Understanding A Coolant Analysis Report

Coolant analysis can identify the onset of maintenance deficiencies or mechanical issues that can lead to potential cooling system failure. Corrosion, cavitation, localized overheating, electrolysis and lack of coolant maintenance are just a few of the many destructive conditions that can cause major systems damage.

The Analysts Coolant Analysis Report is easy to read and offers detailed conclusions and maintenance recommendations that will enable you to reduce major repairs and increase equipment uptime, productivity and safety.

**Unit ID, Manufacturer, Model and Coolant Type** are extremely important to a data analyst in determining if the coolant meets engine and coolant OEM specifications and in providing accurate maintenance recommendations.

**Corrosion** occurs when buffers are no longer able to counter acid formation due to thermal degradation.

**Typical Corrosion Product Sources:**
- Iron—liner, water pump, cylinder block/thead
- Aluminum—radiator tanks, coolant elbows, piping, spacer plates, thermostat housings
- Copper—radiator, oil cooler, aftercooler, heater core
- Lead—radiator solder, oil cooler, aftercooler, heater core

**Silicon, Boron, Molybdenum and Phosphorous** are inhibitors present in coolants for metal protection and pH control. Inhibitors present are dependent upon the coolant formulation.

**Reserve Alkalinity** indicates a coolant’s capacity to neutralize acids formed in (glycol oxidation products) or entering (exhaust gas blow-by) the cooling system. The rate at which reserve alkalinity decreases, along with the amount of inhibitor added, will help predict when the coolant will become too acidic to protect the cooling system from corrosion.

**Calcium and Magnesium** Contaminants present in an engine coolant will form scale on hot metal surfaces. Scale is an efficient insulator and can cause localized engine overheating which can result in component failure. OEM and ASTM specifications are set on Total Hardness levels as CaCO₃.

**Nitrite** is present in heavy duty, fully formulated conventional coolants, nitrite OAT and hybrid coolant formulations. Some are a combination of nitrite and molybdenum. The maximum acceptable level of nitrite or nitrite and molybdenum combined is 3000 ppm (parts per million). Excessive nitrite levels can lead to solder corrosion.

An adequate **pH** range should remain between 8.0 – 11.0 for conventional coolants and 7.0 – 9.5 for ELCs. Proper pH levels are necessary for optimum corrosion inhibitor performance.

**Spectrochemical Analysis in Parts per Million**

**Adequate glycol levels** must be maintained to ensure proper **Freeze** and **Boil Point** protection. High glycol can cause additive dropout and decrease coolant life. A glycol range of 45% to 60% is recommended.

**Data analysts provide you with Maintenance Recommendations based on in-depth analysis, taking the guesswork out of interpreting coolant analysis results.**

**Complete and accurate Sample Information**—number of hours on both unit and coolants and filter and fluid change information—is critical for a data analyst to make a proper maintenance recommendation.

**Referencing the Lab Number** will expedite resolving any question when contacting the lab concerning a sample.

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