

RECO-COOL

TECHNICAL BULLETIN 0009/12

## REMOTE TESTING OF COOLANT FLUIDS

Full coolant chemistry analysis is possible after collecting coolant samples and returning these to an appropriate approved chemical laboratory for testing. Recochem is able to offer a comprehensive used coolant testing facility which can be on sold to end-users as a valuable added service.

The types of testing which can be done offsite in approved registered laboratories are:-

### **a) Full testing for inhibitors.**

This is best performed by the coolant suppliers (such as Recochem) as we know the full chemistry and formulary of the coolant products and can advise fully on the appropriate ongoing levels for use in the fluid to provide ongoing adequate cooling system protection.

### **b) pH**

pH can be different for different types of coolant fluids (Traditional vs. Hybrid vs. OAT), and in general a decrease in pH is an indication of the fluid nearing the end of its serviceable life. Too high pH is to be avoided as can lead to accelerated corrosion (especially in Aluminium type cooling systems).

### **c) Reserve Alkalinity**

A decrease in RA below the normal range can indicate excessive topping up with water, or the fluid is nearing the end of its serviceable life. Reserve Alkalinity provides the coolant fluid with 'reserve' benefit which maintains the pH of the fluid in the appropriate range for the inhibitors to work best.

### **d) Glycol content**

Glycol can be determined through Refractometry



**e) Metals analysis**

Metals Analysis can give information on corrosion that may be occurring and potential contamination. The analysis can be performed in the laboratory using standard XRF or AA Spectrographic techniques. This analysis can also be used to identify the presence of metals that could reduce the coolants effectiveness, for example calcium, magnesium and zinc. These results should be used in the longer term to establish trends for a coolant in a particular engine. The presence of some metals and their likely reasons is provided below.

- Iron: (Iron containing components of a cooling system)
- Aluminium (water pump, engine block, radiator)
- Lead (solder)

It is important when evaluating the presence of metals that consistent trend analysis is also performed.

**f) Inhibitor content**

This can either be performed using conventional XRF or AA Spectrographic techniques (for metallic styled inhibitors) or using HPLC derived techniques for OAT type inhibitors. It is important that inhibitors are maintained within recommended levels, which are best monitored by the coolant formulator (e.g. Recochem). Inadequate levels indicate deterioration in corrosion prevention capability of the coolant. It is possible that levels are too high as well, which can be as a result of zealous application of SCAs. Excess concentrations of silicates (a common traditional inhibitor type) can form coagulations and sludge.

**g) Appearance, Colour and Odour**

Simple tests which, if abnormal, can provide vital clues on cooling system health.

Such coolant fluid testing can be accompanied by Gold/Silver/Bronze testing regimes to provide simple customer-friendly traffic light results (Red/Amber/Green) indicating the serviceability of the fluid for further coolant life.

