

**Alkalinity M****56I700120****50 - 2400 mg/L CaCO<sub>3</sub>****Material**

<b>Reagents</b>	<b>Packaging Unit</b>	<b>Part Number</b>
Alkalinity 4.5 Indicator TA4	65 mL	56L013865
Alkalinity LR Titrant TA3	65 mL	56L013965
Alkalinity HR Titrant PA2/TA2	65 mL	56L013665

The following accessories are required.

<b>Accessories</b>	<b>Packaging Unit</b>	<b>Part Number</b>
Syringe, plastic, 20 mL	1 Pieces	56A006501
Titration jar with cap, plastic, 60 mL	1 Pieces	56A006701

**Application List**

- Cooling Water
- Boiler Water

**Remarks**

1. The M refers to methyl orange, the indicator originally used for titrating Total Alkalinity.
2. Nowadays 4.5 indicator is used but the old M terminology has remained.

**Alkalinity Relationship**

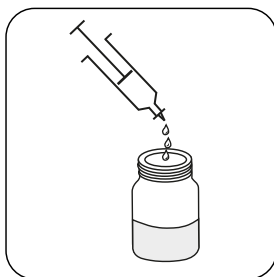
The separate contributions to alkalinity from free caustic, carbonate and bicarbonate can be estimated using the P & M alkalinity relationship in the table below.

<b>If</b>	<b>OH</b>	<b>CO<sub>3</sub></b>	<b>HCO<sub>3</sub></b>
P = 0	0	0	M
P < M/2	0	2P	M - 2P
P = M/2	0	2P	0
P > M/2	2P - M	2 (M - P)	0
P = M	M	0	0

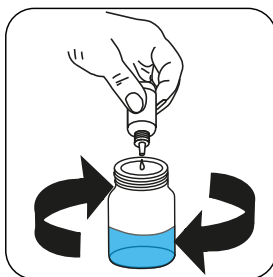
## Sampling

Select the sample volume from the table according to the expected measuring range and read off the factor to calculate the result.

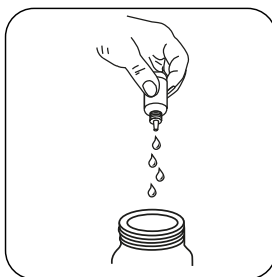
<b>Expected Range</b>	<b>Titrant used</b>	<b>Sample Size</b>	<b>Factor</b>
50-150 mg/L	Alkalinity LR Titrant TA3	40 mL	5
100-300 mg/L	Alkalinity LR Titrant TA3	20 mL	10
200-600 mg/L	Alkalinity LR Titrant TA3	10 mL	20
200-600 mg/L	Alkalinity HR Titrant PA2/TA2	40 mL	20
400-1200 mg/L	Alkalinity HR Titrant PA2/TA2	20 mL	40
800-2400 mg/L	Alkalinity HR Titrant PA2/TA2	10 mL	80



**Attention!** Select the appropriate sample volume according to the instructions in the chapter Sampling.



Add drops of **Alkalinity 4.5 Indicator TA4** to give a **pure blue** colour.



**Attention!** Record the number of drops that will be added.

**Note:** Make sure to swirl the jar after adding each drop!



Add drops of **Alkalinity LR Titrant TA3** or **Alkalinity HR Titrant PA2/TA2** to give a **orange/ yellow** colour.

**Calculate test result: Total Alkalinity (as CaCO<sub>3</sub>) mg/L = Number of drops x factor (see table)**