



Fleet and Heavy Duty TECHTIPS



Gates Green Stripe Hose Is Fully Compatible With Today's High-Tech Coolants

The Gates Corporation has tested its Green Stripe coolant hoses, and based on SAE specifications, has determined that its products are fully compatible with today's "environmentally safe" and "long life" coolants.

The company subjected its Green Stripe hose to the burst strength and immersion requirements of SAE J20 to identify the effects of a wide variety of chemicals used in today's engine coolants.

Coolant concentrates are composed mostly of glycol – either ethylene or propylene. Propylene glycol is relatively new to the market and is often referred to as being "environmentally safe" or "green" because it is less toxic. Ethylene glycol is less expensive and more prevalent.



The smaller component of a coolant concentrate is the corrosion inhibitor package. These chemicals protect various engine metals from corrosion and also prevent the corrosion inhibitors from precipitating out of the solution. The types and amounts of these chemicals can vary greatly between different brands.

Traditional coolants use phosphate or borate-buffered silicates as the primary corrosion inhibitor.

Other chemicals, such as nitrites, nitrates and azoles are often used for additional protection.

In the case of heavy-duty trucks, it is common practice for these types of chemicals, called supplemental coolant additives (SCAs), to be added directly to the truck coolant system. SCAs boost and/or replenish the protection of the coolant concentrate.

In recent years, coolants containing organic acid technology (OAT) as the primary corrosion inhibitor have become popular. They are commonly referred to as "long-life" coolants because of claims that they are more stable, last longer, and require less maintenance.

Like traditional silicate protection, "long-life" OAT corrosion protection is possible in both ethylene glycol and propylene glycol bases. Adding to the complexity, coolants are available in an assortment of colors, and some have a hybrid of silicate and OAT corrosion protection.

In addition to providing less toxicity, and extended replacement intervals, today's coolants lower costs in the service bay. Research indicates that these coolants are compatible with cooling system hoses, thereby assuring full service life.

Gates testing was designed to compare the hose burst strength of its Green Stripe hose when immersed in eight popular EG, PG and OAT solutions.

After 500 hours of testing at 105° C, hose bursts were nearly identical for all the coolants. (See chart.) Also, immersion testing per SAE J20 was performed at twice the required time interval with no adverse affect on the Gates Green Stripe hose compound.



GATES TECHTIP: Hose & Coolant Compatibility

Page 2

Based on these and other test results, Gates concludes that "its Green Stripe hose is fully compatible with the spectrum of coolant chemistry in use today."

In addition to being compatible with a variety of coolant concentrates, Gates Green Stripe hose is built to resist the effects of electrochemical degradation (ECD), the primary cause of most hose failures in the field.

According to Gates engineers, ECD is a condition where metal (such as a radiator stem), hose and liquid coolant (water and ethylene or propylene glycol antifreeze) form an electrical cell, similar to a battery.

The result is a reaction that causes micro-cracks within the hose tube that allow the coolant to attack the hose reinforcement. This eventually weakens the yarn material.

Accelerated by high under-the-hood heat and constant flexing, ECD produces a pinhole leak or will cause the hose to burst before it has reached its expected service life.

The polymers in Gates Green Stripe hose also provide a better bond to stems and connectors. This greatly reduces cold coolant leaks, and EPA concerns for coolant seepage at maintenance facilities and parking areas.

In addition, the hose maintains the proper ratio of water-to-coolant concentrate for a longer time, because it resists permeation of water molecules through the hose wall. This reduces maintenance costs for topping off the radiator and the need to preserve a proper water/antifreeze balance.



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Gates Green Stripe coolant hose exceeds the requirements of SAE J20. Not only does it resist electrochemical degradation, its burst strength far surpasses the SAE specification when tested with eight brands of ethylene and propylene glycol, and OAT-based coolant concentrates.

Gates Green Stripe Hose Burst Test

(140 psi min. burst SAE J20)

