



COMBAT THE EFFECTS OF COLD TEMPERATURES WITH AMSOIL SYNTHETIC LUBRICANTS

Vehicle maintenance is an important part of preparing for winter months. Extreme winter weather can make breakdowns especially dangerous, and most people aren't aware of the effect cold weather has on conventional lubricants.

An oil's cold-temperature performance refers to its ability to flow when the engine is cold, or below typical operating temperature (212°F), and not simply to what feels cold to humans – warm summer days are also cold to an engine. Startup lubrication is directly affected by a lubricant's cold-flow ability, and the impact is felt at higher temperatures than most consumers would think. For example, in early 1991, General Motors halted sales of the Corvette ZR-1. Eight engines had seized at its Bowling Green, Ky. assembly plant. The temperature had only dipped to slightly below freezing and, at startup, hard-to-pump motor oil did not reach the front camshaft bearings and they were destroyed by lack of lubrication. GM responded by requiring the use of synthetic oil in the Corvette.

Motor Oil

Most engine wear occurs at startup. Cold temperatures can render oil so thick it cannot flow through narrow passageways to protect critical components, increasing wear. The paraffins in conventional oil only worsen the problem. AMSOIL synthetic motor oils contain no paraffin, remaining fluid in frigid winter temperatures (down to -63°F) for easier starting, improved oil flow and excellent bearing protection. Their unique synthetic formulations allow them to flow in extreme cold and maintain high film strength in extreme heat for outstanding all-season protection.

Transmission Fluid

Transmission fluids are also affected by cold temperatures. Since transmission fluid's ability to flow does not directly impact a vehicle's ability to start, cold-temperature transmission fluid performance is not foremost in the minds of consumers. It is affected, however, and does impact performance and wear. Automatic transmissions can shift harder in the cold, but changes in transmission performance brought on by cold temperatures are usually more pronounced for drivers who operate manual transmissions. As transmission fluid thickens in the cold, the synchronizers in manual transmissions cannot spin as quickly as they need to, which can severely impact the driver's ability to shift until the fluid is warmed enough to provide proper flow – and protection.

AMSOIL transmission fluids are wax-free and deliver extraordinary cold-flow properties. They help improve shift response, energy efficiency and warm-up times.

Gear Lube

Gear lubricants with high viscosity at cold temperatures are less efficient and the gears require more energy to turn, resulting in reduced fuel economy. Gears and bearings in the differential and axle housing are splash-lubricated, and gear lubricants that are too thick at cold temperatures can starve internal components of lubrication, which can cause failure.

AMSOIL synthetic gear lubes' wax-free construction improves cold-flow

properties for maximum fuel economy and smooth cold-weather operation.

Diesel Fuel

As the temperature drops, the wax naturally found in diesel fuel begins to crystallize. The point at which wax crystals form is known as the cloud point. These wax crystals eventually clog the fuel filter and starve the engine of fuel, preventing it from starting. While low-quality fuels may form wax crystals in temperatures as warm as 40°F (4°C), most fuels have a cloud point near 32°F (0°C). The point at which the crystals clog the fuel filter is known as the cold filter-plugging point (CFPP).

AMSOIL Diesel Cold Flow lowers the CFPP by up to 20°F (15°C) in ultra-low-sulfur diesel fuel (ULSD). It uses a jet-fuel-type deicer that disperses water to control ice formation throughout the fuel system. AMSOIL Diesel Cold Flow inhibits wax crystal formation, allowing fuel to flow to the engine more easily and improving diesel engine reliability in cold temperatures. AMSOIL Diesel Recovery quickly liquefies gelled diesel fuel and thaws frozen fuel filters in engines that haven't been treated with Diesel Cold Flow. ■

Did you know?

AMSOIL Dominator® Coolant Boost significantly reduces engine warm-up times in cold weather. Enjoy warm air from your vehicle's heater faster on cold winter days by adding Coolant Boost to the radiator.