

# Cooling System Sampling Intervals and Methods



## **SAMPLING INTERVALS**

Sampling interval, method and location must be consistent to ensure accurate test results and trending. Always use a clean bottle free of contaminants. When taking samples for laboratory analysis, always fill out the sample information form completely and accurately. Equipment type, engine make and model, coolant manufacturer, product name and miles and/or hours on both the equipment and the coolant are crucial to receiving the best test results and data interpretation possible.

## **FIELD TESTING**

Field testing should be used at every maintenance interval – every 250-500 hours – to maintain glycol and corrosion inhibitor levels for proper metal protection. Testing at every PM can also identify contamination, detect chemical reactions taking place within the system that are damaging to the coolant and determine if further laboratory analysis is needed.

## **STANDARD LABORATORY TESTING - CONVENTIONAL OR EXTENDED LIFE COOLANTS**

Standard laboratory analysis should be performed quarterly to monitor system and coolant condition on high-hour heavy equipment in mining, construction and oil and gas field applications. At a minimum, this equipment should be tested prior to a change in seasons – before summer and before winter.

## **PREMIUM LABORATORY TESTING - CONVENTIONAL OR EXTENDED LIFE COOLANTS**

Premium laboratory analysis should be performed twice a year prior to a change in seasons – before summer and before winter – on equipment used in marine, trucking and power generation or if a system problem is suspected.

## SAMPLING METHODS

### Coolants

Coolant samples can be taken through a variety of permanently installed valve assemblies. Consult engine manufacturer recommendations for the preferred valve type and sampling location.

### Source Water

When sampling source water, run the water for 1 - 3 minutes to ensure a representative sample. Fill the sample bottle 2/3 full and fill out the label completely.

### Needle Probe

To use, unscrew or remove the protective cap on the valve, if present. Wipe the valve clean with a clean, lint-free cloth. Slowly push the needle probe into the sampling valve. BE CAREFUL! Hot, pressurized fluid can be released with great force when valves are opened. To collect a representative sample, discard the first sample to purge the valve of any stagnant coolant or debris. Seal and mark the sample to be analyzed immediately. Be sure to recap the valve with its protective cap or plug.

### Push Button Valve

Push button valves make obtaining clean samples quick and easy. These valves use a push button to activate the flow of coolant for sampling. Remove the protective cap, if present, and wipe the valve off with a clean, lint-free cloth. Depress the push button slowly to avoid a sudden burst of coolant. Draw four to five ounces of coolant and discard to purge the valve of any stagnant coolant or debris. To collect the sample, fill the bottle up to one inch from the top. Seal the bottle tightly, wipe it clean and apply the completed sample label.

### Petcock Valve

To use, remove the protective cap, if present, and wipe the valve off with a clean, lint-free cloth. Turn the handle slowly to avoid a sudden burst of coolant. Draw four to five ounces of coolant and discard to purge the valve of stagnant coolant and debris. To collect the sample, fill the bottle up to within one inch from the top. Seal the bottle tightly, wipe it clean and apply the information on the sample label.

### Vacuum Pump

Sampling by vacuum pump also draws coolant from the radiator. With the engine off, insert a clean piece of plastic tubing into the radiator tank cutting it to a length that extends about six inches into the coolant and about one inch beyond the base of the radiator filler neck. Attach a sample bottle to the pump and tighten firmly. Never take a sample from the bottom of the radiator tank.

### Coolant Drain

Draining the coolant for a sample is not a recommended method because system debris tends to settle at the bottom of the radiator. However, if this is the only sampling location available, inform the laboratory on the sample information form that the sample was obtained from a coolant drain. Wipe the area around the drain plug with a clean, dry cloth to avoid sample contamination. Be aware of hot surfaces around the underside of the engine or equipment. Remove the drain plug and allow the coolant to drain for two to five seconds before catching a sample. Place a clean, dry sample bottle in the coolant stream and fill to within one inch from the top. Seal the bottle tightly and wipe the bottle clean. Fill out the sample information form completely and attach.

### Rubber Squeeze Bulb

To avoid sample contamination, the battery powered squeeze bulb should not be used. If this is the only method readily available, do not use the squeeze bulb for anything other than taking coolant samples. With the engine turned off, insert the bulb into the radiator. Draw coolant into the bulb filling the sample bottle to the top to avoid air entrapment. Be sure to rinse the apparatus thoroughly after taking each sample.