



Cooling Water No.1 Test Kit



Instruction Manual



COOLING WATER No.1

Legionella bacteria can survive under a wide variety of environmental conditions and have been found in water at temperatures between 6°C and 60°C. Water temperatures in the range of 20°C to 45°C seem to favor growth. The organisms do not appear to multiply below 20°C and will not survive above 60°C.

Legionella bacteria can colonise manufactured water systems and be found in cooling tower systems, hot and cold water systems and other plant which use or store water. To reduce the possibility of creating conditions in which the risk from exposure to legionella bacteria is increased, it is important to control the risk by introducing measures which:

- (a) Do not allow proliferation of the organisms in the water systems; and
- (b) Reduce, as far as reasonably practicable, exposure to water droplets and aerosol.
- (c) Maintain treatment levels and conditions that prevent the bacteria from proliferating.

Examples of systems at risk:

- *Cooling towers & evaporative condensers*
- *Hot & cold water systems, especially those incorporating showers*
- *Spa & whirlpool baths*
- *Hot tubs*
- *Indoor fountains & water features*
- *Horticultural misting systems*
- *Emergency showers and eye wash sprays*
- *Car/bus washes*

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UK guidelines published by the HSE (Health and Safety Executive): "Legionnaires' disease. The control of legionella bacteria in water systems" - Approved Code of Practice and guidance – commonly called L8 were produced to give guidance on the control of legionella bacteria in water systems.

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 open 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. Bromine (Comparator)
2. Conductivity/TDS (SD70 meter)
3. Hardness from a softener (tablet test)
4. pH (SD50 meter)

Notes

1. The SD70 conductivity meter will also measure temperature directly on the display while measuring pH value.
2. Additional tests can be added by purchasing the appropriate reagent packs.
3. Aerobic bacteria can be measured using dipslides and the DI-10

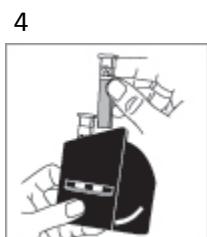
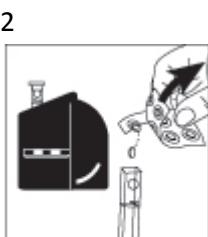
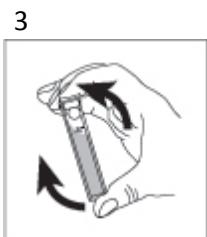
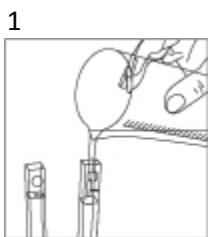
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Bromine (Total)

Bromine is an effective oxidising biocide for cooling water treatment, provided that careful pH control is maintained. Your water treatment contractor will advise suitable control concentrations to maintain. Use the following test to check this concentration weekly and log the results. Both free and combined forms of bromine are biocidal.

Bromine Total - (Free and Combined)

- Fill both cells to the 10 ml mark and place one cell in the left-hand compartment of the comparator as a blank.
- Add one **DPD No.1** tablet in the other cell, cap the cell swirl it until the tablet has dissolved.
- Place this second cell in the right-hand compartment of the comparator and match the two colour fields against north day light
- Read off the result as mg/l total bromine.



Note: To remove any chlorine that may be present, add one **DPD Glycine tablet** (not supplied as standard) before the DPD No.1 tablet and crush to dissolve.

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Conductivity/TDS/Temperature (SD70 Meter)

An SD70 conductivity meter is supplied to measure water conductivity. Multiplying the result by 0.7 will convert the reading to total dissolved solids (TDS). Temperature is displayed directly on screen during pH measurement.

Quick Start Guide:

(For full features, see the instruction booklet supplied)



Press and hold for 3 seconds to turn off.



Press to hold reading - (!) appears on LCD



Press for backlight on/off



Press for 3 seconds to store data

After 3 sec. appears shortly the file no. on the display, e.g. 01. Once the storage has reached maximum capacity, the data will overwrite the oldest files.

- * Re-Calibrate regularly to maintain accuracy.
- * Rinse the electrode with distilled water after each reading.
- * If temperature is out of range, "ERR" will appear, then return to measurement mode automatically.
- * If the default reading is more than 30% off compare to the standard buffer, "ERR" will appear.



Calibration

Auto-recognition for 1413µS and 12.88mS

3 sec



Press "Cal" for 3 seconds - Then Press
(CAL with blink in LCD)



Wait for CAL to disappear

The instrument is now calibrated. Rinse with a small quantity of sample water then immerse the probe in sample water to display the conductivity result.

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Hardness Yes/No

Range: 4 – 20mg/l (as CaCO₃)

| | | | |
|--|--|--|---|
| Allow the sample water to flow for 30 seconds. | Then fill the test vessel with sample water, depending upon the threshold level of the softener. See table below. | Add the number of KT168 Hardness Yes/No Tablets according to the table below | Note the colour of the sample. Red or Green . |
|--|--|--|---|

Flow for 30 seconds



Colours may vary depending on sample and test conditions.

Green Sample Colour : Hardness is less than the threshold level

Red Sample Colour : Hardness is more than the threshold level

ppm = mg/l

| Threshold Level (CaCO ₃ mg/l) | Sample Size (ml) | Number of KT168 Tablets to Add |
|--|------------------|--------------------------------|
| 10 | 20 | 1 |
| 20 | 10 | 1 |
| 16 | 25 | 2 |
| 8 | 25 | 1 |

NOTE

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.

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pH Measurement

The effectiveness of the oxidising biocide is pH dependant. Correct pH control of cooling water is essential to ensure maximum biocide efficiency.

Quick Start Guide:

(For full features, see the instruction booklet supplied)



Press and hold for 3 seconds to turn off.



Press to hold reading - (!) appears on LCD



Press for backlight on/off



Press for 3 seconds to store data



After 3 seconds the storage location (eg. 01) appears shortly on the display. Once the storage has reached maximum capacity, the data will overwrite the oldest files.

- * Re-Calibrate regularly to maintain accuracy.
- * Rinse the electrode with distilled water after each reading.
- * If temperature is out of range, "ERR" will appear, then return to measurement mode automatically.
- * If the default reading is more than 30% off compare to the standard buffer, "ERR" will appear.

Calibration: Auto-recognition for pH 4 (L), pH 7 (M) and pH 10 (H) buffer solutions.

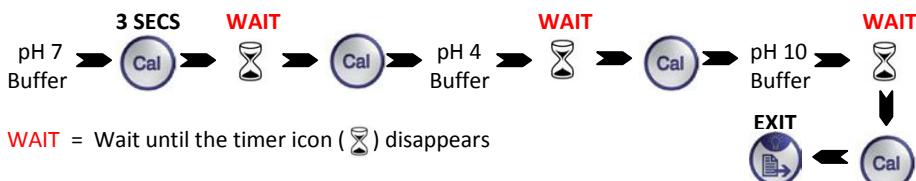
One point calibration:



Two Point Calibration



Three Point Calibration



WAIT = Wait until the timer icon (⌚) disappears