

Coolant Testing

Cooling-system maintenance is one of those items that most people do not pay attention to or even think about. Research has shown that up to half of engine failures can be linked to problems with the cooling system. One way to get ahead of potential issues and prevent failures is coolant analysis.

A properly functioning cooling system is essential for proper and efficient operation. Many components make up a cooling system, and a deficiency with one part can affect both the coolant and the lubricant. For example, if the fins on the radiator are damaged or restricted of air flow, the coolant cannot dissipate the heat away from the engine, causing the engine to run warmer than normal, putting more stress on the lubricant and causing oxidation. This could eventually lead to equipment failure if not remedied in a timely manner.

The main goal of coolant analysis is to check the overall health of the coolant and cooling system. It includes identifying contamination and coolant properties, and lets the user know if the coolant is good for continued use and whether the system is being properly maintained. One of the primary tests included with coolant testing is elemental analysis by ICP (Inductively Coupled Plasma), which identifies the levels of corrosion metals, contaminants, corrosion inhibitors and carrier salts. Test results provide information on the condition of the cooling system and the coolant's additive package. Another important test is pH, which indicates whether the coolant is turning acidic or basic. Low pH can cause corrosion in the system. Total hardness should also be checked as high total hardness increases scaling potential, which can lead to buildup and cause restrictions and loss of heat transfer. To avoid this issue, use the recommended water type when mixing the coolant yourself or topping off. Using hard water will increase the likelihood of scaling.

Many other tests can also be performed on coolant, including Ion Chromatography, Reserve Alkalinity and Specific Conductance, which can help shed light on potential issues and provide information on root causes. However, even basic coolant testing will produce a great snapshot into the condition of your cooling system and indicate whether it's time to change your coolant.