



Introduction

The ADEY® Engineer's water test kit provides rapid on-site analysis of critical parameters that can affect the longevity and efficiency of the heating system.

The test kit is supplied with all the required equipment and reagents to determine:

- Chloride
- Copper
- Iron
- pH
- Total Water Hardness
- Level of ADEY MC1+™ Protector (if it has been previously introduced into the system).

Chloride

High levels of chloride, significantly above the mains water reading, are indicative of flux contamination. These can sometimes be associated with high level of copper. High chloride levels within hydronic heating systems can lead to pitting corrosion which can cause component failure. This test should be undertaken before the addition of MC1+ Protector.

Procedure

- Take a sample of the system water before adding any MC1+ Protector.
- Transfer 5ml of the sample using the syringe to the sample tube.
- Add Chloride Reagent 1 drop by drop and swirl to mix.
- Add Chloride Reagent 2 drop by drop until the colour changes to yellow
- Add Chloride Reagent 3 drop by drop, counting the number of drops, until the colour changes from yellow to violet
- Multiply the number of drops of reagent 3 by 10 to calculate chloride concentration in ppm.

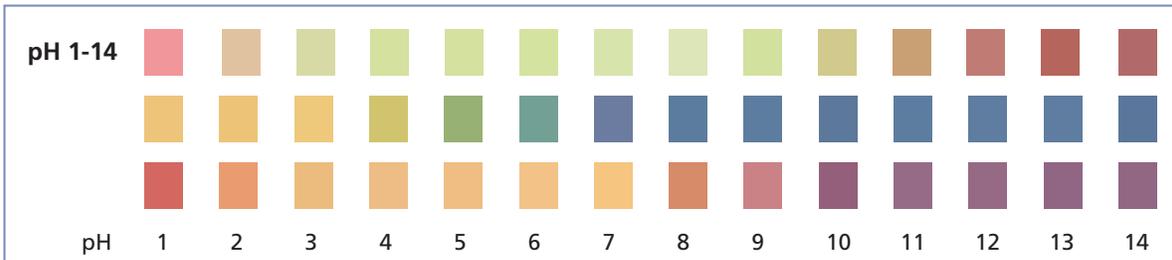
Number of drops of reagent 3 X 10 = chloride concentration (ppm)

pH

pH is a measure of acidity or alkalinity. Corrosion of metals is accelerated in acidic conditions of pH is < (less than) 6.5. The lower the pH number the greater the acidity and rate of corrosion. pH levels in water can reduce and become more acidic if fluxes are not flushed out thoroughly. Aluminium can also corrode in alkaline conditions where the pH is > (greater than) 8.5.

Procedure

Dip the test strip into a small sample of the system water for 3 seconds, remove and shake off any excess. Allow 10 seconds for the color to develop and compare the color below to determine the pH of the sample.



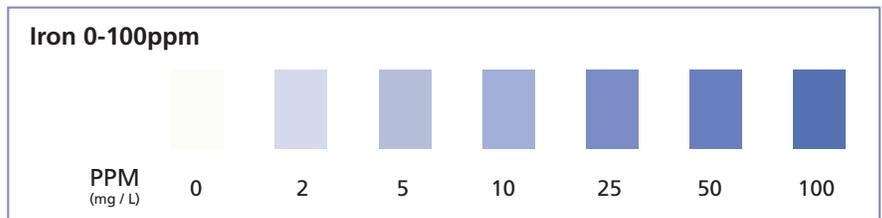
Iron

Iron oxides generally have low solubility in water. Dissolved iron present in the system heating water can indicate a corrosion issue. Black iron oxide particles present as magnetite, are a sign that corrosion has already occurred and cleaning is required using the ADEY MC3+™ Cleaner and ADEY MagnaCleanse® unit to remove the iron oxide contamination, as this can lead to fouling of components and reduction in efficiency.

After carrying out a cleaning program using ADEY MC3+ Cleaner, an iron test can be used to ensure that the system has been sufficiently cleaned and flushed before addition of ADEY MC1+ Protector. Elevated levels of dissolved iron, greater than 10ppm, can indicate that chemical cleaner has not been flushed out sufficiently or corrosion is occurring.

Procedure

Dip the test strip into a small sample of the system water for 3 seconds, remove and shake off any excess. Allow 10 seconds for the color to develop and compare to the color chart to determine the level of iron present.

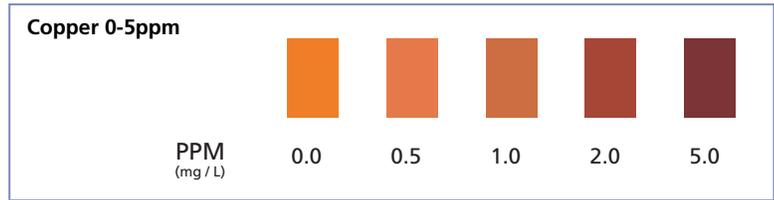


Copper

Copper levels of 6ppm or greater in the system water indicate copper corrosion and could lead to localised corrosion and pin-holing of aluminium and steel, due to copper plating out on these surfaces.

Procedure

Dip the test strip into a small sample of the system water for 3 seconds, remove and shake off any excess. Allow 10 seconds for the color to develop and compare to the color chart to determine the level of copper present.

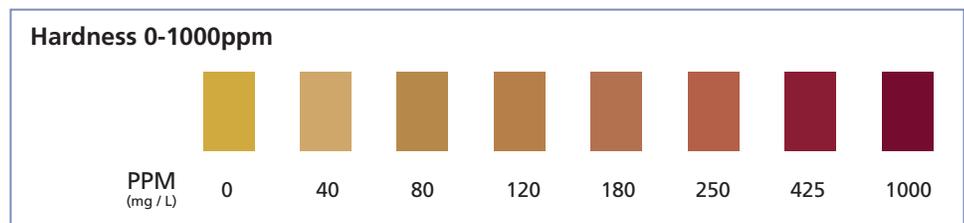


Total Hardness

Water hardness is based on the amount of calcium and magnesium salts that are dissolved in the water. Hard water which has greater than 200ppm CaCO₃ results in limescale deposition in heat exchanger surfaces. Hard water areas are recommended to be treated with ADEY MC1+ Protector to reduce limescale issues. Soft water has less than 100ppm CaCO₃ and is generally more corrosive than hard water.

Procedure

Dip the strip into a small sample of the mains water for 3 seconds, remove and shake off any excess. Allow 10 seconds for the color to develop and compare the color chart to determine the level of hardness of the mains water.



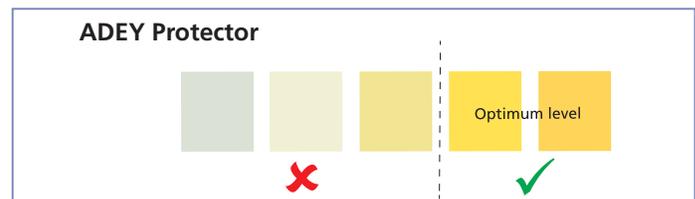
ADEY MC1+ Protector Quick Test

The MC1+ Quick Test is used to measure the concentration of ADEY MC1+ Protector in a heating system, to ensure it has been treated adequately. The concentration can be determined quickly and easily using the ADEY MC1+ Quick Test strip.

Note: Ensure that ADEY MC1+ Protector has been adequately circulated and mixed before testing. This may take up to 30 minutes.

Procedure

Dip the test strip into a small sample of the system water for 3 seconds, shake off any excess. Allow 10 seconds for the color to develop and compare the color to the color chart to determine the level of ADEY MC1+ Protector.



Interpretation of analysis

Test	Result	Interpretation	Recommendation
Chloride	High chloride >150ppm	Flux residues in system.	Clean with ADEY MC3+ Cleaner. Flush and treat with ADEY MC1+ Protector.
Copper	High copper >5ppm	Copper corrosion possibly due to flux residues.	Clean system using ADEY MC3+ Cleaner. Flush and treat with ADEY MC1+ Protector.
Iron	High iron in system water >10ppm	If untreated then indication that system is corroding.	Clean with ADEY MC3+ Cleaner. Flush and treat with ADEY MC1+ Protector.
pH	less than 6.5 greater than 8.5	Acidic conditions, possibly from excess flux residues. Alkaline conditions.	Clean with ADEY MC3+ Cleaner. Flush and treat with ADEY MC1+ Protector. If aluminium present in system, drain and flush. Refill and treat with ADEY MC1+ Protector.
Total Hardness	Mains water harder than 200ppm	Scaling of heat exchanger surfaces can occur.	Treat with ADEY MC1+ Protector for scale control.
ADEY MC1+ Protector	Inhibitor less than minimum level	Under dosed or leak has occurred.	Check for leaks and re-dose with ADEY MC1+ Protector.