Understanding the 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.

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/head
- 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

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.

Nitrile is present in heavy duty, fully formulated conventional coolants, nitrile OAT and hybrid coolant formulations. Some are a combination of nitrile and molybdenum. The maximum acceptable level of nitrile or nitrile and molybdenum combined is 3200 ppm (parts per million). Excessive nitrile 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.

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

Nitrite is present in heavy duty, fully formulated conventional coolants, nitrile OAT and hybrid coolant formulations. Some are a combination of nitrile and molybdenum. The maximum acceptable level of nitrile or nitrile and molybdenum combined is 3200 ppm (parts per million). Excessive nitrile levels can lead to solder 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.

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

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.

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