M330

6.5 - 8.4 pH

PH

Phenol Red

## 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 100, MD 110, MD 200, MD 600, MD 610, MD 640, MultiDirect, PM 600, PM 620, PM 630	ø 24 mm	560 nm	6.5 - 8.4 pH
SpectroDirect, XD 7000, XD 7500	ø 24 mm	558 nm	6.5 - 8.4 pH

## Material

Required material (partly optional):

Reagents	Packaging Unit	Part Number
Phenol Red Photometer	Tablet / 100	511770BT
Phenol Red Photometer	Tablet / 250	511771BT
Phenol Red Photometer	Tablet / 500	511772BT

## Application List

- Boiler Water
- Pool Water Control
- Raw Water Treatment

## Notes

1. For photometric determination of pH values only use PHENOL RED tablets in black printed foil pack and marked with PHOTOMETER.

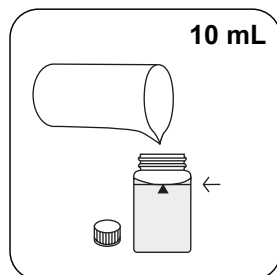




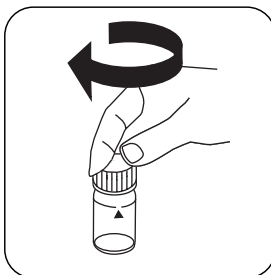
## Determination of pH-value with Tablet

Select the method on the device.

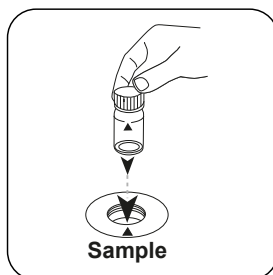
For this method, a ZERO measurement does not have to be carried out every time on the following devices: XD 7000, XD 7500



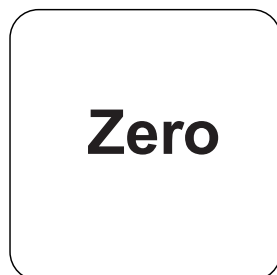
Fill 24 mm vial with **10 mL sample**.



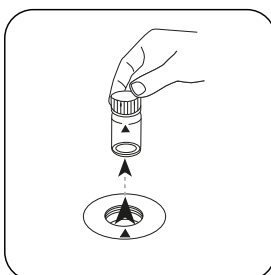
Close vial(s).



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

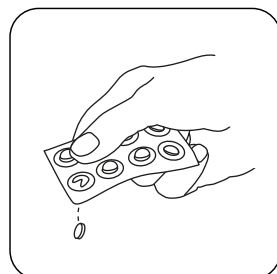


Press the **ZERO** button.

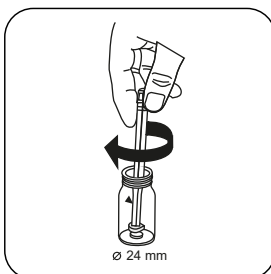


Remove the vial from the sample chamber.

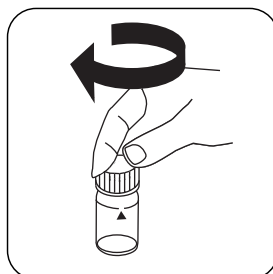
For devices that require **no ZERO measurement**, start here.



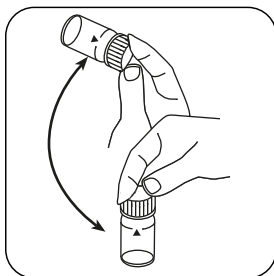
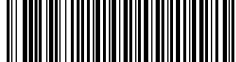
Add **PHENOL RED PHOTOMETER** tablet.



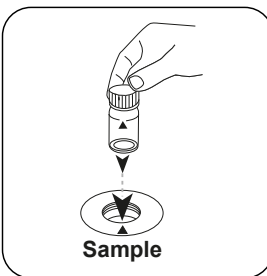
Crush tablet(s) by rotating slightly.



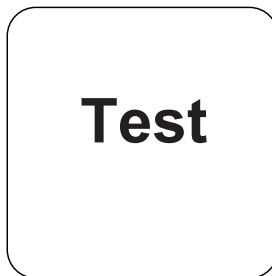
Close vial(s).



Dissolve tablet(s) by inverting.

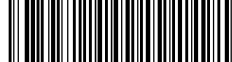


Place **sample vial** in the sample chamber. Pay attention to the positioning.



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

The result in pH value appears on the display.



## Chemical Method

Phenol Red

## Appendix

### Calibration function for 3rd-party photometers

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

	ø 24 mm	□ 10 mm
a	$5.95215 \cdot 10^{+0}$	$5.95215 \cdot 10^{+0}$
b	$4.13767 \cdot 10^{+0}$	$8.89599 \cdot 10^{+0}$
c	$-5.29861 \cdot 10^{+0}$	$-2.44928 \cdot 10^{+1}$
d	$3.74419 \cdot 10^{+0}$	$3.72112 \cdot 10^{+1}$
e	$-1.25321 \cdot 10^{+0}$	$-2.6778 \cdot 10^{+1}$
f	$1.6149 \cdot 10^{-1}$	$7.41887 \cdot 10^{+0}$

## Interferences

### Persistent Interferences

1. Water samples with little Carbonate hardness\* can lead to false pH values.  
\* $K_{\text{S4.3}} < 0.7 \text{ mmol/l} \triangleq \text{total alkalinity} < 35 \text{ mg/L CaCO}_3$ .

### Removeable Interferences

1. pH values below 6.5 and above 8.4 can produce results inside the measuring range. A plausibility test (pH-meter) is recommended.
2. Salt error  
For salt concentrations below 2 g/L, no significant error, is expected due to the salt concentration of the reagent tablet. For higher salt concentrations the measurement values have to be adjusted as follows:

Salt content per sample in g/L	30 (seawater)	60	120	180
Correc-tion	-0.15 <sup>1)</sup>	-0.21 <sup>2)</sup>	-0.26 <sup>2)</sup>	-0.29 <sup>2)</sup>

<sup>1)</sup> according to Kolthoff (1922)

<sup>2)</sup> according to Parson and Douglas (1926)



## **Bibliography**

Colorimetric Chemical Analytical Methods, 9th Edition, London