

# UNDERSTANDING COOLANT TECHNOLOGY & SELECTION



A Tomkins Company

## ENGINE COOLANT HAS SEVERAL FUNCTIONS:

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



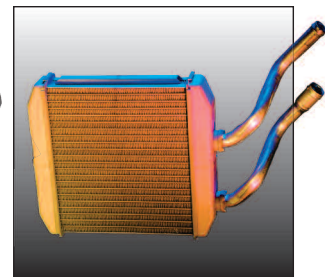
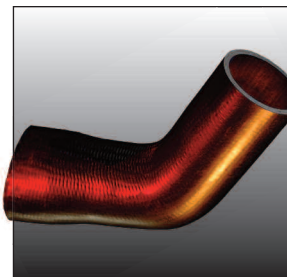
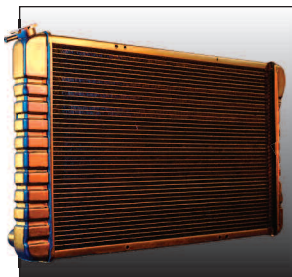
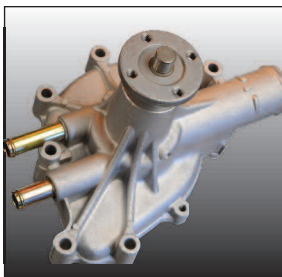
## MANUFACTURERS DEVELOP FACTORY FILL COOLANT BASED ON COOLING SYSTEM TESTING AND DESIGN

### 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 unsurpassed 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.

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



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## MIXING COOLANT TYPES CAUSES PROBLEMS

OE manufacturers may void their warranty if coolant other than the recommended coolant technology is used.



Topping off the system with a non-compatible coolant may reduce the original inhibitor levels and corrosion protection.

Using a non-compatible coolant results in material compatibility issues.

Inorganic acids deplete and must be replenished over time 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



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

- ✓ *Flush the cooling system with an approved flush.*
- ✓ *Replace the vehicle's coolant with the vehicle manufacturers recommended coolant.*
- ✓ *Do not mix coolant types.*
- ✓ *Use pre-mix coolant or mix new coolant with distilled water.*
- ✓ *Protect your investment.*