Lovibond® Water Testing

Tintometer® Group

Disinfection Combined Test Kit

56I701160

Disinfection Chlorine Test Kit (combined)

Cooling towers, evaporative condensers, make up tanks and associated systems should be cleaned and disinfected every six months.

Hot and cold water services may also require disinfection if:

1. Routine inspection shows it to be necessary.
2. If the system has been substantially altered leading to possible contamination.
3. During or following a legionella outbreak.

This test kit provides the water treatment engineer with suitable testing equipment to measure water conditions throughout the disinfection process.

Tests included are as follows:

Chlorine – Free (drop test)

Disinfection guidelines for water services advise free chlorine residual in the cold water storage tanks should be raised to between 20 and 50mg/l Cl2. This concentration should be monitored throughout the disinfection to ensure that header tank levels remain, with additional disinfectant added to top up when necessary. The Chlorine (Free) drop test can be used to monitor tank levels.

Starch/Iodide Paper

Contact time for 50 ppm chlorine is at least 1 hour and 20 ppm chlorine is at least 2 hours. The disinfectant should be flushed through the system by systematically opening outlets such as taps and showers. Using starch/Iodide papers or potassium iodide tablets at these outlets will confirm the presence of disinfection concentrations of chlorine.

pH test strips

It is essential to monitor water pH in the storage tank throughout the disinfection process. The effectiveness of chlorine as a biocide is pH critical so careful pH control is necessary to maintain biocide efficiency.

Disinfection Hydrogen Peroxid

Disinfection is the process of adding a biocide to water to prevent the spread of infection and disease (including Legionnaires' Disease). Disinfected water systems require careful monitoring to ensure the correct conditions are achieved and maintained during the disinfection process.Failure to achieve the correct hydrogen peroxide levels can lead to unsuccessful disinfections while elevated levels can lead to potentially corrosive conditions. This hydrogen peroxide test kit has been designed to measure low and high levels of hydrogen peroxide. Test strips allow quick easy checking at Sentinel outlets.

Chlorine (Detection)

Starch/Iodide papers are provided to enable rapid detection of high chlorine levels at outlets during system disinfection. Simply wet a portion of paper in the stream of water from an outlet. If the paper turns blue/black then chlorine is present at levels above potable water limits. The paper will typically detect chlorine above 5ppm (pale colour change) and give a deep blue/black colour with 100ppm chlorine.

pH Measurement

The effectiveness of the oxidising biocide is pH dependant. Correct pH control during chlorination is essential to ensure maximum biocide efficiency. Simply take a sample of water to be tested and dip the test strip into the sample. Remove and Compare to colour chart provided.

Hydrogen Peroxide Strip

Hydrogen peroxide papers are provided to enable rapid detection at outlets during system disinfection. Simply wet a portion of paper in the stream of water from an outlet. Compare the colour developed with the chart provided.

Note:

1. Further instructions can be found with the corresponding product.

Chlorine (free) 56I700200

1 - 300 mg/L Cl_2

EN

Material

Reagents	Packaging Unit	Part Number
Chlorine Free Buffer FCL1	65 mL	56L015165
Chlorine Free LR Titrant FCL2	65 mL	56L015265
Chlorine Free HR Titrant FCL3	65 mL	56L015365

The following accessories are required.

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

Notes

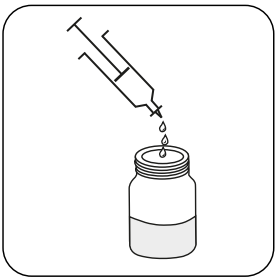
1. Colours may vary depending on sample and test conditions.
2. Test should be carried out immediately on fresh samples.
3. If adding chlorine in an intermittent dose, wait 10-15 minutes after dosing before sampling and testing.
4. This wait is not necessary for continuously dosed systems.
5. Add 10 drops of Chlorine Free Buffer FCL1 if you are testing samples with a hardness greater than 400 mg/L (as $CaCO_3$).
6. [1]Dilute samples of less than 20 mL to approximately 20 mL with distilled or deionised water.

Sampling

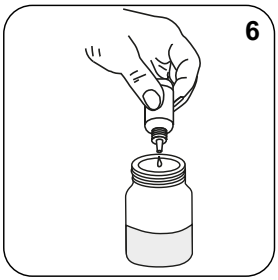
Select the sample volume from the table according to the expected measuring range and read off the factor to calculate the result.

Expected Range	Titrant used	Sample Size	Factor
1-4 mg/L	Chlorine Free LR Titrant FCL2	40 mL	0.25
2-8 mg/L	Chlorine Free LR Titrant FCL2	20 mL	0.50
5-15 mg/L	Chlorine Free LR Titrant FCL2	10 mL[1]	1.0
10-30 mg/L	Chlorine Free LR Titrant FCL2	5 mL[1]	2.0
15-40 mg/L	Chlorine Free HR Titrant FCL3	40 mL	2.5
25-80 mg/L	Chlorine Free HR Titrant FCL3	20 mL	5
50-150 mg/L	Chlorine Free HR Titrant FCL3	10 mL[1]	10
100-300+ mg/L	Chlorine Free HR Titrant FCL3	5 mL[1]	20

EN

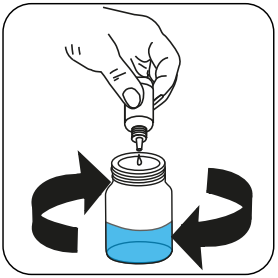


Attention!Select the appropriate sample volume according to the instructions in the chapter Sampling.



Add **6 drops Free Chlorine Buffer FCL1**.
Note: Add 10 drops when hardness of sample is greater than 400 mg/l (as $CaCO_3$).

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



Add **Chlorine Free LR Titrant FCL2 or Chlorine Free HR Titrant FCL3** drop by drop to the sample until colouration turns from **colourless/pale yellow** to **blue**.

Calculate test result: Free Chlorine (as Cl_2) mg/L = Number of drops x factor (see table)

Chlorine Dioxide 56I700230

0.16 - 600 mg/L ClO_2

EN

Material

Reagents	Packaging Unit	Part Number
Chlorine Dioxide Buffer CDO1	65 mL	56L033965
Chlorine Dioxide Titrant CDO2	65 mL	56L150265
Chlorine Dioxide Titrant CDO2A	65 mL	56L150165
Chlorine Dioxide Titrant CDO3	65 mL	56L150065

The following accessories are required.

Accessories	Packaging Unit	Part Number
Syringe, plastic, 20 mL	1 pc.	56A006501
Titration jar with cap, plastic, 250 mL	1 pc.	56A010501

Notes

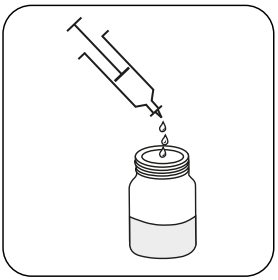
1. Colours may vary depending on sample and test conditions.
2. Acidic samples must be neutralised prior to testing.

Sampling

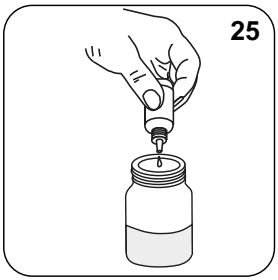
Select the sample volume from the table according to the expected measuring range and read off the factor to calculate the result.

Expected Range	Titrant used	Sample Size	Factor
0.16-0.48 mg/L	Chlorine Dioxide Titrant CDO2A	250 mL	0.02
0.2-0.6 mg/L	Chlorine Dioxide Titrant CDO2A	200 mL	0.025
0.4-1.2 mg/L	Chlorine Dioxide Titrant CDO2A	100 mL	0.05
0.8-2.4 mg/L	Chlorine Dioxide Titrant CDO2A	50 mL	0.1
1.0-3.0 mg/L	Chlorine Dioxide Titrant CDO2A	40 mL	0.125
2.0-6.0 mg/L	Chlorine Dioxide Titrant CDO2A	20 mL	0.25
4.0-12 mg/L	Chlorine Dioxide Titrant CDO2A	10 mL	0.5
0.3-1.5 mg/L	Chlorine Dioxide Titrant CDO2	250 mL	0.04
0.4-1.2 mg/L	Chlorine Dioxide Titrant CDO2	200 mL	0.05
0.8-2.4 mg/L	Chlorine Dioxide Titrant CDO2	100 mL	0.1
2.0-6.0 mg/L	Chlorine Dioxide Titrant CDO2	40 mL	0.25
4.0-12.0 mg/l	Chlorine Dioxide Titrant CDO2	20 mL	0.5
8.0-24.0 mg/L	Chlorine Dioxide Titrant CDO2	10 mL	1
20-60 mg/L	Chlorine Dioxide Titrant CDO3	50 mL	2
50-150 mg/L	Chlorine Dioxide Titrant CDO3	20 mL	5
100-300 mg/L	Chlorine Dioxide Titrant CDO3	10 mL	10
200-600 mg/L	Chlorine Dioxide Titrant CDO3	5 mL	20

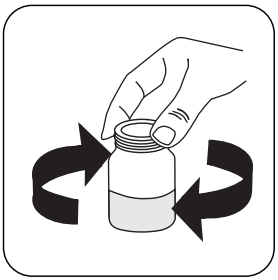
EN



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

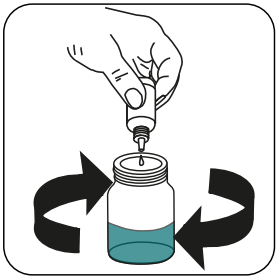


Add **25 drops Chlorine Dioxide Buffer CDO1**.



Swirl to mix.

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



Add **Chlorine Dioxide Titrant CDO2A or Chlorine Dioxide Titrant CDO2 or Chlorine Dioxide Titrant CDO3** drop by drop to the sample until colouration turns from **colourless/pale yellow** to **blue/green** .

Calculate test result: Chlorine Dioxide (as ClO_2) mg/L = Number of drops x factor (see table)

Hydrogen Peroxide 56I700290

15 - 500 mg/L H_2O_2

EN

Material

Reagents	Packaging Unit	Part Number
Hydrogen Peroxide Buffer HP1	65 mL	56L041565
Hydrogen Peroxide HR Titrant HP2	65 mL	56L719965
Hydrogen Peroxide LR Titrant HP3	65 mL	56L649665

The following accessories are required.

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

Notes

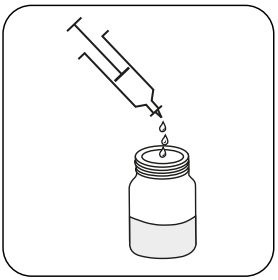
1. Colours may vary depending on sample and test conditions.
2. Other oxidising agents such as raw water residual chlorine will be included in the result but is not significant compared with the usual high concentration of peroxide employed in sanitising operations.
3. Add drops of Hydrogen Peroxide HR Titrant HP2 or Hydrogen Peroxide LR Titrant HP3 slowly with mixing. Do not use more titrant than is required for the colour to persist for at least 30 seconds or the titration will be inaccurate.

Sampling

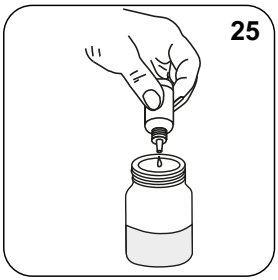
Select the sample volume from the table according to the expected measuring range and read off the factor to calculate the result.

Expected Range	Titrant used	Sample Size	Factor
1-12.5 mg/L	Hydrogen Peroxide LR Titrant HP3	40 mL	0.5
2-25 mg/L	Hydrogen Peroxide LR Titrant HP3	20 mL	1
4-50 mg/L	Hydrogen Peroxide LR Titrant HP3	10 mL	2
15-125 mg/L	Hydrogen Peroxide HR Titrant HP2	40 mL	5
25-250 mg/L	Hydrogen Peroxide HR Titrant HP2	20 mL	10
50-500 mg/L	Hydrogen Peroxide HR Titrant HP2	10 mL	20

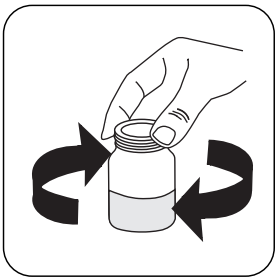
EN



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

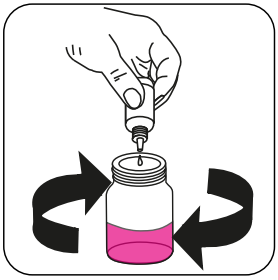


Add **25 drops Hydrogen Peroxide Buffer HP1**.



Swirl to mix.

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



Add **Hydrogen Peroxide HR Titrant HP2 or Hydrogen Peroxide LR Titrant HP3** drop by drop to the sample until colouration turns from **colourless** to **pink**.

The color should persist for at least **30** seconds.

Calculate test result: Hydrogen Peroxide (as H_2O_2) mg/L = Number of drops x factor (see table)

Chlorine HR

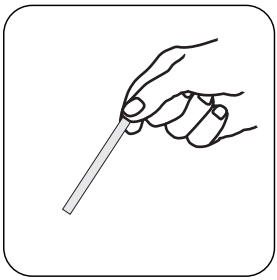
Strips Cl HR 10-200

10 - 200 mg/L Cl_2

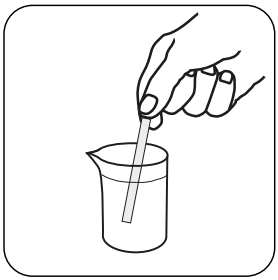
EN

Notes

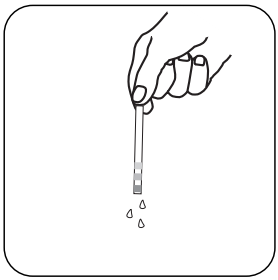
1. High concentrations will bleach the strip white and a thin blue line may separate wet from dry area.
2. Color indicates approximate strength of the solution as total available chlorine.
3. Store in cool, dry place and away from direct sunlight.
4. The test strips must be stored in the closed packaging.



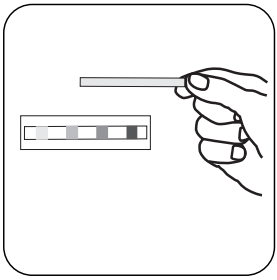
Remove one test strip. Hold the end of the test strip between index finger and thumb.



Dip the test strip into the solution to be tested without agitation.



Shake off excess liquid.



Read the result from the colour scale.

Hydrogen Peroxide test strips

Strips H2O2 0.5-100

0.5 - 100 mg/L H_2O_2

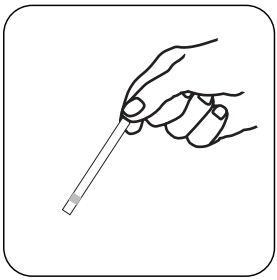
EN

Material

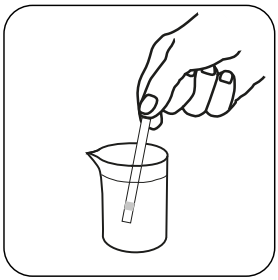
Reagents	Packaging Unit	Part Number
Hydrogen Peroxide Strips	1 pc.	56S000850

Notes

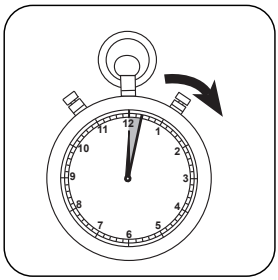
1. Store in cool, dry place (below 32°C) and away from direct sunlight.
2. When handling test strips, make sure to touch them with your fingers only at the end of the test strip. The pads must not come into contact with the fingers.
3. The test strips must be stored in the closed packaging.
4. Similar colour development may occur if other oxidizing agents, such as Free Chlorine, are present in the sample.



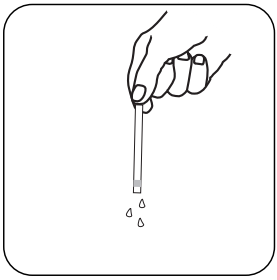
Remove one test strip. Hold the end of the test strip between index finger and thumb.



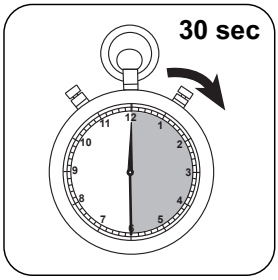
Dip the test strip into the solution to be tested so that the pad is completely immersed.



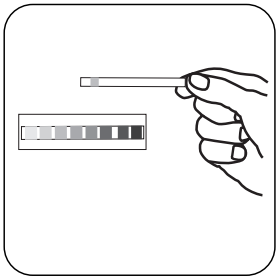
Keep the test strip immersed in the water sample for 2 seconds without moving.



Shake off excess liquid.



Wait for **30 second(s) reaction time**.



Read the result from the colour scale.

pH — Strips pH 7-14

7 - 14 pH

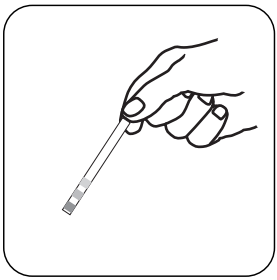
EN

Material

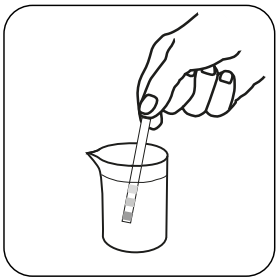
Reagents	Packaging Unit	Part Number
pH Strips pH 7-14 Plastic	1 pc.	56S001190

Notes

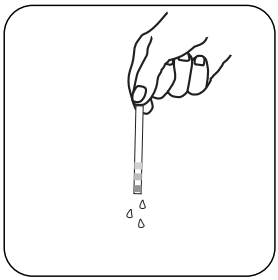
1. When handling test strips, make sure to touch them with your fingers only at the end of the test strip. The pads must not come into contact with the fingers.
2. The test strips must be stored in the closed packaging.



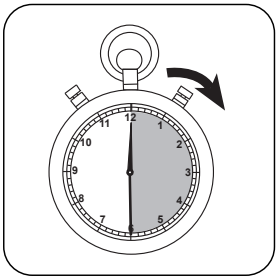
Remove one test strip. Hold the end of the test strip between index finger and thumb.



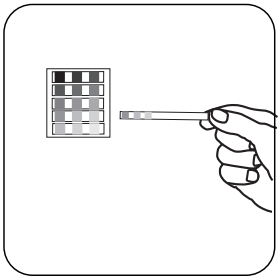
Dip the test strip into the solution to be tested so that all pads are completely immersed.



Shake off excess liquid.



Compare the colour of the test strip within 30 seconds with the colour chart provided.



Read the result from the colour scale.

Tintometer GmbH
Lovibond® Water Testing
Schleefstraße 8-12
44287 Dortmund
Tel.: +49 (0)231/94510-0
sales@lovibond.com
www.lovibond.com
Germany

The Tintometer Limited
Lovibond House
Sun Rise Way
Amesbury, SP4 7GR
Tel.: +44 (0)1980 664800
Fax: +44 (0)1980 625412
sales@lovibond.uk
www.lovibond.com
UK

Tintometer China
Room 1001, China Life Tower
16 Chaoyangmenwai Avenue,
Beijing, 100020
Customer Care China Tel.: 4009021628
Tel.: +86 10 85251111 App. 330
Fax: +86 10 85251001
chinaoffice@tintometer.com
www.lovibond.com
China

Tintometer South East Asia
Unit B-3-12, BBT One Boulevard,
Lebuh Nilam 2, Bandar Bukit Tinggi,
Klang, 41200, Selangor D.E
Tel.: +60 (0)3 3325 2285/6
Fax: +60 (0)3 3325 2287
lovibond.asia@tintometer.com
www.lovibond.com
Malaysia

Tintometer Brazil
Caixa Postal: 271
CEP: 13201-970
Jundiaí – SP
Tel.: +55 (11) 3230-6410
sales@lovibond.us
www.lovibond.com.br
Brazil

Tintometer Inc.
6456 Parkland Drive
Sarasota, FL 34243
Tel: 941.756.6410
Fax: 941.727.9654
sales@lovibond.us
www.lovibond.us
USA

Tintometer India Pvt. Ltd.
Door No: 7-2-C-14, 2nd, 3rd & 4th Floor
Sanathnagar Industrial Estate,
Hyderabad, 500018
Telangana
Tel: +91 (0) 40 23883300
Toll Free: 1 800 599 3891/ 3892
indiaoffice@lovibond.in
www.lovibondwater.in
India

Tintometer Spain
Postbox: 24047
08080 Barcelona
Tel.: +34 661 606 770
sales@tintometer.es
www.lovibond.com
Spain

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