

## Contents:

The Systemsure water analysis test kit includes:  
 5m reel pH paper.  
 Drop test for dissolved iron content evaluation.  
 Drop test for dissolved copper content evaluation.  
 Drop test for chloride level evaluation.  
 Drop test for total hardness evaluation.  
 Drop test for Systemsafe-DM corrosion inhibitor concentration.

Electronic pH and TDS meters are an extra cost option.

## General instruction notes:

For accurate results, rinse sample tubes with a sample of the water to be tested before carrying out tests, and rinse again with fresh tap water after use.

## Drop test method:

The test should take between 10 and 30 drops of titrant to reach the end point. If outside this range, adjust the sample volume used, i.e take a larger sample volume if less than 10 drops are used, and a lesser sample volume if greater than 30 drops are required. NOTE: the multiplication factor will have to be altered accordingly.



## Use of pH paper:

Remove 5-8 cm of pH paper from the dispenser roll, and immerse in water for 30 seconds.

Compare the colour with the circular chart on the side of the dispenser, and note the pH number printed next to that colour.

Supplied in 5m dispenser pack.



## Use of soluble iron drop test:

Fill test tube with sample water to the 5 ml mark. Add 5 drops of Fe5 reagent, mix, and wait for 5 minutes. (#)  
 Hold the tube 2-3 cm from the colour scale, and compare.

The number next to the best colour match is the dissolved iron level in mg/l (ppm).

(#) If complexing agents are present, the time period should be extended. Allow colour development until no further increase is observed.

Reagent for ca. 60 tests supplied.  
 Range: 0-5 ppm.



## Use of soluble copper drop test:

Fill test tube with sample water to the 5 ml mark. Add 5 drops of Coppercol Reagent 1, and mix.  
 ... Add 5 drops of Coppercol Reagent 2, and mix.

Add 1 scoop of Coppercol Reagent 3, and mix.

After 2 minutes, hold the tube 2-3 cm from the colour scale and compare. The number next to the best colour match is the dissolved copper level in mg/l (ppm).

If complexing agents are present, the time period should be extended.  
 Reagent for ca. 60 tests supplied. Range: 0-5 ppm.



## pHScan1 pH meter

An electronic pH meter is available, at extra cost, enabling the pH value of water to be determined with greater accuracy, to one decimal point.

A separate data sheet on the pH meter is available.



## TDSScan LOW (total dissolved solids) meter

An electronic total dissolved solids meter is available, at extra cost. This measures the conductivity of water and hence the level of total dissolved solids in solution.

A comparison of TDS levels between mains water and system water can be used to confirm the efficiency of a power flush - after flushing, both values should be almost identical.

A TDS meter can also be used to ensure correct dosing of inhibitor or flushing chemical into a system of unknown volume. For details, see the separate TDS meter data sheet.



# Systemsure water analysis test kit - instructions

## Use of chloride drop test:

Fill test tube with sample water to the 5 ml mark.  
Add 15 drops of Chloride Reagent A and swirl to mix. Add 15 drops of Chloride reagent B, and swirl to mix. Allow to stand for 5 minutes for colour to develop.

Hold the tube 2-3 cm from the colour scale, and compare.  
The number next to the best colour match is the chloride level in mg/l (ppm) of chloride.

Reagent for ca. 60 tests supplied.  
Range: 10-200 ppm.



## Use of total hardness test:

Fill test tube with sample water up to the 20ml mark. Add drops of Hardness Reagent to the tube one at a time, mixing until colour changes from red to blue.

Hardness value, expressed as CaCO<sub>3</sub> (ppm) = no. of drops x 10.

If a 10ml water sample is taken, multiply the number of drops by a factor of 20.

Reagent for ca. 30 tests supplied.  
Range: 0-600 ppm.



## Use of inhibitor / molybdate test:

Fill test tube with sample water up to 5ml mark (half way up tube). Add 6 drops of Molybdate HR Reagent to the tube. Cap the tube, and invert to mix.

Wait for 10 minutes for colour to develop. Hold the tube 2-3 cm from the colour scale, and compare.  
The result is shown as mg/l (ppm) of molybdate. 330 ppm molybdate is the optimum treatment level for Systemsafe-DM (1%).

Reagent for ca. 50 tests supplied.  
Range:  
20-450 ppm.



## Interpretation and significance of water analysis test results

Analysis / test	Result of test	Interpretation / cause	Action to be taken by engineer
<b>pH</b>	pH less than 6.	Acidic cleanser left in system.	Power flush system, check pH, and add Systemsafe-DM inhibitor.
	pH greater than 8.5.	Alkaline cleanser left in system or system may contain softened water.	Power flush system, refill with mains water, and add Systemsafe-DM inhibitor.
<b>Dissolved iron</b>	More than 1 mg/l above mains water.	1. If no inhibitor present, system is corroding.	Check for aeration (pumping over?). Repair any leaks, power flush and add Systemsafe-DM inhibitor.
		2. If inhibitor is present, corrosion may have stabilised.	Check again after four weeks. If iron content has increased, power flush and add Systemsafe-DM inhibitor.
<b>Dissolved copper</b>	More than 0.5 mg/l.	Flux residues left in system.	Power flush system, and add Systemsafe-DM inhibitor.
<b>Chloride level</b>	More than 25 mg/l, or 50% higher, than the reading for mains water.	Flux residues left in system.	Power flush system, and add Systemsafe-DM inhibitor.
<b>Hardness</b>	Mains water much harder than system water.	Limescale deposits in heat exchanger or boiler.	Descale boiler with Scalebreaker FX, Scalebreaker SR, or Power Flush FX2.
	Less than 2 mg/l hardness in system water.	Heating system contains softened water.	If aluminium heat exchanger or boiler, check pH level. If above 8.5, drain and refill system with mains water, and add Systemsafe-DM inhibitor.
<b>Inhibitor concentration</b>	Less than 330 mg/l molybdate.	Insufficient inhibitor added, or system has leaked.	Check for leaks, and add further inhibitor to give 330 mg/l molybdate.
	More than 330 mg/l molybdate.	System over dosed with inhibitor.	If all other tests passed, no action needed.
<b>T.D.S. (Total dissolved solids)</b>	Reading after power flushing higher than mains water.	Residue of cleanser or corrosion debris in system.	Continue flushing until T.D.S. value is similar to mains water.

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