

# Benefits of Testing Your Coolant System



**Even though an engine coolant system is an integral component for engine health, 20 times more engine oil samples are tested than coolant samples.**

Cooling system problems are related to a significant number of engine health issues. Sampling coolant systems should be performed quarterly to monitor system and coolant condition, including prior to a change in seasons (before winter and summer seasons), or if a system problem is suspected.

When submitting a sample for analysis complete information is most useful, just like for an engine oil sample. The ALS online sample submission process via our web and mobile application tools can also be used for coolant samples.

Routine testing provides a trending analysis report that will produce information to help optimize cooling system reliability for engine health. Testing can provide insight into several areas for proactive maintenance and equipment care.

## Areas for proactive maintenance and equipment care

- Proper coolant formulation
- Coolant mixing and compatibility
- Additive depletion
- Contaminants
- Metals for corrosion and electrolysis
- Scale formation
- Acid formation
- Failed EGR
- When coolant should be removed and replenished with new coolant

Contact us at [reliability@alsglobal.com](mailto:reliability@alsglobal.com) to see how coolant system testing can optimize asset health and reliability.



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The lower testing activity of coolants compared to engine oil samples may be related to challenges or questions about taking a coolant sample from an engine. It is recommended taking a sample from the exchanger or installing a sample port into one of the coolant lines. Some lines in newer engines are tapped for taking a sample, older engines might not have this. Taking a sample from the overflow reservoir (expansion tank) would be the next best thing. This can be performed using a vacuum pump and tubing. It is recommended using dedicated sampling equipment for coolant samples and not use sampling equipment that is also used for taking engine oil samples.

Basic testing will report glycol concentration, as well as total dissolved solids (TDS), freeze point, boiling point, pH, and nitrite (SCA) levels in the mixture. Additional testing will report the level of the corrosion inhibitor additive package, which prevents deterioration of metal surfaces. Silicates, borates, nitrates, and phosphates are commonly used in various proportions in conventional coolants as corrosion inhibitors. Additional testing can also monitor the breakdown of the glycol by determining the level of glycolate acids in the coolant.

Extended Life Coolants (ELCs) use organic acid technology for inhibitors (OAT). The organic acids in ELC formulations have been neutralized to form highly effective corrosion inhibitors. There are a variety of organic acids used in ELCs for these inhibitors. Coolants manufacturers will use different combinations of organic acids depending on their proprietary formulations. Different corrosion inhibitors in the coolant formulations, whether conventional or ELC, are intended to protect specific types of metal surfaces such as, iron, brass, copper, aluminum, and soldered components.

Never return used coolant back into the engine after a repair. Depending on the repair, the used coolant may be corrosive, contain excessive particulate contamination, or is degraded, which will cause harm to the newly repaired engine.

Ensure engines that are out in the field have a container or two of the same coolant that is used in the shop. This will eliminate the possibility of mixing two different coolant types if a top-up is needed and potentially reducing the life of the coolant.

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