



## Alkalinity-p T

M35

5 - 500 mg/L CaCO<sub>3</sub>

Acid / Indicator

### 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	560 nm	5 - 500 mg/L CaCO <sub>3</sub>
SpectroDirect, XD 7000, XD 7500	ø 24 mm	552 nm	5 - 500 mg/L CaCO <sub>3</sub>

### Material

Required material (partly optional):

Reagents	Packaging Unit	Part Number
Alka-P-Photometer	Tablet / 100	513230BT
Alka-P-Photometer	Tablet / 250	513231BT

### Application List

- Drinking Water Treatment
- Raw Water Treatment

### Notes

1. The terms Alkalinity-p, p-Value, and Acid demand to K<sub>8.2</sub> are identical.
2. For accurate results, exactly 10 ml of water sample must be used for the test.
3. This method was developed from a volumetric procedure. Due to undefined boundary conditions, deviations from the standardised method may be greater.
4. By determining Alkalinity-p and Alkalinity-m, it is possible to classify the alkalinity as Hydroxide, Carbonate and Hydrogencarbonate.
5. The following differentiation is only valid if:
  6. a) no other alkalis are present and
  7. b) Hydroxide and Hydrogen are not present in the sample. If condition b) is not fulfilled, please see additional information from "Deutsche Einheitsverfahren zur Wasser-, Abwasser- and Schlammuntersuchung, D8".

- If p-Alkalinity = 0:  
Hydrogen carbonate = m  
Carbonate = 0  
Hydroxide = 0
- If p-Alkalinity > 0 and m-Alkalinity > 2p:  
Hydrogencarbonate = m - 2p  
Carbonate = 2p  
Hydroxide = 0
- If p-Alkalinity > 0 and m-Alkalinity < 2p:  
Hydrogen carbonate = 0  
Carbonate = 2m - 2p  
Hydroxide = 2p - m



## Determination of Alkalinity-p = p-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.

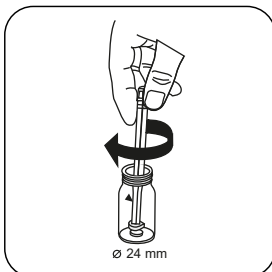


Remove the vial from the sample chamber.

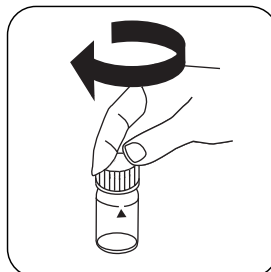
For devices that require **no ZERO measurement**, start here.



Add **ALKA-P-PHOTOMETER** tablet.



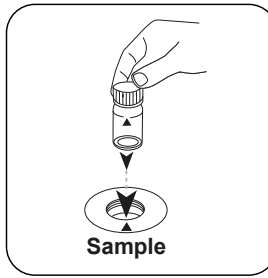
Crush tablet(s) by rotating slightly.



Close vial(s).



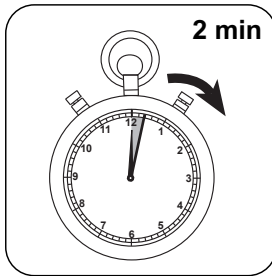
Dissolve tablet(s) by inverting.



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



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



Wait for **2 minute(s) reaction time**.

Once the reaction period is finished, the measurement takes place automatically. The result in Alkalinity-p appears on the display.



## Analyses

The following table identifies the output values can be converted into other citation forms.

Unit	Cite form	Scale Factor
mg/l	CaCO <sub>3</sub>	1
	°dH	0.056
	°eH	0.07
	°fH	0.1
	°aH	0.058
	K <sub>S4.3</sub>	0.02

## Chemical Method

Acid / Indicator

## 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	-4,64325•10 <sup>0</sup>	-4,64325•10 <sup>0</sup>
b	2,19451•10 <sup>+2</sup>	4,7182•10 <sup>+2</sup>
c	-7,83499•10 <sup>+1</sup>	-3,62172•10 <sup>+2</sup>
d	2,24118•10 <sup>+1</sup>	2,24737•10 <sup>+2</sup>
e		
f		

## Method Validation

Limit of Detection	3.34 mg/L
Limit of Quantification	10.03 mg/L
End of Measuring Range	500 mg/L
Sensitivity	167.10 mg/L / Abs
Confidence Intervall	23.21 mg/L
Standard Deviation	10.67 mg/L
Variation Coefficient	4.22 %



**Derived from**

DIN 38409 - H-4-2

EN ISO 9963-1