



# Chevron Delo® Extended Life Coolants Recommendations for Navistar® MAXXFORCE® Engines in Mixed Fleet Applications.

## Background

In August of 2010, Navistar® issued new extended life coolant specifications for their MAXXFORCE® 11, 13, & 15 EPA10 diesel engines that provide a chemistry change from the previous CEMS-B1-Type III specification for extended life coolants. Navistar vehicles that have MAXXFORCE 11,13, & 15 liter engines are currently being factory filled with the new CEMS-B1-Type IIIa fluid (see table for key properties) and it's important to provide clarification on Chevron Delo® Extended Life Coolants recommendations for customers that operate not only Navistar engines, but also non-Navistar diesel engines.

## Navistar CEMS-B1-Type IIIa key properties table

Property	Specification	Performance Impact
Nitrite	< 50 ppm	Limited - Cavitation protection provided by total additive package
Molybdate as MoO <sub>4</sub>	600 to 1,000 ppm	Provides corrosion protection (including cavitation protection) as part of a total additive package
Color	Yellow	No performance impact – color only used to identify different types of coolant
Carboxylate Technology	Excludes 2-Ethyl Hexanoic Acid (2-EHA) Carboxylate Technology	No performance impact – several European HD OEMs have indicated “gray listing” for toxicology concerns with this chemistry

Navistar has provided a MAXXFORCE Coolants Fact Sheet (see Appendix 1) to customers and channel partners to help manage the confusion on what to use in the marketplace with their new engines. The fact sheet clarifies that EITHER CEMS-B1-Type IIIa coolant **OR** an OAT based coolant that is nitrite-free (NF) meeting the performance requirements of ASTM D 6210 may be used by customers with MAXXFORCE engines.

Additionally, Navistar has recently confirmed that they now approve the use of nitrated coolants in MAXXFORCE engines for mixed fleet customers that only want to utilize one coolant for top-off and maintenance. Navistar has indicated that extended life coolants with nitrite may be used as long as the MAXXFORCE engine coolant system is drained, fully charged with a nitrated extended life coolant that meets ASTM D 6210 and is treated with Fleetrite Radiator Conditioner (Navistar #2611268C1).



**Delo®**

**Let's go further.™**

## Chevron Product Recommendation

For fleets, owner/operators, repair facilities or Navistar® dealers that utilize or service Navistar MAXXFORCE® 11, 13 & 15 liter engines and are concerned about meeting performance requirements, Chevron recommends our Delo® Extended Life Coolant - Nitrite-Free (NF) product based on it meeting the performance requirements outlined by the Navistar MAXXFORCE Coolant Fact Sheet.

For customers that have a mixture of OEM engines in their fleet there are several options available in regards to selecting a Chevron Extended Life Coolant:

### 1. Customers that have a large percentage of MAXX-FORCE engines in their fleet mix:

Delo ELC - NF would be the primary coolant recommendation based on Navistar's preference to have a nitrite-free coolant that meets ASTM D6210. Delo ELC-NF would provide appropriate protection for other OEM Heavy Duty Diesel engines and provide a "one coolant" option for the customer's operation. No drain and refill step would be required for any of the non-MAXXFORCE engines, if Delo ELC or ELC-NF antifreeze/coolant is already being used.

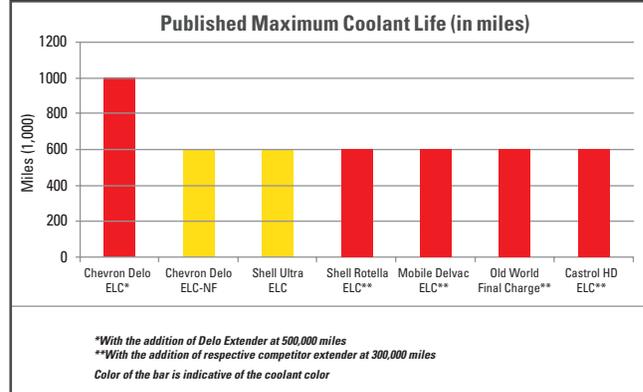
### 2. Customers that have a small percentage of MAXX-FORCE engines in their fleet mix:

Delo Extended Life Coolant would be the optimal choice to provide the best overall protection and longest coolant life for the mix of diesel engines in the fleet. For this option, the Navistar MAXXFORCE engines would need to be drained, refilled with Delo ELC and treated with Fleetrite Radiator Conditioner to maintain both Chevron's and Navistar's warranty programs.

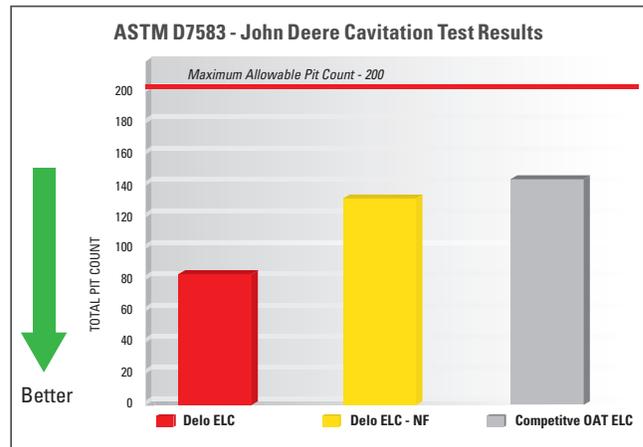
By following one of the above options, Chevron will extend its Delo Warranty Plus (see Appendix 2) to the performance of both Delo ELC and Delo ELC-NF for use in 2010 MAXXFORCE 11, 13, and 15 liter engines.

## Chevron Delo ELC & Delo ELC-NF Product Performance

Delo ELC and Delo ELC-NF are proven extended life mileage coolants to help customers reduce operating costs versus conventional and other extended life coolants.



Delo ELC and Delo ELC - NF provide excellent cavitation (liner pitting) protection that supports long liner life and excellent engine performance.



## Appendix 1

Navistar MAXXFORCE coolants fact sheet

## Appendix 2

Chevron Delo Warranty Plus document



### APPENDIX 1

## MAXXFORCE® 11 & 13 (2010)

# NITRITE-FREE COOLANT

BECAUSE NITRITES CAUSE CORROSION TO ALUMINUM COOLING SYSTEMS, 2010 EMISSIONS-COMPLIANT MAXXFORCE® 11 & 13 ENGINES COME EQUIPPED WITH NITRITE-FREE COOLANT—STANDARD.



### NITRITE-FREE COOLANT:

- Enhances corrosion protection for aluminum components
- Increases service life to 600,000 miles or 12,000 hours
- Is backward-compatible for all cooling systems with Organic Additive Technology (OAT) coolants
- Gets the same cooling and antifreeze performance as today's regular coolant

### TESTING AND SERVICE TIPS:

#### COOLANT SPECIFICATION

For the best results, be sure to maintain your engine cooling system with ELC (OAT) nitrite-free, heavy duty coolant D6210 or CEMS-B1 specification coolant.

#### COLOR

Nitrite-free coolants that meet MaxxForce 11 & 13 specifications are available in several colors. All are acceptable to use if they are labeled "Nitrite-Free" and meet specifications D6210 or CEMS-B1.

Note: Mixing of colors is acceptable.

#### FREEZE PROTECTION

Use a traditional refractometer to test the percentage of ethylene glycol by volume. This method is preferred with other ELC coolants, as well.

#### TESTING

Test strips designed for extended-life coolants (OAT plus nitrites) can be used to check for the presence of nitrites. The presence of some nitrites is acceptable. However, if nitrite levels exceed 200 PPM, the coolant is contaminated. Contaminated coolant should be corrected by completely draining the system and refilling with nitrite-free ELC.

Note: The lack of nitrites during a test should be considered normal.

Navistar allows 20% dilution of nitrite-free coolant with other coolant types, not to exceed nitrite levels of 200 PPM.



Chevron Products Company warrants that our Delo® Family of Products specifically listed below conform to Chevron's specifications and written performance claims for those products and meet the product performance requirements of all U.S. and foreign-manufactured equipment applicable to each such product expressed in writing on the Chevron authorized product label and in Chevron's prepared brochures and Salesfaxes existing at the time the product was sold.

The warranty applies to the Chevron Delo® Family of Products identified below when used in the following described equipment:

- Heavy Duty Diesel and Gasoline Engines** – Coverage includes all U.S. and foreign-manufactured on and off-road automotive diesel and gasoline engines that recommend the specific API classification and SAE viscosity grade. As a plus, this warranty will remain in effect for Delo Heavy Duty Motor Oils used in extended drain maintenance programs endorsed by engine manufacturers. You must perform periodic oil analyses to forecast optimum oil drain intervals and to monitor equipment operations. **Products include: Delo 400 LE Synthetics, Delo 400 LE, Delo 400 Multigrade, Delo 710 LE, Delo 400 SAE 30 & SAE 40 and Delo 100.**
- Axles and Transmissions** – Coverage includes all U.S. and foreign-manufactured manual transmissions, axles and wheel hubs when installed in class 8 (GVW of 33,001 pounds and over) trucks or other vehicle class applications where use of a GL-5 gear lubricant (or SAE 50 engine oil) in transmissions is acceptable. As a plus, this warranty will remain in effect for use in extended drain maintenance programs endorsed by equipment manufacturers. You must perform periodic oil analyses to forecast optimum oil-drain intervals and to monitor equipment operations. **Products include: Delo Synthetic Gear Lubricant, Delo Gear Lubricant ESI® and Delo Synthetic Transmission Fluid.**
- Greased Bearings and Fifth Wheels** – Coverage includes all U.S. and foreign-manufactured, heavy-duty automotive components lubricated and protected by greases under manufacturer's guidelines. **Products include: Delo Greases EP, Delo Grease ESI®, Delo Heavy Duty EP, Delo Heavy Duty Synthetic Moly 5% EP, Delo Heavy Duty Moly EP and Delo Synthetic Grease SF.**
- Coolant/Antifreeze Systems** – Coverage includes all U.S. and foreign-manufactured heavy-duty automotive coolant systems maintained and operated in accordance with the original equipment manufacturer's recommendations. **Products include: Delo ELC, Delo ELC NF, Delo XLI and Delo XLI-N.**

Chevron will, at its option, replace at no charge or refund the purchase price of any Delo products not conforming to this warranty.

Additionally, Chevron will pay to repair damage (parts and labor only) to your covered equipment that is directly caused by a failure of Chevron's Delo product when the equipment is used under normal operating conditions and maintained according to manufacturers' recommendations (including lubricant selection). Such warranty will not extend to components not included in the descriptions of covered equipment listed above or to equipment damaged as the result of a condition that is unrelated to the use of the Delo product or is the result of normal and expected equipment wear or where the use of other products may have affected the performance of the Delo product (including after-market additive treatments).

To make a claim under this warranty, present records showing that the equipment was serviced at the intervals recommended by the manufacturer. You'll also be required to submit a lubricant or coolant sample from the failed equipment as well as the opportunity for Chevron or its agent to inspect the equipment operating records and test the equipment and failed parts.

*AS INDICATED, THIS WARRANTY COVERS ONLY DAMAGE TO YOUR EQUIPMENT (PARTS AND LABOR ONLY). EXCEPT AS OTHERWISE EXPRESSED IN THIS WARRANTY PLUS, CHEVRON NEITHER GIVES NOR MAKES ANY OTHER WARRANTIES, EITHER EXPRESS OR IMPLIED, IN FACT OR BY LAW, AS TO THE DESCRIPTION OF THE CHEVRON PRODUCTS, ITS QUALITY, MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER MATTER. CHEVRON SHALL ALSO NOT BE RESPONSIBLE OR LIABLE TO YOU OR TO ANY OTHER PERSON FOR ANY SPECIAL, CONSEQUENTIAL, INCIDENTAL OR INDIRECT LOSSES OR DAMAGES ARISING FROM THE USE OF THE CHEVRON PRODUCTS.*



Call toll-free **1-800-LUBE-TEK (582-3835)** if you have an equipment problem.

Should you experience equipment failure, Chevron's WARRANTY PLUS technical support team will work with you to help determine the cause of the problem. If it's not the fault of our Delo product, we'll provide you with the results of our analysis to assist you in determining the root cause of the failure.

Visit [www.deloperformance.com](http://www.deloperformance.com) to learn more about our Delo products.

**A Chevron company product**

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