

ETHYLENE OR PROPYLENE GLYCOL BASED ANTIFREEZE

An important choice in the antifreeze industry today is between ethylene glycol (EG) or propylene glycol (PG) as the antifreeze base. For antifreeze formulations each glycol has supporters, although the best choice depends on the intended use. There are several considerations we make when choosing an antifreeze, the most important being performance. In the area of performance there is very little difference in EG and PG. Additives determine most performance criteria so all coolants supplied by a respectable manufacturer will perform well. The one major difference in EG and PG is toxicity. This article looks at this topic and presents facts for consideration.

Because the most persuasive reason to use PG instead of EG based antifreeze is toxicity, we should discuss a little about toxicity. The first thing to think about is the difference between acute and chronic toxicity. Acute toxicity refers to toxicity that has a short duration. If you survive poisoning with an acute toxin, there are usually no lasting effects. Chronic toxicity on the other hand is something that lasts a long time. When poisoned with a chronic toxin, symptoms may not appear for a long time and they may last indefinitely.



Sierra Antifreeze is a propylene glycol based antifreeze.

PG differs from EG in both acute and chronic toxicities. In antifreeze we are most concerned about one time accidental ingestion. Therefore our interest is in acute toxicity. The acute toxicity of PG, especially in humans, is substantially lower than that of EG. Propylene glycol, like alcohol, is not toxic at low levels. In applications where ingestion is a possibility, PG based antifreeze is a prudent choice. To fill this need, Old World Industries markets SIERRA and Fleet Charge PG antifreeze. SIERRA antifreeze is a PG based automotive coolant. Fleet Charge PG antifreeze is formulated for heavy duty diesel applications.

Another consideration is that all antifreezes pick up heavy metal contamination during service. When contaminated (particularly with lead) any used antifreeze can be considered hazardous. Because of metal contamination many people feel that the toxicity of used antifreeze is the same regardless of glycol. This is where we look at chronic toxicity. PG is not a chronic toxin. EG and heavy metals are chronic toxins. Heavy metals, on the other hand are not acute toxins at the levels found in used antifreeze. For this reason PG based antifreezes, like Fleet Charge PG and SIERRA antifreeze, are much safer for people and pets in case of accidental ingestion even after use.

An area that concerns many people is the impact a used product has on the environment. When discussing this topic we refer to the products biodegradability. The biodegradability of EG and PG are almost identical. Although due to the possibility of heavy metal contamination discussed above it is very important to properly dispose of used coolant, regardless of glycol type.

Glycol is the main ingredient in all antifreezes. With the addition of propylene glycol based products consumers now have a choice in their antifreeze base. For applications where a chance of ingestion exists, the toxicity advantages of PG give it a clear advantage. The choice of antifreeze type depends on what properties the customer desires. Whatever type of properties you desire, Old World Industries has a product to meet your needs.