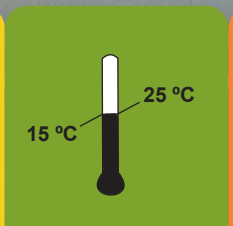
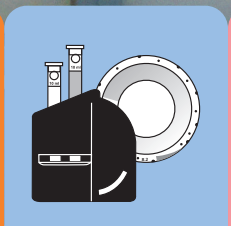
Lovibond® Water Testing

Tintometer® Group

Cooling Water Legionella Compliance Test Kit

56I701110





Cooling Water Legionella Compliance Test Kit

Cooling Water Monitoring

This test kit includes tests for the most critical parameters that should be measured regularly to minimise the risk of Legionella proliferating to harmful levels in cooling water systems. The test kit DOES NOT test for Legionella bacteria itself but instead test for the conditions to control legionella growth. The kit is designed to be used on systems treated with bromine as the oxidising biocide.

Tests supplied are as follows:

1. Alkalinity
2. Bromine (Comparator)
3. Conductivity/TDS
4. Hardness
5. Iron
6. pH

Note:

1. The conductivity meter will also measure temperature directly on the display.
2. Further instructions can be found with the corresponding product.

Alkalinity M 56I700120

50 - 2400 mg/L $CaCO_3$

EN

Material

Reagents	Packaging Unit	Part Number
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.

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

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.

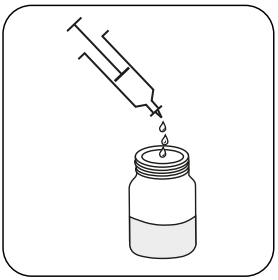
If	OH	CO_3	HCO_3
P = 0	0	0	M
P < M/2	0	2P	M - 2P
P = M/2	0	2P	0
P > M/2	2P - M	2 (M - P)	0
P = M	M	0	0

Sampling

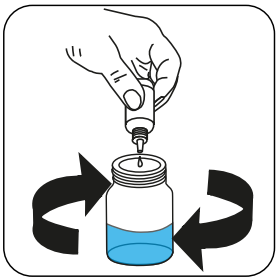
Select the sample volume from the table according to the expected measuring range and read off the factor to calculate the result.

Expected Range	Titrant used	Sample Size	Factor
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

EN



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 $CaCO_3$) mg/L = Number of drops x factor (see table)

Hardness Calcium 56I700270

5 - 600 mg/L $CaCO_3$

EN

Material

Reagents	Packaging Unit	Part Number
Hardness Calcium Buffer CH2	65 mL	56L014465
Hardness Calcium Indicator CH1P	Powder / 20 g	56P021620
Hardness LR Titrant TH3	65 mL	56L016265
Hardness HR Titrant TH4	65 mL	56L014565
Hardness Total Indicator TH1P	Powder / 40 g	56P028340
Hardness Total Buffer TH2	65 mL	56L016065

The following accessories are required.

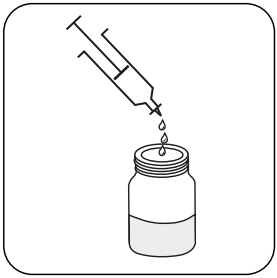
Accessories	Packaging Unit	Part Number
Syringe, plastic, 20 mL	1 Pieces	56A006501
Titration jar with cap, plastic, 60 mL	1 Pieces	56A006701

Sampling

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

Expected Range	Titrant used	Sample Size	Factor
5-15 mg/L	Hardness LR Titrant TH3	40 mL	0.5
10-30 mg/L	Hardness LR Titrant TH3	20 mL	1
20-60 mg/L	Hardness LR Titrant TH3	10 mL	2
50-150 mg/L	Hardness HR Titrant TH4	40 mL	5
100-300 mg/L	Hardness HR Titrant TH4	20 mL	10
200-600 mg/L	Hardness HR Titrant TH4	10 mL	20

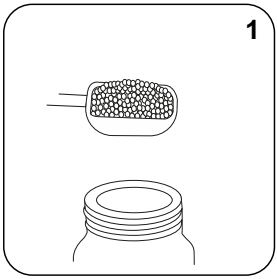
Determination of Hardness Calcium



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

Add **4** drops of **Hardness Calcium Buffer CH2** per **10 mL** of sample.

Swirl to mix.



Add **1 measuring scoop(s) Hardness Calcium Indicator CH1P** .

Swirl to mix.

The sample will turn **wine red** .

Attention! Record the number of drops that will be added.
Note: Make sure to swirl the jar after adding each drop!

Add **Hardness LR Titrant TH3 or Hardness HR Titrant TH4** drop by drop to the sample until colouration turns from **wine red** to **blue**.

Calculate test result: Total Hardness (as $CaCO_3$) mg/L = Number of drops x factor (see table)

Hardness, total 56I700280

5 - 600 mg/L $CaCO_3$

EN

Material

Reagents	Packaging Unit	Part Number
Hardness Total Buffer TH2	65 mL	56L016065
Hardness Total Indicator TH1P	Powder / 40 g	56P028340
Hardness LR Titrant TH3	65 mL	56L016265
Hardness HR Titrant TH4	65 mL	56L014565

The following accessories are required.

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

Remarks

1. Colours may vary depending on sample and test conditions.
2. More than 1 ppm copper in the sample will prevent the pure blue endpoint from occurring.
3. To remove copper interference, add 1 drop of Iron Reagent FE6 before the addition of Hardness Total Buffer TH2. Iron Reagent FE6 is not supplied as standard in the hardness test pack, but can be purchased separately. (56L006365)

Sampling

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

Expected Range	Titrant used	Sample Size	Factor
5-15 mg/L $CaCO_3$	Hardness LR Titrant TH3	40 mL	0.5
10-30 mg/L $CaCO_3$	Hardness LR Titrant TH3	20 mL	1
20-60 mg/L $CaCO_3$	Hardness LR Titrant TH3	10 mL	2
50-150 mg/L $CaCO_3$	Hardness HR Titrant TH4	40 mL	5
100-300 mg/L $CaCO_3$	Hardness HR Titrant TH4	20 mL	10
200-600 mg/L $CaCO_3$	Hardness HR Titrant TH4	10 mL	20

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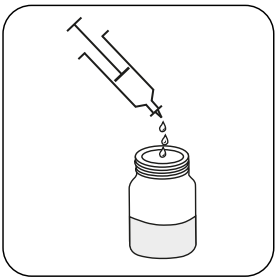
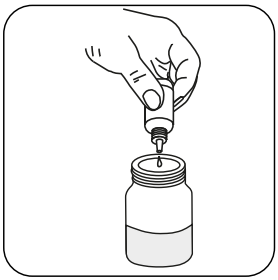
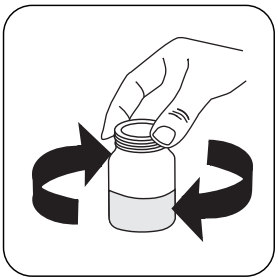


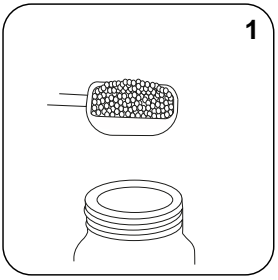
Attention!Select the appropriate sample volume according to the instructions in the chapter Sampling.



Add **4** drops of **Hardness Total Buffer TH2** per **10 mL** of sample.



Swirl to mix.

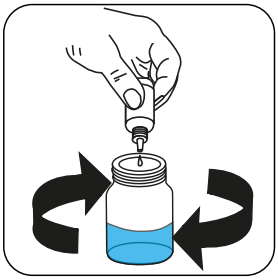


Add **1 measuring scoop(s) Hardness Total Indicator TH1P** .

Swirl to mix.

The sample will turn **wine red** .

Attention! Record the number of drops that will be added.
Note: Make sure to swirl the jar after adding each drop!



Add **Hardness LR Titrant TH3 or Hardness HR Titrant TH4** drop by drop to the sample until colouration turns from **wine red** to **blue**.

Calculate test result: Total Hardness (as $CaCO_3$) mg/L = Number of drops x factor (see table)

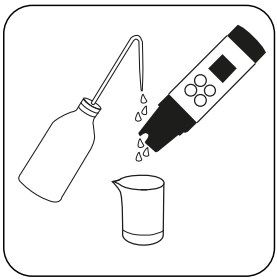
Conductivity SD / Con

0 - 20 mS/cm

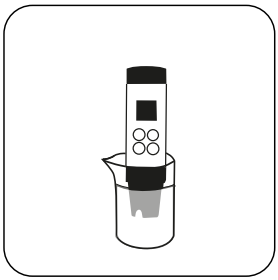
EN

Remarks

1. The description of the calibration and the device settings are described in the detailed operating instructions. Detailed operating instructions are enclosed with the device.



Rinse the electrode with distilled or deionised water and carefully wipe with a paper towel.



Hold the tester without protective cap in the sample water to be measured so that the electrode and temperature probe is immersed in the sample water not deeper than the seal ring.

The measurement result is displayed.

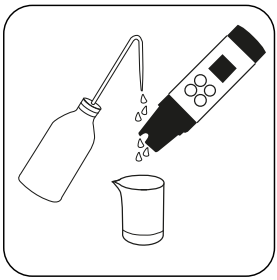
pH **SD / pH**

0 - 14

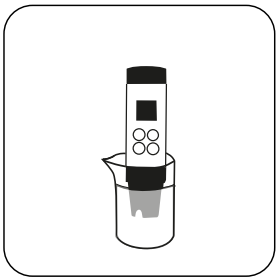
EN

Remarks

1. The description of the calibration, the preparation of the buffer solutions and the device settings are described in the detailed operating instructions. Detailed operating instructions are enclosed with the device.



Rinse the electrode with distilled or deionised water and carefully wipe with a paper towel.



Hold the tester without protective cap in the sample water to be measured so that the electrode and temperature probe is immersed in the sample water not deeper than the seal ring.

The measurement result is displayed.

Hardness (Yes/No) Y/N

8 - 20 mg/L $CaCO_3$

EN

Material

Reagents	Packaging Unit	Part Number
Hardness Yes/No	Tablet / 100	515360BT

Sampling

1. Let the sample water flow for 30 seconds before taking the sample.

Remarks

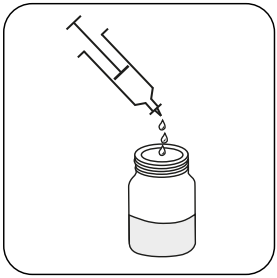
1. Colours may vary depending on sample and test conditions.
2. This test may be used to determine the performance of a softener unit by measuring the total hardness of softened water taken from the outlet. It is important to monitor hardness levels regularly as hardness breakthrough is indicative of exhausted resin and regeneration would be required.
3. Test result:
   Green Sample Colour : Hardness is less than the threshold level
   Red Sample Colour : Hardness is more than the threshold level

Sampling

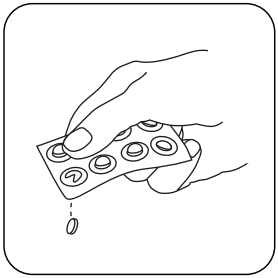
Select the sample volume from the table according to the expected measuring range and read off the factor to calculate the result.

Expected Range	Titrant used	Sample Size	Factor
10 mg/L	1 Tablette Hardness Yes/No	20 mL	
20 mg/L	1 Tablette Hardness Yes/No	10 mL	
16 mg/L	2 Tabletten Hardness Yes/No	25 mL	
8 mg/L	1 Tablette Hardness Yes/No	25 mL	

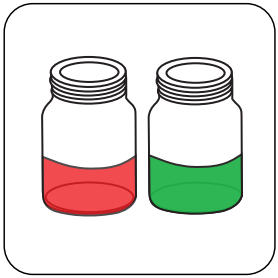
Determination of Hardness (Yes/No)



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



Add **x Hardness Yes/No tablet(s)**. **(See chapter Sampling under Titrant in the table.)**



The sample will turn **red or green (See chapter Notes.)**.

Read the test result: Note the color of the sample (red or green) (see Notes).

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