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COOLING SYSTEM:

# UNDERSTANDING COOLANT TECHNOLOGY & SELECTION

MANUFACTURERS DEVELOP FACTORY FILL  
COOLANT BASED ON COOLING SYSTEM TESTING  
AND DESIGN

Each technology is designed to work differently. Each OEM requires a vehicle specific coolant additive technology so one coolant cannot work for all vehicles.

ENGINE COOLANT HAS  
SEVERAL FUNCTIONS:

- Dissipate engine heat
- Protect the cooling system from corrosion
- Offer boil over protection
- Provide freeze protection



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# COOLING SYSTEM: TYPES OF COOLANT

COOLANTS FALL INTO FOUR MAIN TYPES:

TYPE		PROTECTION TECHNOLOGY
Inorganic Additive Technology	IAT	Silicate
Organic Acid Technology	OAT	Organic Acid - Silicate Free
Hybrid Organic Acid Technology	HOAT	Silicate & Organic Acid
Phosphate Hybrid Organic Acid Technology	PHOAT	Phosphate & Organic Acid

Typically these are all ethylene glycol-based coolants as used by OEMs. All provide freeze protection.

Inorganic additives such as silicates and phosphates are used to plate cooling system surfaces. These act as a barrier to protect against corrosion but deplete over time. Organic additives chemically react with metal surfaces when needed for protection. They offer longer protection but are less compatible.

Each vehicle manufacturer uses a coolant based on the cooling system component materials that come in contact with the coolant. These components include the water pump, radiator, heater core, engine block, hoses, and seals.

## WHEN REPLACING A WATER PUMP, DON'T RISK A COMEBACK!

Flush the cooling system with an approved flush, and replace the vehicle's coolant with the vehicle manufacturers recommended coolant. Do not mix coolant types, and use pre-mixed coolant or mix new coolant with distilled water.



# MIXING COOLANT TYPES CAUSES PROBLEMS

- OE manufacturers may void their warranty if coolant other than the recommended coolant technology is used.
- Using a non-compatible coolant results in material compatibility issues.
- Topping off the system with a non-compatible coolant may reduce the original inhibitor levels and corrosion protection.
- Inorganic acids deplete over time and must be replenished or corrosion can occur and lead to deterioration, damage, and unsuspected leaks in cooling system components.

ALWAYS REPLACE COOLANT WITH THE COOLANT RECOMMENDED BY THE VEHICLE MANUFACTURER

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