Antifreeze/Coolants – A Rainbow of Colors

Before dilution, almost all antifreeze/coolant sold in the U.S. is 95% ethylene glycol. The variety of colors comes from a dye that is added to each different type of additive package to prevent people from adding the wrong type.

A 50/50 mix of water and antifreeze/coolant is essential for proper engine operation. Heat removal is the major function, but maintenance of proper engine temperature is essential for the operation of the computer controls. A 50/50 mix with water will protect against freezing down to -34°F and prevent boiling up to 265°F.

Light Duty Automotive- Gasoline Engines

Until the introduction of Dex-Cool (orange) by GM, American cars generally used green antifreeze. Newer DaimlerChrysler vehicles have yellow or gold coolant. Some Japanese cars use green antifreeze, but it is a darker green than the American antifreeze, and Toyota uses red. European cars may have green, yellow or blue, but Volkswagen and Audi use pink.

To get the proper antifreeze/coolant in your vehicle, pay less attention to the color and read the label to determine the vehicles that can use the product.

European automakers prefer coolant that is phosphate free because the water in Europe is much harder than the water in the U.S. Use of coolant with phosphates may void the warranty in these vehicles. Common American and Japanese antifreeze/coolants contain phosphates to protect the iron and steel parts of the engines. Most U.S. coolants also contain silicates or silicone. Japanese manufacturers prefer antifreeze without silicates, but with higher levels of phosphates. The extended life antifreeze coolants (Dex-Cool) use organic acid technology (OAT) inhibitors.

- _ GM specifies orange with OAT but no phosphates or silicates.
- _ Ford requires yellow with OAT and silicates.
- _ DaimlerChrysler specifies orange with OAT and silicates.
- _ VW & Audi specifies pink with OAT and silicates.
- _ Honda requires a green coolant with OAT and phosphates but no silicates.
- _ Toyota specifies red with OAT and phosphates but no silicates.

Heavy Duty – Diesel Engines

Diesel engine antifreeze/coolants are formulated for longer and more severe operation than those formulated for light duty engines (of course, these higher performance coolants can be used in light and medium duty applications). Heavy duty diesels, and some light and medium duty diesel engines, are subjected to cavitation erosion problems, as well as the corrosion and water pump durability problems shared by all engines.

The colors of common U.S. heavy duty antifreeze coolants are:

- Red-orange for Caterpillar ELC.
- Pink is Freightliner FleetCharge.
- Green is Peterbilt factory fill and any aftermarket conventional coolant.
- Blue is Cummins Fleetguard Compleat
- Yellow is Ford GO-5

More and more fleets are going with fully-formulated antifreeze coolants to avoid the necessity of initial charging with supplemental coolant additives (SCA's). Conventional and extended life heavy duty coolants showed be monitored by testing (test strips and/or laboratory analysis) to determine when SCA's should be added. Be sure the SCA is the proper one for the type of coolant in use.

Mixing of Coolants

A 10% limit for mixing different coolant types is recommended by engine manufacturers and ATA's Technology Maintenance Council (TMC). There is a lot of laboratory test data that indicates that mixtures of different types of coolants will not provide the needed protection.

There are three basic types of coolants in common use in the U.S. today – conventional and two types of extended life. The green conventional is designed to work at a pH of 8.5 – 10.5. The higher pH helps prevent corrosion and helps to keep the additives in solution. The extended life coolants can be classified as carboxylate or hybrid. Carboxylate is another name for OAT coolant and these are designed for a pH range of 6.0-8.5. The hybrid uses OAT and conventional additives and operates at a pH of 7.5-8.5.

Many of the new heavy duty antifreeze/coolants use both OAT and conventional additives, making them hybrids

Mixing more than 10% of the low pH extended life coolants with the high pH conventional coolants can cause the inorganic additives in the green coolant to come out of solution and form solid deposits in the cooling system.

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