Prestone COMMAND

Technical Service Bulletin

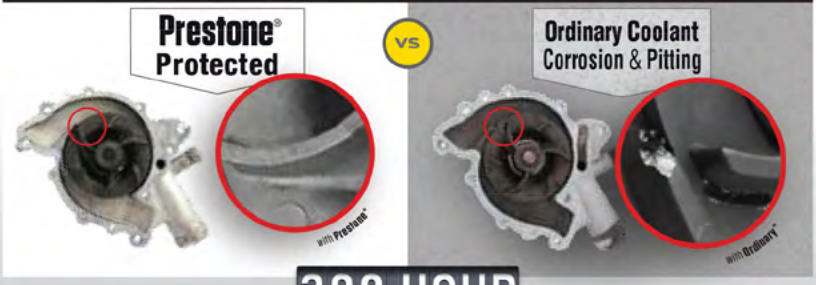
Recommended HD Fluid Maintenance, Testing, and/or Fluid Conversion Plan

Click Here

COR-GUARD® Inhibitors are an Industry GAME CHANGER

Introducing

A Heavy Duty Coolant that Protects Your Engine, Instead of Corroding it.



300 HOUR

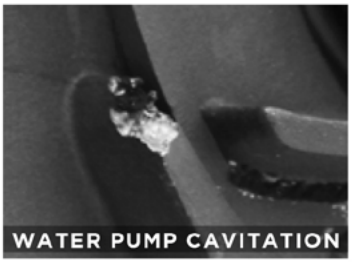
*ASTM Water Pump High Stress Tested to 300 hrs/high stress test

6250 N River Rd, Suite 6000, Rosemont, IL 60018

FACT SHEET INNOVATION

The #1 Reason for Roadside Repair is Cooling System Parts Failure*

*American Trucking Associations' Technology & Maintenance Council & FleetNet America | Q4 2019


WATER PUMP CAVITATION


WATER PUMP CAVITATION


ENGINE BLOCK PASSAGE CORROSION


ROADSIDE REPAIR

COR-GUARD®

Inhibitors are the **Most Advanced Coolant Technology** in the **industry.** It is **Engine Protection** that **Instantly STOPS Corrosion, Rust,** and **Pitting.**

PATENTED TECHNOLOGY
COR-GUARD®
INSTANTLY STOPS CORROSION

- **Designed** specifically to increase UPTIME to a True 1,000,000 miles
- Heavy Duty Coolant Technology that **Protects** Your Engine
- **Instant** parts protection - even if you have old coolant in your engine!

Coolant is one of the Engine's Most Important Fluids

COMMAND® COR-GUARD® Technology	VS	**Current and Older Coolant Technology**
• **Instant Engine Protection**: Protects older engines and keeps new engines looking new on the inside!		• **Older technology** coolants claim 1,000,000 miles but that is only through frequent top-offs.
• **Designed for Class 6-8*** & works in Class 1-6. **Command COR-GUARD®** covers an entire fleet.		• **Other coolant technologies** don't start protecting until up to 10,000 miles of driving.
• **Engineered to be a 1,000,000 mile* formula**		• **Corrosion and buildup** reduce engine parts life and increase unscheduled maintenance.
• **Designed** for current, future and historical materials used in engines.		• **Buildup** of 1/16th of an inch can reduce engine's heat transfer.
• **COR-GUARD®** technology has been in the LD market since 2015 and has been the factory fill in Ford LD vehicles since 2018.		• **Are designed for older engine materials** from 25+ years ago, not the newer, lower-weight materials.
		• Green coolants have a **higher cost** of maintenance and money over the coolant's life.

Flush it Out with 2-in-1 Flush & Degreaser

- **Part 1 - Designed to remove** oil & grease in the system.
- **Part 2 – Acid Cleaner** to dissolve corrosion & buildup.
- **Cleaning,** then using **COMMAND COR-GUARD®** will extend engine life.
- **One Bottle** handles 16 gallons & is safe for all materials in today's engines.

* Class 8 wet sleeve liner applications. With a complete flush/drain and fill per manufacturer's recommendations. Always refer to the vehicle manufacturer owner's or service manual for the recommended change intervals, cooling system capacity, and specific cooling system service instructions.
Prestone®, Command® and Cor-Guard® are registered trademarks of Prestone Products Corporation.

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PRESTONE® COMMAND® COOLANT TECHNOLOGY

The Prestone COMMAND® Difference

- World class technology from world class scientists
- Prestone's Patented Antifreeze/Coolant technology
- USA based manufacturing facilities with 49 quality checks
- Prepared for present and future technology
- COMMAND UPTIME - Prestone's Quality Manufacturing

Heavy-Duty Coolant Technologies Overview

There are five basic heavy-duty coolant formulation technologies:

- Inorganic Additive Technology
- HD Extended Service Interval Technology (ESI)
- Hybrid Organic Acid Technology
- Nitrite Organic Acid Technology
- Nitrite Free Organic Acid Technology

There are other coolant technologies, but they pertain to Automotive, Light and Medium Duty vehicles.

INORGANIC ADDITIVE TECHNOLOGY COOLANT (IAT)

Known as HD Conventional green; other colors are used as well. This is a low silicate formulation which may include phosphate and/or borate, nitrate, nitrite, azoles, and other inorganic compounds. This type of coolant formulation is not used today in factory fill.

When used in a HD application a pre-charge dose of Supplemental Coolant Additives must be added, during a complete initial fill, to bring the inhibitor level up to proper protection or when topping off. The HD technician must monitor and recharge the coolant when necessary for proper protection to hours or mileage. The optimum change interval for this type of coolant is 3000 hours, 1 year, or 100k to 150k miles (160k to 240k KM). The change interval would be based on the OE manufacturer recommended Preventative Maintenance Schedule.

HD EXTENDED SERVICE INTERVAL COOLANT (IAT)

This is also an inorganic additive technology coolant known as an Extended Service Interval Coolant (ESI) type coolant. This formulation may still be used for factory fill in some heavy-duty cooling systems. When following TMC recommend practices the color should be purple, pink or blue, but other colors are used as well.

ESI coolant is a low silicate formulation which may include phosphate and/or borate, nitrate, nitrite, azoles and other inorganic compounds. ESI coolants are pre-charged with the acceptable levels of inhibitors. This means you do not have to add Supplemental Coolant Additives (SCA) at the initial fill or after a proper flush and fill. SCA must be monitored and recharged when necessary. Some fleets use a SCA charged coolant filter for this type of coolant. Inhibitor releasing filters are also used to extended service intervals.

It is recommended that ESI coolants have a lab analysis completed at least once a year to monitor ethylene glycol condition and for contaminates, such as, metals and outside contaminates. Lab analysis can be used to determine coolant condition and change interval.

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HYBRID ORGANIC ACID TECHNOLOGY COOLANT (HOAT)

This type of coolant is typically not used as heavy-duty factory fill in the North America.
HOAT coolants typically utilize a combination of organic acids with low levels of silicate and inorganic additives, such as, borate, molybdate, nitrite and nitrate in the inhibitor package. HOAT coolant comes in multiple colors; color usually depends on the coolant manufacturer. Typical colors used today are red, blue and yellow.
Following TMC Recommended Practice: RP-365 - Coolant Maintenance Guidelines
Preventative Maintenance on a HOAT coolant is typically maintained on an interval of 25,000 miles (40,000 KM) or as specified by the engine manufacturer (The PM is usually maintained the same as a HD IAT/ESI coolant).

NITRITE ORGANIC ACID TECHNOLOGY COOLANT (NOAT)

It is an organic acid inhibitor base with nitrite and may contain molybdate for extra cavitation pitting control. This coolant does not contain inorganic inhibitors, such as, silicate, or borate. NOAT coolant is known as an Extended Life Coolant, HD ELC, or EC-1. HD ELC coolants are still used in today's factory fill in some HD vehicles, especially in off-road and mining equipment. They were designed for optimal performance in heavy duty cooling system components made of copper and brass.
NOAT coolants protect the cooling system much longer and with less maintenance than Conventional (IAT) coolants. There is no need to monitor SCA or install SCA charged coolant filters.
TMC recommended practice color is Red, but other colors are used as well.
This coolant protects HD cooling system components up to 6000 hours or 300,000 miles (480,000 KM). You can extended this protection by adding an Extender every 6000 hours or 300,000 miles (480,000 KM) interval. Total protection may be up to 15,000 hours or 750,000 miles (1.2M KM).
It is recommended to have a lab analysis completed before adding the Extender. This allows the technician to review the coolant condition to decide whether or not to add an Extender or flush and fill the system with new coolant. Do not use SCA or inhibitor releasing coolant filters with this product.

HD NITRITE FREE ORGANIC ACID TECHNOLOGY COOLANT (OAT)

This coolant, known as a HD NF ELC, uses organic acid inhibitors with a possible combination of other inhibitors such as tolyltriazole, mercaptobenzothiazole, nitrate, molybdate and phosphate. This coolant uses the organic acid inhibitors and molybdate to help control corrosion and cavitation erosion in a cooling system. It does not contain inorganic inhibitors, such as, Silicate, Nitrite or Borate. There is no need to monitor SCA or install SCA charged coolant filters. Do not use a charged coolant filter with this coolant, only a non-charged coolant filter should be used.
HD NF ELC is used in some HD vehicles for factory fill. The color is typically pink/red for factory fill. Some other colors are yellow or blue (AG & Mining).
HD NF OAT coolant may protect the cooling system for up to 20,000 hours or 1,000,000 miles (1.6M KM). No Extender is typically needed; however, check with the manufacturer's recommendation for extended service. The extended service interval does not mean you do not need to monitor the condition of the cooling system. It is recommended to test the coolant at least twice a year (preferred every PM) to check coolant level, pH, freeze point levels and for the presence of nitrite. It is also recommended to have a lab analysis completed at 6,000 hours or 300,000 miles (480,000 KM) to check the condition and contaminate levels of the coolant.

HD Coolant Top-off & Coolant Conversion Notes

MIXING COOLANT TECHNOLOGIES DURING TOP-OFF

It is not recommended to use any other coolant technology to top of HD IAT/ESI coolant. Always maintain HD IAT/ESI coolants with SCA, charge coolant filters and top-off with only a HD IAT/ESI type coolant. It is not recommend to use a HD IAT/ESI type coolant to top-off HD NOAT or NF OAT coolants. It is not recommend to use a HD NOAT type coolant to top-off HD NF OAT coolant. It is acceptable with some HD manufacturers to top-off a HD NOAT type coolant with a HD NF OAT coolant. Always consult the OE Manufacturers recommended cooling system maintenance practices.

In an emergency situation OE Manufacturers say it is acceptable to mix coolant technologies, but the cooling system must be flushed and refill with the proper technology during the emergency repair. After reaching a total of 25% mixing of coolant technologies the risk of cavitation erosion is very high if the fluid is not replaced. Monitoring the coolant is a must, especially when HD vehicle coolants are being mixed, or have the potential of being mixed, with different coolant technologies. Follow recommended test procedures to determine if the cooling system needs to be flushed, refilled, or converted to Prestone Command® HD NF OAT with Patented Cor-Guard® Technology.

HD COOLANT CONVERSION NOTES:

Conversion from an IAT/ESI type HD coolant to a HD NF OAT coolant: (Never open a hot cooling system, wait for the cooling system to cool down before opening). This conversion may be done anytime at the fleet's discretion.

- Completely flush the cooling system with Prestone Command® HD 2in1 Flush.
- Always remove flush water and contaminates by flushing two to three times with water.
- Read the "When in doubt, flush it out" article (Page 22) for more information on flushing. It is attached at the end of this TSB.
- It is preferred (if equipped) to unscrew and remove the engine cooling system block drain plug(s) to completely drain all flush water from the cooling system. When not drained completely, a HD engine cooling system could hold up to 20% to 35% of contaminated coolant or flush water.

The next few pages describe recommended testing tools and procedures to determine if the cooling system needs maintenance or if a conversion is recommended from an IAT/ESI or NOAT ELC type coolant to a HD NF OAT ELC coolant. There is an "Antifreeze/Coolant Inspection/Testing Checklist" for documenting your test results in this TSB.

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WHAT'S IN YOUR COOLING SYSTEM?
COOLANT LABEL LOCATION AND IDENTIFICATION

To locate the antifreeze/coolant label on a HD cooling system visually inspect the areas listed below:

- Radiator near the radiator cap.
- Side tanks of the radiator near the top.

  The label would most likely be located on the passenger's side of the radiator.
- On the surge tank (cooling system reservoir tank)

Listed are label samples. Not all labels have the same look, but the content information is usually the same.

HD Fully Formulated SCA Pre-charged Coolant colors:

- Purple
- Pink
- Blue (Cummins)
- Green (Sold in Canada)

Top-off with Prestone Command® Heavy Duty SCA Pre-Charged ESI Antifreeze/Coolant - Purple OR remove any SCA filters, completely flush the cooling system with Prestone Command® HD 2in1 Flush, and (recommended conversion) refill with new Prestone Command® HD NF ELC with Cor-Guard®. If no conversion, refill with Heavy Duty SCA Pre-Charged ESI Antifreeze/Coolant.

Heavy Duty NOAT Extended Life Coolant color:

- Red (most widely used color)
- Other colors may be used, but it will state HD ELC coolant on label

Important: Read label carefully. HD NOAT ELC coolant label will not state Nitrite Free OAT. Top-off with Prestone Command® HD Extended Life Antifreeze/Coolant - Red or Prestone Command® HD Nitrite Free Extended Life Antifreeze/Coolant – Red or Yellow.
Or Flush and Refill with Prestone Command® HD NF ELC with Cor-Guard® Antifreeze/Coolant.

Heavy Duty Nitrite Free OAT Extended Life Coolant color:

- Pink/Red (most widely used color for factory fill in over-the-road Tractors)
- Yellow or Blue (some construction and AG equipment)

Important: Read label carefully.
Label with Nitrite Free OAT ELC coolant will state Nitrite Free OAT.
Top-off with Prestone Command® HD Nitrite Free Extended Life Antifreeze/Coolant - Red or Yellow.
Or Flush and Refill with Prestone Command® HD NF ELC with Cor-Guard® Antifreeze/Coolant.

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RECOMMENDED/REQUIRED HD COOLANT TEST EQUIPMENT

Not available for purchase

Refractometer is the most accurate test tool for Freeze Point Concentration. Results are by looking through the lens. Go to Pages 15 & 16 for coolant testing & concentration levels.

50/50 -34° F / -36° C

100% Water 32° F / 0° C

HACH Pocket Pro pH Test - Meter PT# 9531000
Buffer Solution PT# 2947600
Preferred specifications: pH accuracy of 0.1 pH, range of 0.0-14 pH, operating temperature 0-50 Degrees Celsius

Any electronic pH tester may be used as long as it is recommended for use with antifreeze/coolant. Most accurate pH test tool for the shop.

Recommended pH Tester

Not available for purchase

Coolant Test Strips
Measure Nitrite level.
Brand of Test Strips need to be for coolant formulation being tested:
Conventional/ESI
or Extended Life Coolant.

Always check the HD coolant formulation before any test are started. Do NOT add coolant to system before testing.

TMC-RP-351 provides guidelines for color standardization of engine coolants, but in today's market one cannot always depend on the color of the coolant as a true indicator. The engine manufacturers recommend different coolant technologies for various engine applications.

Note: The following pages are Recommended Fluid Maintenance and Conversion Plans. Refer to the vehicle specific Original Equipment Manufacturer's preventative maintenance schedule for more information.

APPLIES TO HD CONVENTIONAL ESI/IAT COOLANTS ONLY

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Recommended HD Conventional ESI/IAT Fluid Maintenance or Conversion Plan

STEP ONE

1. Visually inspect coolant for color, clarity, presence of solids/precipitates, oils or other contamination. If signs of mixed coolant colors or contamination then flush with Prestone Command 2in1 Flush and refill the cooling system Prestone Command® coolant of choice.
2. Make all visual fluid determinations before testing.
3. Remove sample coolant for testing before topping off cooling system.

Note: Do NOT add coolant to system before testing.

STEP TWO

1. Record % Glycol level with a refractometer for most accurate results (see page 15).
2. Record the Nitrite level ppm
   a. When using test strips follow the Nitrite test instructions on the test strip card or bottle. The color standards on the card are preferable.
3. Measure and record the pH reading using a pH meter. Make sure the pH tester is verified or calibrated with buffer solutions before use.
4. See Determine Test Results on Page 10.

pH Measurement: Proper Testing Procedures

1. Thoroughly rinse the probe with clean water.
2. Fill the test cup with clean water and place the probe in the test cup for 2 minutes.
3. Remove the probe from the test cup. Empty and dry the test cup.
4. Make sure the pH tester is verified or calibrated with buffer solutions before use.
5. Repeat step 1-3.
6. Remove fluid from the coolant de-aeration/reservoir tank and fill the test cup to the correct level.
7. Place the probe in the test cup and set on a stable surface vertically for at least 1 minute.
a. 2 minutes is preferable
8. Record the pH reading.
9. Remove the probe from the test cup.
10. Thoroughly rinse the probe and test cup with clean water after each test.

APPLIES TO HD CONVENTIONAL ESI/IAT COOLANTS ONLY

DETERMINE TEST RESULTS

1. **If the pH level is below 8.0:**
   a. Remove any SCA filters, completely flush the cooling system with Prestone Command® HD 2in1 Flush, and (recommended conversion) refill with new Prestone Command® HD NF OAT with Patented Cor-Guard® Technology. If no conversion, refill with Prestone Command® Heavy Duty SCA Pre-Charged ESI Antifreeze/Coolant.

2. **If the pH level is between 8.0 - 11.0 and the nitrite level is between 1200 and 3000 ppm:**
   a. The fluid is OK.

   b. Top off with the correct amount of Prestone Command® Heavy Duty SCA Pre-Charged ESI Antifreeze/Coolant or water to adjust the level and concentration (see page 15).

3. **If the pH level is between 8.0 - 11.0 and the nitrite level is below 1200 ppm:**
   a. Add the correct amount of SCA to raise the nitrite level to between 1200 and 3000 ppm. Follow the test strip directions to add the proper amount of SCA to cooling system.

   b. Top off with the correct amount of Prestone Command® Heavy Duty SCA Pre-Charged ESI Antifreeze/Coolant or water to adjust the level and concentration (see page 15).

   c. OR - Remove any SCA filters, completely flush the cooling system with Prestone Command® HD 2in1 Flush, and (recommended conversion) refill with new Prestone Command® HD NF OAT with Patented Cor-Guard® Technology.

   d. If no conversion, refill with Prestone Command® Heavy Duty SCA Pre-Charged ESI Antifreeze/Coolant.

4. **If the pH level is above 11.0 or the nitrite level is above 3000 ppm:**
   a. Remove any SCA filters, completely flush the cooling system with Prestone Command® HD 2in1 Flush.

   b. Recommended conversion: refill with new Prestone Command® HD NF OAT with Patented Cor-Guard® Technology.

   c. If no conversion: refill with Prestone Command® Heavy Duty SCA Pre-Charged ESI Antifreeze/Coolant.

Note 1: Reference Specifications TMC RP-262

APPLIES TO HD ELC NOAT COOLANTS ONLY

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Recommended HD NOAT Fluid Maintenance or Conversion Plan

STEP ONE

1. Visually inspect coolant for color, clarity, presence of solids/precipitates, oils or other contamination. If signs of mixed coolant colors or contamination then flush with Prestone Command 2in1 Flush and refill the cooling system Prestone Command® coolant of choice.
2. Make all visual fluid determinations before testing.
3. Remove sample coolant for testing before topping off cooling system.

Note: Do NOT add coolant to system before testing.

STEP TWO

1. Record % Glycol level with a refractometer for most accurate results (see page 15).
2. Record the Nitrite level ppm
   a. When using test strips follow the Nitrite test instructions on the test strip card or bottle. The color standards on the card are preferable.
3. Measure and record the pH reading using a pH meter. Make sure the pH tester is verified or calibrated with buffer solutions before use.
4. See Chart to Determine Test Results (Page 12).

pH Measurement: Proper Testing Procedures

1. Thoroughly rinse the probe with clean water.
2. Fill the test cup with clean water and place the probe in the test cup for 2 minutes.
3. Remove the probe from the test cup. Empty and dry the test cup.
4. Make sure the pH tester is verified or calibrated with buffer solutions before use.
5. Repeat step 1-3.
6. Remove fluid from the coolant de-aeration/reservoir tank and fill the test cup to the correct level.
7. Place the probe in the test cup and set on a stable surface vertically for at least 1 minute.

a. 2 minutes is preferable

8. Record the pH reading.
9. Remove the probe from the test cup.
10. Thoroughly rinse the probe and test cup with clean water after each test.

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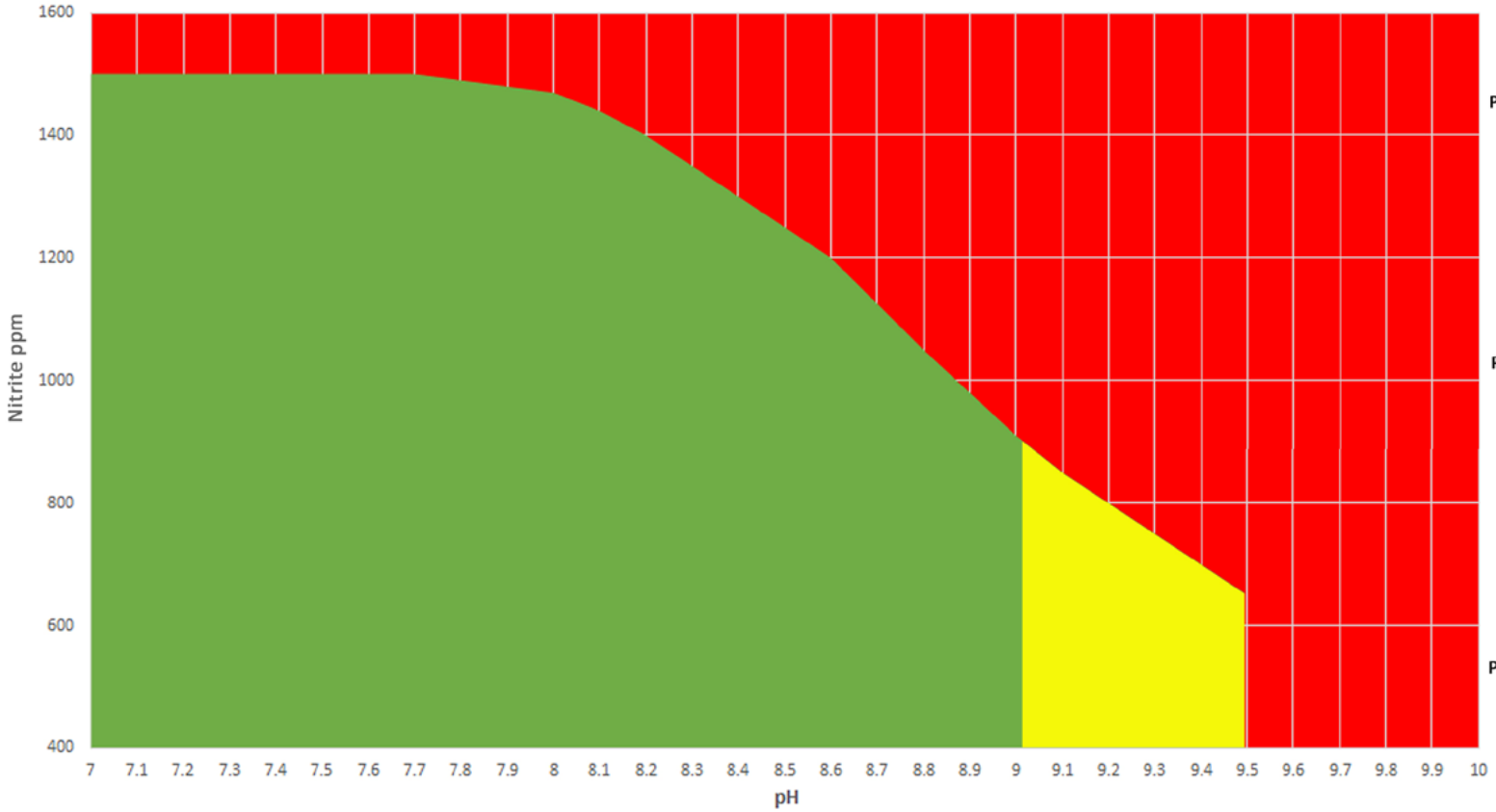
APPLIES TO HD ELC NOAT COOLANTS ONLY

SEE CHART BELOW TO DETERMINE TEST RESULTS

Recommended Conversion Test Chart for HD NOAT ELC Coolants (pH & Nitrite Test)



Recommend FLUSH

Completely flush the cooling system with Prestone Command® HD 2in1 Flush (HD100) and refill with Prestone Command® HD NF OAT ELC with Patented Cor-Guard® Technology.

Recommend MAINTAIN

Continue to operate with existing fluid.
Retest every 6 months.
At the fleet's discretion:
Completely flush the cooling system with Prestone Command® HD 2in1 Flush (HD100) and refill with Prestone Command® HD NF OAT ELC with Patented Cor-Guard® Technology.

Fluid BORDERLINE

Fluid is on the Borderline.
Continue to operate with existing fluid.
Retest before 3 months/25,000 miles (40,000 KM).
At the fleet's discretion:
Completely flush the cooling system with Prestone Command® HD 2in1 Flush (HD100) and refill with Prestone Command® HD NF OAT ELC with Patented Cor-Guard® Technology.

Note: Reference Specifications TMC RP-262
Never use a SCA charged coolant filter with HD Extended Life Coolants (NOAT or NF OAT).

APPLIES TO HD NF OAT ELC COOLANTS ONLY

Recommended HD Nitrite Free OAT Fluid Maintenance Plan

STEP ONE

1. Visually inspect coolant for color, clarity, presence of solids/precipitates, oils or other contamination. If signs of mixed coolant colors or contamination then flush with Prestone Command 2in1 Flush and refill the cooling system Prestone Command® coolant of choice.
2. Make all visual fluid determinations before testing.
3. Remove sample coolant for testing before topping off cooling system.

Note: Do NOT add coolant to system before testing.

STEP TWO

1. Record % Glycol level with a refractometer for most accurate results (see page 15).
2. Record the Nitrite level ppm
   a. When using test strips follow the Nitrite test instructions on the test strip card or bottle. The color standards on the card are preferable.
3. Measure and record the pH reading using a pH meter. Make sure the pH tester is verified or calibrated with buffer solutions before use.
4. See Determine Test Results.

pH Measurement: Proper Testing Procedures

1. Thoroughly rinse the probe with clean water.
2. Fill the test cup with clean water and place the probe in the test cup for 2 minutes.
3. Remove the probe from the test cup. Empty and dry the test cup.
4. Make sure the pH tester is verified or calibrated with buffer solutions before use.
5. Repeat step 1-3.
6. Remove fluid from the coolant de-aeration/reservoir tank and fill the test cup to the correct level.
7. Place the probe in the test cup and set on a stable surface vertically for at least 1 minute.
a. 2 minutes is preferable
8. Record the pH reading.
9. Remove the probe from the test cup.
10. Thoroughly rinse the probe and test cup with clean water after each test.

APPLIES TO HD NF OAT ELC COOLANTS ONLY

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DETERMINE TEST RESULTS

1. **If the pH level is below 7.0:**
   a. Full fluid analyses are required or completely flush the cooling system with Prestone Command® HD 2in1 Flush, and refill with Prestone Command® HD NF OAT with Patented Cor-Guard® Technology.

   b. Or flush and fill with Prestone Command® HD NF OAT

2. **If the pH level is between 7.0 - 9.5 and the nitrite level is below 200 ppm:**
   a. The coolant is OK.
   b. Top off with the correct amount of Prestone Command® HD NF OAT with Patented Cor-Guard® Technology or water to adjust the level and concentration (see page 15).
   c. If pH level is between 9.0 and 9.5 it is borderline. Continue to operate with existing coolant, but monitor and retest within 3 months or 25,000 miles (40,000 KM).

3. **If the pH level is between 7.0 - 9.5 and the nitrite level is above 200 ppm:**
   a. Completely flush the cooling system with Prestone Command® HD 2in1 Flush, and refill with Prestone Command® HD NF OAT with Patented Cor-Guard® Technology.

   b. Or flush and fill with Prestone Command® HD NF OAT

4. **If the pH level is above 9.5:**
   a. Completely flush the cooling system with Prestone Command® HD 2in1 Flush, and refill with Prestone Command® HD NF OAT with Patented Cor-Guard® Technology.

   b. Or flush and fill with Prestone Command® HD NF OAT

Note 1: Reference Specifications TMC RP-262
Note 2: Never use a SCA charged coolant filter with HD ELC coolants.

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CALCULATING GLYCOL% / WATER% FOR PROPER FREEZE POINT

The following chart determines how much to drain from the cooling system to add new concentrated coolant or water to bring the system back to a 50/50 mix with a freeze point of -34º F. Depending on the climate and elevation the vehicle is used, the mixture should range between 40% - 65%. Refer to the OEM recommended concentration levels, for the vehicle's use, for different climate and elevations. Refer to the next page for calculating amount of fluid to drain, if needed.

Concentrated HD Antifreeze/Coolant to Water %

Refractometer Test			Recommended Maintenance After Test Results			
Temperature (F)	Glycol%	Water%	% Gallons to Drain from Cooling System	Only if the Desired Temperature - -34 F	Type of recommended HD coolant	
32	0%	100%	Drain & Refill		Prestone Command® HD NF OAT with Patented Cor-Guard® Technology	Flush with Prestone Command® HD 2in1 Flush (HD100) with any visual signs of rust or contamination. Refill with choice of Prestone Command® HD Antifreeze/Coolant. If converting from HD ESI/IAT Coolant flush the cooling system with Prestone Command® HD 2in1 Flush (HD100) and refill with Prestone Command® HD NF OAT with Patented Cor-Guard® Technology
25	10%	90%	Drain & Refill		Prestone Command® HD NF OAT with Patented Cor-Guard® Technology	
20	16%	84%	Drain & Refill		Prestone Command® HD NF OAT with Patented Cor-Guard® Technology	
15	21%	79%	Drain & Refill		Prestone Command® HD NF OAT with Patented Cor-Guard® Technology	
10	25%	75%	Drain 25%		Top-off with existing Prestone Command®concentrated coolant formulation	
5	29%	71%	Drain 21%		Top-off with existing Prestone Command®concentrated coolant formulation	
0	33%	67%	Drain 17%		Top-off with existing Prestone Command®concentrated coolant formulation	
-10	39%	61%	Drain 11%		Top-off with existing Prestone Command®concentrated coolant formulation	
-20	44%	56%	Coolant Recommended Mixture %. If needed drain enough from the cooling system to bring temperature range to -34 Degrees Fahrenheit.	Drain 6%	Top-off with existing Prestone Command®concentrated coolant formulation	
-30	48%	52%		Okay		
-34	50%	50%		Okay		
-40	52%	48%		Okay		
-50	56%	44%		Drain 6%	Top-off with water	
-60	59%	41%		Drain 9%	Top-off with water	
-70	64%	36%	Drain 14%		Top-off with water	
-84	70%	30%	Drain 20%		Top-off with water	
Above	80 - 100%	10 - 20%	Flush, Drain & Refill		Prestone Command® HD NF OAT with Patented Cor-Guard® Technology	

% Gallon to Drain from Cooling System **X** Total system Capacity = Drain Gallons

Example: Refractometer Test Reading: 10 Degrees Fahrenheit For calculating 25%: .25 X 12 gl = 3.0 gl (Drain 3.0 Gallons and fill with Prestone Command®concentrated coolant formulation)

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CALCULATING GLYCOL% / WATER% FOR PROPER FREEZE POINT

Using the actual reading from the Refractometer calculate, if needed, how much fluid to remove from the cooling system. Add the proper amount of concentrate or water to bring the cooling system to specifications.

% Gallon to Drain from Cooling System X Total System Capacity = Drain Gallons, Quarts, or Liters

Example: Total System Capacity can be gallons, quarts, or liters.

Refractometer Test reading is 10^0 F. Look at Glycol% on the chart, shows 25% of cooling system is antifreeze.

For calculating 25%: .25 X 12 gl = 3.0 gl (Drain 3.0 Gallons and fill with concentrate coolant)

Sample Refractometer Readings

REFRACTOMETER BEFORE TESTING

REFRACTOMETER WITH COOLANT READING: -440 F

REFRACTOMETER 100% CONCENTRATED COOLANT

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Click here to go to Uptime Calculator

Prestone COMMAND

PATENTED TECHNOLOGY
COR-GUARD
INSTANTLY STOPS CORROSION

MAXIMIZE UPTIME

Spend Time and Money on Your Business, Not on Roadside Repair

How much will you save? Go to **PrestoneCommand.com** for the **UPTIME CALCULATOR**

FLEET MAINTENANCE COST	FLEET MAINTENANCE COST	FLEET MAINTENANCE COST	FLEET MAINTENANCE COST
when you use COMMAND® COR-GUARD® Nitrite Free (Red) Antifreeze + Coolant for 1,000,000 miles	when you use ESI Precharged (Purple) for 1,000,000 miles	when you use COMMAND® COR-GUARD® Nitrite Free (Red) Antifreeze + Coolant for 1,000,000 miles	when you use Low Silicate Conventional (Green) for 1,000,000 miles
$113,464.44	$196,252.50	$113,464.44	$264,617.50
Cor-Guard® saves you $82,788.06		Cor-Guard® saves you $151,153.06	

*Calculations based on simulated data for this brochure and may not be entirely accurate. Visit PrestoneCommand.com for the full Uptime Calculator

Prestone® COMMAND® Heavy Duty Cor-Guard® Antifreeze+Coolant

Nitrite Free Cor-Guard® Inhibitors Extended Life Antifreeze+Coolant

- Cor-Guard® increases uptime by instantly stopping the spread of rust, corrosion, pitting, gunk, grime, and buildup.
- Formulated for use in all Heavy and Light Duty engines
- Eliminates the need to add supplemental coolant additives
- Service Life 1,000,000 miles/20,000 hours* - Heavy Duty applications only
- Works with all metals, rubber, elastomers, & seals

For Use In: Heavy & Light Duty Vehicles Classes 1-8
Compatibility: NF Non-2EH, NF-OAT

SKU	Pack	UPC
CONCENTRATE		
AFC13000	6/1 gal.	7 97496 88112 0
AFC13000-55	55 gal. drum	7 97496 88126 7
AFC13000-1KL	264 gal. tote	7 97496 88127 4
50/50		
AFC13100	6/1 gal.	7 97496 88114 4
AFC13100-55	55 gal. drum	7 97496 88128 1
AFC13100-1KL	264 gal. tote	7 97496 88129 8

Meets or Exceeds OEM Performance Requirements

Cummins CES 14603
Cummins Bulletin 3666132
Detroit Diesel 93K217
CAT EC-1
Navistar CEMS B-1, Type IIIA
International
John Deere H24
John Deere H24 C1
John Deere JDS-G135
Ford WSS-M97-B44D
GM 6277M
GMW 34290
Volvo
Mack
Freightliner
Paccar CS 0185
Peterbilt
Kenworth
Komatsu
Komatsu KES 07.892
Kubota
GM Heavy Truck
Chrysler/Dodge/Ram
Ford WSS-M97B57-A1/A2

Meets or Exceeds Industry & Governmental Standards:

ASTM D6210
ASTM D3306
ASTM D4985
ASTM D7583
ASTM D4340
SAE J1941
TMC RP338A
TMC RP364
TMC RP351
JIS K2234
SAE J1034

* Class 8 wet sleeve liner applications. With a complete flush/drain and fill per manufacturer's recommendations. Always refer to the vehicle manufacturer owner's or service manual for the recommended change intervals, cooling system capacity, and specific cooling system service instructions. PRESTONE®, COMMAND®, and COR-GUARD® are registered trademarks of Prestone Products Corporation. All other marks are those of their respective owners.

Formulated for Heavy Duty Engines

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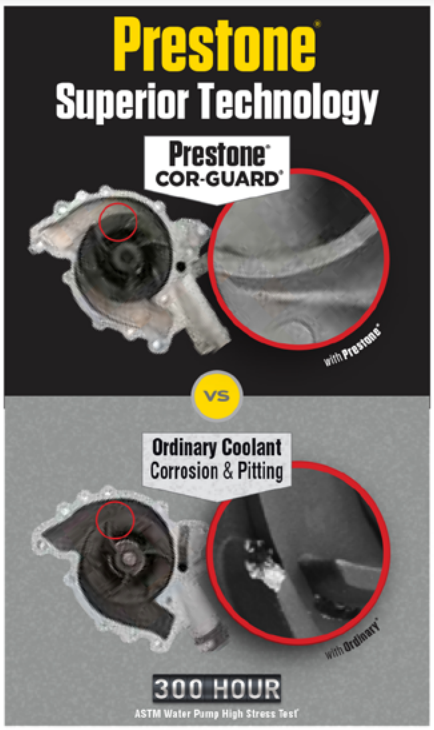

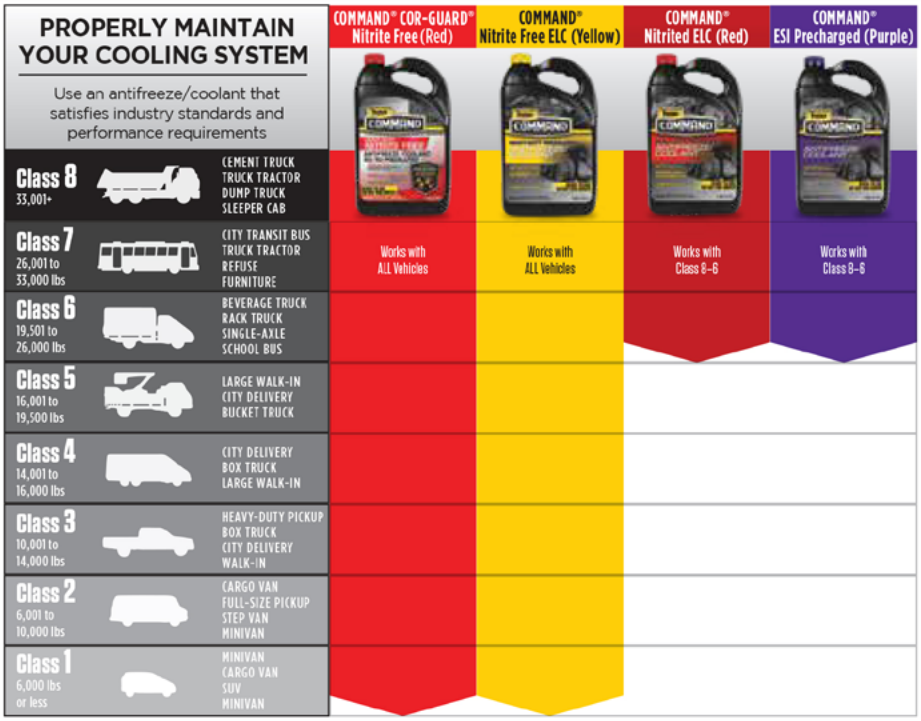

Prestone® COMMAND® Heavy Duty Nitrite Free Antifreeze+Coolant

Nitrite Free Extended Life

- Formulated for use in all Heavy and Light Duty engines
- Nitrite Free formula provides excellent protection for aluminum and all other engine metals
- Protects against liner pitting and corrosion protections
- Service Life 750,000 miles/15,000 hours* - Heavy Duty applications only
- Eliminates the need to add supplemental coolant additives
- Works with all NF-OAT coolants

For Use In: Heavy & Light Duty Vehicles Classes 1-8
Compatibility: NF-OAT

SKU	Pack	UPC
CONCENTRATE		
AFC12000	6/1 gal.	7 97496 87906 6
AFC12000-55	55 gal. drum	7 97496 87908 0
AFC12000-1KL	264 gal. tote	7 97496 87909 7
50/50		
AFC12100	6/1 gal.	7 97496 87910 3
AFC12100-55	55 gal. drum	7 97496 87912 7
AFC12100-1KL	264 gal. tote	7 97496 87913 4

OEM Approvals/Registrations
This product meets Cummins® Eng. Std. CES14439
Detroit Diesel 93K217

Meets or Exceeds OEM Performance Requirements
CAT EC-1
Navistar CEMS B-1, Type IIA
International
Volvo
Mack
John Deere H24
John Deere H24 C1
John Deere JDS-G135
Freightliner
Paccar
Paccar CS 0185
Peterbilt
Kenworth
GM 6277M
GMW 34290
Ford WSS-M97-B44D

Meets or Exceeds Industry & Governmental Standards:
ASTM D6210
ASTM D3306
ASTM D4985
ASTM D7583
ASTM D4340
SAE J1941
TMC RP338A
TMC RP364
TMC RP351
JIS K2234
SAE J1034

Prestone® COMMAND® Heavy Duty Extended Life Antifreeze+Coolant

Nitrited Extended Life

- Formulated for Heavy Duty Vehicles
- Nitrited formula provides excellent protection for aluminum and all other engine metals
- Protects against liner pitting and corrosion protections.
- Complete liner pitting & corrosion protection
- Service Life 750,000 miles/15,000 hours* with use of extender at 300,000 miles/6,000 hours and 600,000 miles/12,000 hours - Heavy Duty applications only

For Use In: Heavy Duty Vehicles Classes 6-8.
Compatibility: NOAT

SKU	Pack	UPC
CONCENTRATE		
AFC11000	6/1 gal.	7 97496 87757 4
AFC11000-55	55 gal. drum	7 97496 87758 1
AFC11000-1KL	264 gal. tote	7 97496 87759 8
50/50		
AFC11100	6/1 gal.	7 97496 87761 1
AFC11100-55	55 gal. drum	7 97496 87762 8
AFC11100-1KL	264 gal. tote	7 97496 87763 5

OEM Approvals/Registrations
This product meets Cummins® Eng. Std. CES14439

Meets or Exceeds OEM Performance Requirements
CAT EC-1
Navistar CEMS B-1, Type III
International
Volvo
Mack
Freightliner
John Deere JDS-G135
Paccar
Kenworth
Peterbilt
New Holland
Waukesha
John Deere H24
John Deere H24 C1

Meets or Exceeds Industry & Governmental Standards:
ASTM D6210
ASTM D3306
ASTM D4985
ASTM D4340
SAE J1941
TMC RP329A
TMC RP338A
TMC RP364
TMC RP351
SAE J1034

Prestone® COMMAND® Heavy Duty ESI Antifreeze+Coolant

Extended Service Interval - ESI

- Formulated for Heavy Duty Vehicles
- Compatible with any IAT antifreeze/coolant
- Nitrited, pre-charged with supplemental coolant additives
- Extended service interval; fully formulated to provide engine protection
- Stabilized, low silicate (no phosphates) formula helps reduce deposits & reduce hard water scale buildup
- Requires monitoring & maintaining additive levels

For Use In: Heavy Duty Vehicles Classes 6-8
Compatibility: ESI & IAT

SKU	Pack	UPC
CONCENTRATE		
AFC10000	6/1 gal.	7 97496 87765 9
AFC10000-55	55 gal. drum	7 97496 87766 6
AFC10000-1KL	264 gal. tote	7 97496 87767 3
50/50		
AFC10100	6/1 gal.	7 97496 87769 7
AFC10100-55	55 gal. drum	7 97496 87770 3
AFC10100-1KL	264 gal. tote	7 97496 87774 1

OEM Approvals/Registrations
This product meets Cummins® Eng. Std. CES14439
Detroit Diesel 93K217

Meets or Exceeds OEM Performance Requirements
Cummins CES 90T8-4
Detroit Diesel 7SE298
Navistar CEMS B-1, Type II
Mack 014617004
Freightliner 48-25961
Freightliner 48-25878
Freightliner 48-22880
Kenworth R02G-170-97
Peterbilt 8502.002
John Deere H24, H24 A1
John Deere JDS-G135
John Deere 8650-5

Meets or Exceeds Industry & Governmental Standards:
ASTM D6210
ASTM D3306
ASTM D4985
ASTM D4340
GCA A-A-52624
CID A-A-52624A
TMC RP329A
TMC RP338A
TMC RP351
SAE J1034
SAE J1941

* Class 8 wet sleeve liner applications. With a complete flush/drain and fill per manufacturer's recommendations. Always refer to the vehicle manufacturer owner's or service manual for the recommended change intervals, cooling system capacity, and specific cooling system service instructions. PRESTONE®, and COMMAND®, and COR-GUARD® are registered trademarks of Prestone Products Corporation. All other marks are those of their respective owners.

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Antifreeze/Coolant Inspection/Testing Checklist

Do Not Top-Off Cooling System until Inspection/Testing is Complete

PM Inspection Date:	Company Name:
Date Manufactured:	VIN Number:
Technician Name:	Write Comments Below (Owner/Operator/Driver Problems or Complaints):

Unit Number		Year		Model	
Mileage		Make		Engine	

Document the Type of Antifreeze/Coolant in the vehicle (Check the sticker on reservoir or side tank of radiator)

Fully Formulated/SCA Pre-Charge (IAT)	☐ Yes ☐ No	Color of Antifreeze/Coolant	
HD Extended Life (NOAT ELC)	☐ Yes ☐ No	Color of Antifreeze/Coolant	
Nitrite Free Extended Life (NF OAT ELC)	☐ Yes ☐ No	Color of Antifreeze/Coolant	
Antifreeze/Coolant Unknown (No Sticker)	☐ Yes ☐ No	Color of Antifreeze/Coolant	
Antifreeze/Coolant Known (No Sticker)	☐ Yes ☐ No	Color of Antifreeze/Coolant	

If Type of Antifreeze/Coolant is known and NO sticker is present or visible check known Antifreeze/Coolant below

☐ **Conventional (IAT)** ☐ **SCA Pre-Charge (IAT)** ☐ **HD Extended Life (NOAT ELC)** ☐ **Nitrite Free Extended Life (NF OAT ELC)**

If the Antifreeze/Coolant is unknown it is recommended to perform a laboratory analysis of the fluid

or completely flush & refill the cooling system with the preferred Prestone Command® HD Antifreeze/Coolant.

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Antifreeze/Coolant Inspection/Testing Checklist

Do Not Top-Off Cooling System until Inspection/Testing is Complete

HD Conventional or SCA Pre-charged IAT Coolant Purple/Pink/Blue/Green	NOAT ELC Coolants Red	Nitrite Free OAT ELC Coolant Red, Pink, or Yellow
The color of the antifreeze/coolant might not match the colors listed above. Color can be dependent on antifreeze/coolant manufacturer or OEM.		
Visually Inspect Antifreeze/Coolant Condition	☐ Clear ☐ Cloudy ☐ Muddy	Cloudy/Muddy Coolant Needs Flushed & Refilled
Inspect Antifreeze/Coolant Level (When Cold)	☐ Normal ☐ Low ☐ High	Comments:
Test Glycol Concentration (Freeze Point)	Document Refractometer Reading:	
Use the proper Test Strip depending on type of Antifreeze/Coolant determined by inspection. Record pH Meter & Test Strip readings below. Refer to the proper bulletin page number 10, 12, or 14 for instructions and to determine test results.		
IAT/ESI SCA Pre-Charge Acceptable Reading Levels	**pH Meter Reading: 8.0 – 11 ***	**Test Strip Nitrite Reading: 1200 – 3000 ppm**
Actual Test Results for IAT SCA Pre-Charge	pH Meter Reading:	Test Strip Nitrite Reading:
NOAT ELC Acceptable Reading Levels	**pH Meter Reading: NOAT ELC Chart in TSB**	**Test Strip Nitrite : NOAT ELC Chart in TSB** Page 12
Actual Test Results for NOAT ELC	pH Meter Reading:	Test Strip Nitrite Reading:
Odometer Reading at 300,000 miles or run time at 6000 hours: add Extender to HD NOAT coolant if inspection/testing passes		
NF OAT ELC Acceptable Reading Levels	**pH Meter Reading: 7.0 – 9.5 ***	**Test Strip Nitrite Reading: Under 200 ppm**
Actual Test Results for NF OAT ELC	pH Meter Reading:	Test Strip Nitrite Reading:
It is recommended to perform a lab analysis on HD ELC type of antifreeze/coolants at 300,000 miles or 6000 hours.		
Documented Test Results	☐ Pass ☐ Fail	☐ Top-Off Needed ☐ Flush & Refill Recommended
Top off the cooling system to the proper level utilizing the correct Prestone COMMAND® Antifreeze/Coolant If Antifreeze/Coolant does not pass Inspection/Testing: Flush & Refill with Prestone COMMAND® 2in1 Flush and the correct Prestone COMMAND® Antifreeze/Coolant		
Refer to TSB for Prestone COMMAND® Antifreeze/Coolant Descriptions Page 17		

Do Not use Liquid SCA or SCA Charged Coolant Filters with a NOAT ELC or Nitrite Free OAT ELC Antifreeze/Coolant. USE ONLY Non-Charged Coolant Filters. If NO Antifreeze/Coolant sticker is present install proper sticker.

*** TMC RP-262**

Importance of Water Quality Spec on Testing Water Source

When you use water to mix with antifreeze/coolant concentrate it is critical that the water be of the appropriate quality.

Why should you check water quality?
The quality of water can have a negative effect on the life and performance of the antifreeze/coolant by introducing excessive levels of corrosive ions, hard water salts, or pH destabilizing materials. Water quality is critical in order to prevent scale build-up and ensure that important chemicals in antifreeze/coolant mixtures perform as expected and do not drop out of solution.

TOTAL HARDNESS LEVELS: MAX 170 PPM

Water hardness level is determined by calcium and magnesium carbonate ion content. When water with high hardness is used in cooling systems, scale can form on cooling system surfaces and prevent efficient heat transfer. The net result can be excessive heat buildup leading to overheating, oil degradation, etc.

ASTM Specifications:
Total Hardness: Max 170 ppm
Total Solids: Max 340 ppm
Chloride: Max 40 ppm
Sulfate: Max 100 ppm

pH LEVELS: 6.0 – 8.0

The pH of the water used to dilute the coolant should remain in the appropriate range of between 6-8 pH units at all times for optimal performance. A pH that is too low or too high can destabilize the coolant inhibitor package causing the inhibitors to fall out of solution and in some cases form unstable gels. Any lost inhibitors can shorten the life of the coolant and reduce the corrosion protection provided by the coolant. If the pH of your water is too high or too low it should not be used to mix with antifreeze concentrates.

Chloride Levels: Max 40 ppm

High chloride levels in water (sodium chloride) can increase the corrosion rate of aluminum and iron metal surfaces resulting in the depletion of important corrosion inhibitors out of the coolant. The net result is a reduction of corrosion protection of the engine cooling system.

Prestone® Heavy Duty Products

Prestone® COMMAND® Heavy Duty Diesel Exhaust Fluid (DEF)

EXHAUST FLUID AF+C

FORMULATED FOR HEAVY DUTY DEF VEHICLES

- ✔ Non-Flammable & Non-Toxic Premixed with Pure Water
- ✔ Long Shelf Life
- ✔ Stored & Handled per ISO 22241 Guidelines
- ✔ Batch Date Coded
- ✔ Packaged on Dedicated Equipment for Purity
- ✔ Compatible with all API certified DEF products

SKU	Pack	UPC
HD1001	2/2.5 gal.	7 97496 87703 1
HD1000-55	55 gal. drum	7 97496 87788 8
HD1000-330	330 gal. tote	7 97496 87789 5
Fluid Color:	Clear	

Meets Performance Requirements

DEF TECHNOLOGY
Meets all API & ISO 22241 specifications

API AMERICAN PETROLEUM INSTITUTE CERTIFIED DIESEL EXHAUST FLUID

Prestone COMMAND® Heavy Duty 2-in-1 Flush & Degreaser

FLUSH & DEGREASER

SAFE FOR ALL HEAVY DUTY COOLING SYSTEM COMPONENTS

- ✔ Removes oil and fuel contamination
- ✔ Safe for all engines (Classes 1-8)
- ✔ Designed to remove oil & grease
- ✔ Acid Cleaner to dissolve corrosion & buildup
- ✔ 1 bottle treats up to a 16-gallon cooling system

SKU	Pack	UPC
HD100-6	6/1 gal.	7 97496 88017 8

Prestone® Bug Wash® Windshield Washer Fluid

SUMMER WASHER FLUID

Improves Summer Visibility

- ✔ Removes & Repels Toughest Grime
- ✔ Power Cleans Grime, Bug Residue & Bird Droppings
- ✔ Water Beading Technology
- ✔ Streak & Glare Free - Improves Windshield Visibility
- ✔ Safe for Rain Sensing Technology

SKU	Pack	UPC
AS657	6/1 gal.	7 97496 87889 2
AS657-55	55 gal.	7 97496 87944 8

Prestone® All Season Windshield Washer Fluid

YEAR-ROUND WASHER FLUID

Improves Year-Round Visibility

- ✔ 2-in-1 De-Icer & Bug Wash®
- ✔ Power Cleans Winter Salt & Grime / All-Year Dirt & Bugs
- ✔ Extreme Winter Protection - Melts Ice & Frost Fast
- ✔ Streak & Glare Free - Improves Windshield Visibility
- ✔ Safe for Rain Sensing Technology

SKU	Pack	UPC
AS658	6/1 gal.	7 97496 87914 1
AS658P	6/1 gal.	7 97496 88033 8

Prestone® De-Icer Winter Windshield Washer Fluid

WINTER WASHER FLUID

Improves Winter Visibility

- ✔ -34°F Protection
- ✔ Melts Ice & Frost Fast
- ✔ Extreme Winter Protection
- ✔ Power Cleans Winter Salt & Grime
- ✔ Streak & Glare Free - Improves Windshield Visibility
- ✔ Safe for Rain Sensing Technology

SKU	Pack	UPC
AS253	6/1 gal.	7 97496 88168 7
AS253-55	55 gal.	7 97496 88186 1

Prestone® Antifreeze+Coolant TESTER

SERVICE TOOLS

- ✔ Test Coolant/Water ratio to maintain proper mix
- ✔ Check Freeze & Boil Temperature

SKU	Pack	UPC
AF1420	6	7 97496 00469 7

Most of our COMMAND® Antifreeze+Coolant Products come in 55 Gal. Drums, 264 Gal. Totes and Bulk.

55 gal. drum

264 gal. tote

When in doubt, flush it out!

One of the most frequently asked questions to our Prestone® technical team is, “When and how often should I flush the cooling system in my Heavy Duty truck?” and “What procedure should I use to flush the cooling system on a HD truck?”

WHEN SHOULD YOU FLUSH THE COOLING SYSTEM?

1) Whenever there are any signs of contamination in the system. The contamination could be oil, fuel, particulates, or hard water salts leaving deposits on cooling system metals.

2) If the vehicle has overheated. An overheated system can break down the coolant causing it to turn acidic, quickly causing component failures.

3) When the cooling system has been contaminated with multiple coolant types. For example, a truck operating with a HD extended life coolant was topped off with a conventional (green) coolant. This would lower the overall protection and may cause water pump failure or even cavitation pitting of the cylinder liners. If mixing coolant technologies is occurring, the cooling system will need to be flushed and the system refilled with a HD extended life coolant.

4) Flush the system whenever there is a cooling system component failure. If the component failed, it failed for a reason and likely left residual foreign material in the system.

5) A regular cooling system maintenance flush should be done whenever the coolant is at the end of the recommended mileage or time protection. Refer to the trucks owner’s manual for the recommended coolant change intervals.

6) Lastly, always remember the saying: **When in doubt, flush it out!**

When flushing a HD cooling system always follow the OE Manufacturers flushing procedures. In a HD truck, flushing procedures can be different depending on the year, make, and model. It could be a universal flushing procedure, or a more intricate flushing procedure that requires a scan tool or laptop to open and close cooling system valves while flushing.

When in doubt, flush it out!

STEPS FOR A UNIVERSAL FLUSHING PROCEDURE

- When the engine is cold, start by completely draining the cooling system by loosening the radiator petcock drain. At this time you do not have to worry about the leftover coolant in the engine block, the flush solvent is designed to work with some coolant in the system.
- Tighten the radiator petcock drain and pour one gallon of Prestone® HD 2in1 Flush and Degreaser (use 1 gallon up to 16 gallon system) into the radiator or reservoir bottle and fill the rest of the system with water.
- Start the engine and let it run until it reaches normal operating temperature. Continue to run the engine for an additional 30-45 minutes with the heater set on high heat. Systems that are especially dirty or oily can be run for up to 3 hours.
- After the time has lapsed, shut off the vehicle and let the cooling system cool down.
- Open the radiator petcock and remove all engine block drain plugs to completely drain all water from the cooling system. You might have to disconnect the heater core inlet and outlet lines to completely drain the water from the heater core.
- Flush the system with water. Let the water run until the water coming out of the radiator drain and engine block drain plug holes is clear. If the heater core lines were removed, run water through these and back flush the heater core running water into the outlet hose until the water is clear and no debris is seen.
- Shut off the water and let the system drain.
- Reinstall the engine block drain plugs, reattach the heater hoses, and close the petcock on the radiator.
- Fill the system with distilled or deionized water and run the truck for 10 minutes after it reaches operating temperature. Shut the truck off and let engine cool.
- Drain the water out of the cooling system again by opening the radiator drain petcock and removing the engine block plugs.
- Remove the heater core hoses to drain the heater core.
- If water drained from the cooling system has no debris and is clear go to the next step of adding coolant. If the water is still contaminated then reinstall heater hoses, engine block drain plugs, and tighten the radiator petcock drain. Repeat the last procedure one more time allowing the cooling system to cool before opening the system to drain the water.

When in doubt, flush it out!

ENGINE BLOCK DRAIN PLUGS - WHY?

Why is it necessary to remove the engine block drain plugs during the flush and fill process? If the block drain plugs are not removed, 20% - 30% of the contaminated coolant or flush water remains in the engine block. In a 12 gallon system that equals up to 3 to 4 gallons of contaminated coolant or flush water left in the cooling system. This will contaminate any new HD Antifreeze/Coolant added the cooling system.

Now it's time to add the coolant. Make sure all engine block drain plugs and hoses are reinstalled, and the radiator drain plug is tightened. Check the OEM manual for recommended procedures for filling the cooling system. HD trucks may have different procedures depending on year, make and model. Fill the system with your preferred technology of Prestone Command® HD Antifreeze/Coolant. If using a concentrated antifreeze/coolant, fill with the proper amount to achieve the desired freeze point. (chart on page 15) Top off the rest of the cooling system with distilled or deionized water. DO NOT USE well water or tap water unless you have tested the water with a Water Analysis Test Strip. Using hard or contaminated water is the quickest way to destabilize your system. If using a 50/50 pre-mixed coolant, pour in the recommend amount of coolant.

Install the pressure cap and run the truck to operating temperature and then for an additional 20 minutes. Monitor the temperature gauge for any overheating. Let the system cool and check the cooling system level. Using a Refractometer, check the coolant freeze point, it should be at least -34º F (-36º C). If the desired freeze point was not reached add enough coolant concentrate and/or water to the system to bring the freeze point to the desired temperature (chart on page 15). If the system is still low at this time top off the cooling system with 50/50 pre-mixed to maintain the proper temperature range.

Always remember to run the engine up to operating temperature for at least 20 minutes after adding coolant or water to adjust the freeze point. Please remember to properly dispose any used coolant and flush water according to Federal, State, and Local laws.

Note 1: See Page 17 for the type of Prestone Command® HD Antifreeze/Coolant you prefer to use.

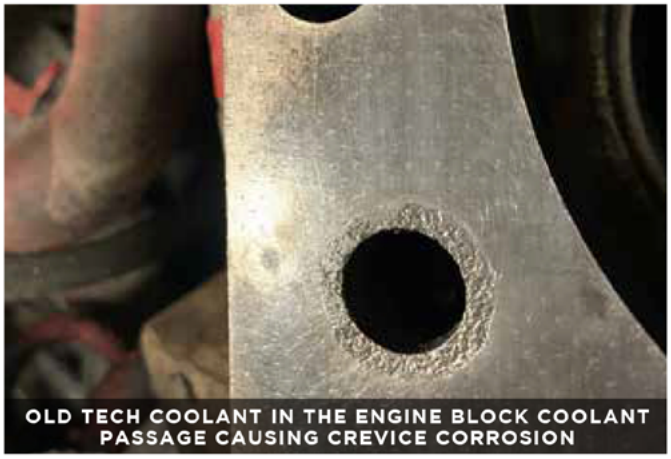
Note 2: Refer to the vehicle's service manual for special flushing procedures.

Prestone COMMAND

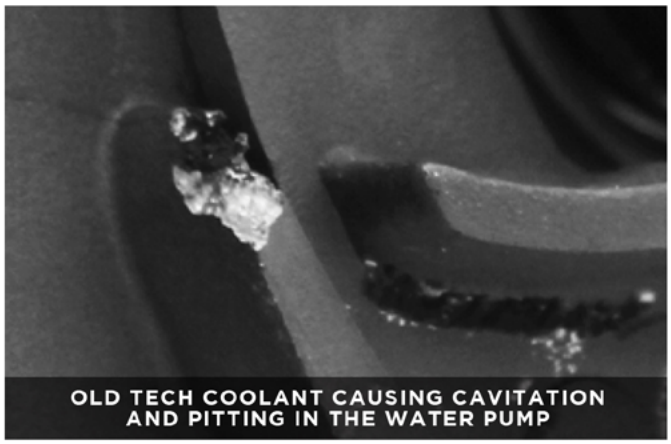
The #1 Reason for Roadside Repair is Cooling System Parts Failure*

*American Trucking Associations' Technology & Maintenance Council & FleetNet America | Q4, 2019

OLD TECH COOLANT CAN CAUSE DOWNTIME



OLD TECH COOLANT IN THE ENGINE BLOCK COOLANT PASSAGE CAUSING CREVICE CORROSION



OLD TECH COOLANT CAUSING CAVITATION AND PITTING IN THE WATER PUMP

OLD TECH COOLANT IN THE WATER PUMP CAUSING CAVITATION

What is the TRUE COST of DOWNTIME?

- **A Down Day** could cost as much as $4,000 per day
- **Cost to Replace** parts could cost as much as $50,000
- **Routine Maintenance** vs. rebuild can save as much as $50,000

Learn how to increase **UPTIME** at **PrestoneCommand.com**

INCREASE UPTIME

Visit us at **PrestoneCommand.com**