



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	λ	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.



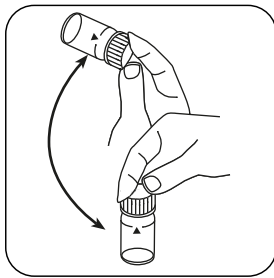
Add **PHENOL RED PHOTOMETER** tablet.



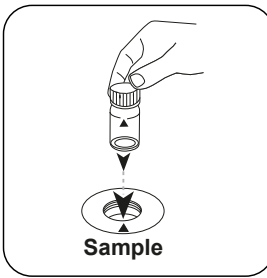
Crush tablet(s) by rotating slightly.



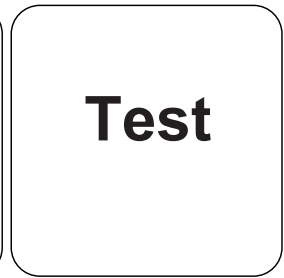
Close vial(s).



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

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

	∅ 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.
* $K_{\text{S}_{4,3}} < 0.7 \text{ mmol/l} \triangleq \text{total alkalinity} < 35 \text{ mg/L CaCO}_3$.

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 ¹⁾	-0.21 ²⁾	-0.26 ²⁾	-0.29 ²⁾

¹⁾ according to Kolthoff (1922)

²⁾ according to Parson and Douglas (1926)



Bibliography

Colorimetric Chemical Analytical Methods, 9th Edition, London