



# 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 litre 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
Colour	Yellow	No performance impact – colour 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).



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## Chevron Product Recommendation

For fleets, owner/operators, repair facilities or Navistar® dealers that utilize or service Navistar MAXXFORCE® 11, 13 & 15 litre 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 MAXXFORCE 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.

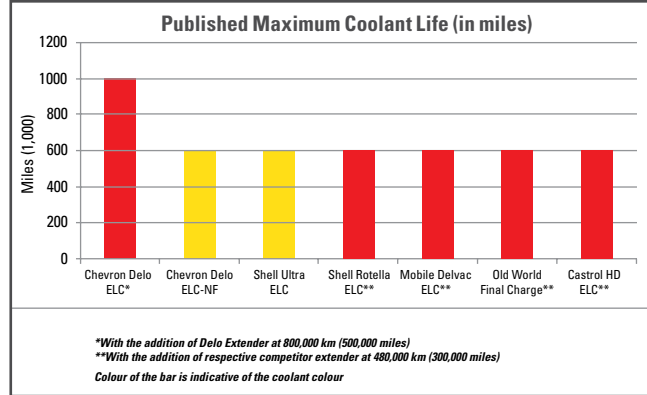
### 2. Customers that have a small percentage of MAXXFORCE engines in their fleet mix:

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.

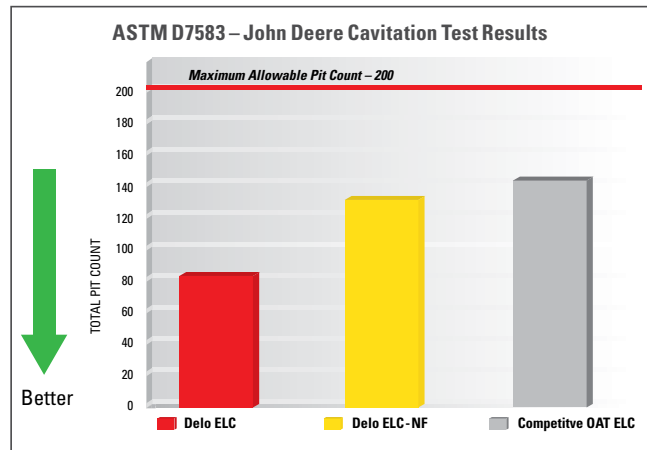
By following one of the above options, Chevron will extend its Delo Warranty Plus (see Appendix 2) to the performance of both Delo ELC and Delo ELC-NF for use in 2010 MAXXFORCE 11, 13, and 15 litre engines.

## 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

