



Frequently Asked Questions

Which automotive coolants are water-based?

All commercially available automotive coolants, except Evans coolants, are water-based.

Do I need to change my radiator cap when using Evans?

No, a different radiator/pressure cap is not required with Evans Waterless Coolant (EWC). A water-based coolant requires a 15 psig pressure cap (higher in some applications) to enable the system to build pressure as a means of raising the boiling point of the coolant. In contrast, EWC already has a high boiling point, and the existing cap will work adequately under the low system pressure that results from the normal thermal expansion of the waterless coolant.

Will Evans coolant lower the operating temperature of my engine?

The effect of EWC on cooling system temperatures will depend on the engine and cooling system configuration, as well as driving conditions.

For stock vehicles running under normal operating conditions, the difference in bulk coolant temperature, compared to water-based coolant, may range from no change, to 5 to 10 degrees Fahrenheit (F).

Under more severe driving conditions, such as towing a trailer, the bulk coolant temperature may be up to 15 degrees higher.

In high-performance applications, the temperature effect of running EWC will depend on the engine and cooling system configuration. Often, the cooling system has not been upgraded to match the higher power output of the engine, even with water-based coolant. The cooling capacity must be correct for the power output of the engine.

Is Evans advocating operating engines at higher temperatures?

Not really. As stated above, operating temperatures may be modestly higher than those of water-based coolant, depending on driving conditions and whether the vehicle is stock or configured as high-performance. When the engine is stressed, more heat is dumped into the coolant and temperatures rise. This is not a concern when using EWC. The combination of the high boiling point of EWC and a correctly-sized cooling system means that any increase in temperature can be accommodated without cooling system failure.

What is afterboil and how does Evans prevent afterboil?

Afterboil occurs after engine shutdown when the heat in the system cannot be rejected to the air because the coolant is no longer being circulated to the radiator. Heat from the engine continues to transfer to the coolant, but the coolant is not able to reject it at the radiator because the water pump has stopped. A coolant which is near its boiling point will not be able to absorb additional heat without boiling and being forced out through the pressure cap. Conversely, the huge separation between the operating temperature and the boiling point of EWC enables the coolant to act as a heat sink into which heat from hot metal parts of the system can be readily dissipated. Boiling is avoided and there is no build-up of pressure to force coolant out of the system. Stresses on cooling system components are avoided as metal temperatures are kept under control.

How does Evans prevent pump cavitation?

With the high boiling point of EWC, the suction side of the coolant pump is never at a low enough pressure to flash vaporize the coolant. So, the pump never gets vapor-bound and has the capability to pump coolant over broad range of temperatures. In addition, no vapor bubbles are formed which could then collapse against the metal and cause cavitation erosion damage to the pump.

What is the flash point of Evans waterless coolant?

The flash point of EWC is similar to that of conventional water-based coolant, 248 °F.

Does Evans require periodic maintenance?

EWC is intended to be in the system for the life of the vehicle. The only maintenance required is to keep the coolant at the proper level in the reservoir. No periodic addition of supplemental coolant additives (SCA's) is needed, nor should any ever be added. Evans does recommend doing an inspection at least once a year to ensure that no contamination of the coolant has occurred.

How can the integrity of the coolant be checked?

The most important thing to check to ensure the quality of the coolant is the water content. It should be kept at less than 3%, and can be measured with water test strips or a hand-held refractometer. Instructions for using both are provided in the General Installation Instructions document on the Evans web site (www.evanscooling.com).

In addition to periodically checking the water content, a visual and smell check should be done for oil and fuel contamination which may have occurred from internal engine leaks. Also, look for the presence of sediment or precipitate which may result from installing EWC in a system which needed a chemical flush.

What happens if I have more than 3% water in my cooling systems after installing Evans? What is the best method to correct?

It is important to closely follow directions during the initial EWC installation. A water content higher than 3% will lower the boiling point, and may reduce the corrosion and pump cavitation protection of EWC. If a water test shows there is between 3 and 5% water in the coolant, the corrective action is to drain half of the system volume and add back new EWC. This will reduce the water content to an acceptable range. If the measured water content is greater than 5%, the system must be drained and refilled with new EWC.

If I have a leak or other event where I need to top off or refill my coolant, and Evans is not immediately available, what can I safely add to the cooling system?

With EWC, the likelihood of coolant loss and the need for topping up are greatly reduced. In the event that there is significant coolant loss from the system during operation and no EWC is available to fill the system and reach a repair facility, water or water-based coolant may be used. However, repairs should be made as soon as possible, and the system should be drained, purged and re-filled with new non-aqueous coolant.

While driving with “contaminated” Evans coolant, what effects will it have on my cooling system?

In the short term, there should be no concern about the performance of mixing a small amount of conventional coolant or straight water with EWC. The mixture should be considered as having the performance of a 50/50 antifreeze/water coolant, and the high boiling point protection will be reduced.

Does Evans require a new coolant filter at time of installation?

EWC is not intended to be used with supplemental coolant additives. If the cooling system is equipped with a chemical release filter, it should be replaced with a non-chemical filter.

Over time, will Evans absorb water?

EWC is hygroscopic, which means it has the ability to absorb moisture. As such, containers of unused coolant should be kept tightly closed. In the cooling system, EWC should not absorb a significant amount of moisture from the atmosphere as long as a conventional pressure cap is used. Under normal circumstances, the cap should not open, allowing air to enter the system. This is because EWC does not develop pressure to the extent that water-based coolant does. It will develop low pressure due to the normal thermal expansion of the liquid.

Will using EWC void my warranty?

While some vehicle manufacturers may not yet recommend or endorse the use of EWC, they must honor the warranty under the Magnuson-Moss Warrant Act¹. In addition, Evans Cooling Systems provides its own warranty which covers any damages which occur as a result of using the coolant. Contact Evans for further information.

How long is the Evans Waterless Coolants guarantee?

As stated above, Evans Cooling Systems provides a warranty covering damages which occur as a direct result of using its coolants. This coverage is in effect for as long as the coolant is in the vehicle, provided that the Evans installation instructions have been followed, the water content of the coolant is maintained at less than 3%, and no other materials are added to the coolant.

If water is a better thermal conductor, how much will heat transfer be compromised with Evans, as compared to water-based coolants?

¹ <http://www.consumer.ftc.gov/articles/0138-auto-warranties-routine-maintenance>

The heat transfer in the engine depends on three factors. First, the coolant traditionally used in an engine is not water. It is a 50/50 antifreeze/water mixture and its thermal conductivity is already about 20% lower than straight water. Second, there must be liquid-to-metal contact to be able to transfer heat from the engine metal to the coolant. Third, you need to look at the relative heat capacities of 50/50 antifreeze/water and EWC, which are 3210 and 2300 J/Kg-K at 20 °C (68 °F), respectively. Under normal operating conditions, both coolants would provide liquid-to-metal contact in the cylinder head, and good heat transfer. The amount of heat removed from the engine by EWC would be about 1/3 less than that removed by 50/50 antifreeze/water. However, vehicle tests have shown that figure to be somewhat better because more heat is rejected to the air at the radiator with EWC.

The real advantage for EWC comes when the vehicle is operated under more severe conditions. In those instances, the water in water-based coolants vaporizes at hot metal surfaces. Because the coolant is near the boiling point of water, the vapor bubbles cannot condense into the coolant, and a vapor film remains at the metal surface. The effective heat transfer would drop by about 40%, and metal temperatures would rise dramatically.

If your coolant doesn't freeze, do I still use my block heater in the winter?

You should still use your block heater during the winter to help warm up the engine.