

Samples need to include fluid that best represents the coolant circulating through the system during normal operations. Coolant analysis kits are available to make sampling convenient and simple. These kits include cap, tubing, sample bottles and paperwork with preaddressed shipping labels.

Use the following tips to capture the best sample possible.

- Make sure the sample bottle is clean and free of contaminants.
- Fill out all equipment and fluid information completely and accurately on paper or electronically.
- Include the time/distance on both the equipment and the coolant.



Sampling with a Vacuum Pump

The vacuum pump is used to extract samples from unpressurized systems, yet most cooling systems operate under pressure to raise the boiling point of the coolant.

Step 1 – Run the equipment long enough for the thermostat to open and mix coolant through the reservoir. Turn off the engine and allow it to depressurize (usually 10 or 15 minutes).

Step 2 – Measure out enough tubing to stick 6 inches into the coolant and 6 inches above the neck of the radiator opening. Make a mark on the tubing where the tube should be level with the opening.

Step 3 – Insert the tube through the head of the vacuum pump and tighten lock ring. The tube should extend about 1 inch (3 cm) beyond the base of the vacuum pump head. Screw in the sample bottle to the bottom of the vacuum pump and tighten securely.

Step 4 – Place tube into the reservoir. To avoid drawing settled debris into the sample, only insert the tubing until the mark from Step 2 is flush with the top. Do not allow the tubing to contact the bottom of the radiator.

Step 5 – Push and pull the vacuum pump plunger a few times to start the suction. Continue pumping until sample bottle is $\frac{3}{4}$ full. Hold the pump upright and do not overfill the bottle to avoid contaminating the vacuum pump.

Step 6 – Unscrew the sample bottle from the vacuum pump to break the suction and continue to hold the pump upright. Seal the bottle with the lid and tighten securely before wiping the outside of the sample bottle with the cloth.

Step 7 – Drain remaining fluid out of tube into radiator and remove tube from the coolant. Wipe off the tube where it extended into the sample bottle. Remove the tube from the pump and properly dispose of it. Reusing tubing will contaminate future samples.

Step 8 – Place one barcode label on sample bottle and the appropriate shipping label on the return package. Send the sample to the lab immediately using a trackable mail service.

Sampling with a KST Series Probing Valve

The KST Series Probe Sampling Valve is a needle valve that is installed on a pressurized system. The valve should be installed on a pressurized line with a minimum of 4 psi to a maximum of 1000 psi. It requires the use of the KST Series Cap to insert into the valve to retrieve sample. It consists of a bottle cap, 4" tube with a needle and a vent opening to allow flow.

Step 1 – Have the equipment being sampled at or close to normal operating temperature. Wipe the valve with a clean, dry, lint-free cloth. Hold a separate waste container under the KST Series cap and insert the needle probe into the valve. Flush at least 3 times the fluid in the valve into the container to purge stagnant coolant and debris. Remove the needle probe to stop the flow and set the separate container in a safe place.

Step 2 – Remove the cap from the sample bottle. Place the KST Series cap onto the sample bottle and secure it firmly. Take the sample bottle with the KST Series cap and insert the needle probe into the valve. Fill the sample bottle to approximately $\frac{3}{4}$ full.

Step 3 – Remove the needle probe to stop the flow. Place the cap onto the sample bottle and tighten securely before wiping the outside of the sample bottle with the cloth.

Step 4 – Tighten the protective cap back onto the valve. Wipe the valve with a clean rag to remove any excess fluid. Discard the KST Series cap assembly in a safe manner.

Step 5 – Place one barcode label on sample bottle and the appropriate shipping label on the return package. Send the sample to the lab immediately using a trackable mail service.



Sampling with a KP Pushbutton Sampling Valve

The KP Series is a push button sampling valve that is installed on a pressurized system. The valve should be installed on a pressurized line with a minimum of 4 psi – maximum of 100 psi.

Step 1 – Have the equipment being sampled at or close to normal operating temperature. Remove the protective cap from the valve and wipe the opening with a clean, dry, lint-free cloth. Place a separate waste under the valve opening. Press the KP Series button and flush at least 3 times the fluid in the valve into the separate waste container. Dispose the waste coolant properly.

Step 2 – Remove the lid from the sample bottle. Place the sample bottle under the valve opening. Press the KP Series button to dispense fluid into the sample bottle filling it to approximately $\frac{3}{4}$ full.

Step 3 – Release the KP Series button to close the valve. Place the protective cap back onto the valve and secure it firmly. Screw the cap onto the sample bottle and tighten securely before wiping the outside of the sample bottle with the cloth.

Step 4 – Place one barcode label on sample bottle and the appropriate shipping label on the return package. Send the sample to the lab immediately using a trackable mail service.

Sampling from a Drain

A drain “catch” requires no equipment beyond a sample bottle, but it produces a sample that is least representative of the fluid circulating in the machine.

Step 1 – Have the equipment being sampled at or close to normal operating temperature, if possible. Open the drain and allow approximately 1/3 of the fluid drain into a clean container.

Step 2 – Quickly move an open sample bottle into the coolant stream. Fill ¾ of the bottle before removing it from the stream. Close the drain.

Step 3 – Screw the cap onto the sample bottle and tighten securely. Wipe the outside of the sample bottle thoroughly with a clean cloth.

Step 4 – Place one barcode label on sample bottle and the appropriate shipping label on the return package. Send the sample to the lab immediately using a trackable mail service.

Taking a Source Water Sample

To ensure contaminants in water are low enough to be added to a radiator, take a sample so it can be analyzed.

Step 1 – Run water for 1 to 3 minutes to remove stagnant water from the water pipes.

Step 2 – Quickly move an open sample bottle into the water stream. Fill the bottle completely before removing it from the stream. Air in the bottle will introduce air into the sample during shipment.

Step 3 – Screw the cap onto the sample bottle and tighten securely. Wipe the outside of the sample bottle thoroughly with a clean cloth.

Step 4 – Place one barcode label on sample bottle and the appropriate shipping label on the return package. Send the sample to the lab immediately using a trackable mail service.

Shipping

New and used coolants are not regulated as hazardous materials by the United States Postal Office. The flash point is well above the cutoff of 200°F (93°C). “Such nonregulated materials must be properly and securely packaged to prevent leakage under the general packaging requirements,” according to [Postal Code 343 for Flammable and Combustible Liquids \(Hazard Class 3\)](#).