

The ABCs of Delo® Extended Life Coolants.



Delo®

Let's go further.™



Delo® Extended Life Coolants Progression of Achievements

- First heavy-duty ELC Technology commercialized in 1995
- First aftermarket heavy-duty ELC to meet CAT EC-1 specification
- First heavy-duty ELC to achieve 1.2M km (750K miles) of truck cooling system life
- First heavy-duty ELC to be selected as OEM Truck Factory Fill
- First heavy-duty ELC to have a full range FleetFix® maintenance and conversion program
- Global coolant technology support

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Key benefits in recommending Delo® Extended Life Coolants

Recommended Extended Life Coolant Technology by many of the world's leading commercial truck and off highway equipment manufacturers.

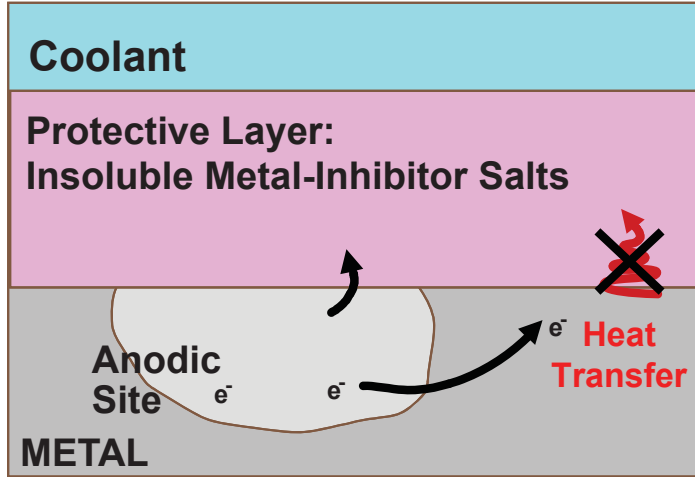
- Longest service history
- Leading heavy-duty ELC formulation used globally, by Commercial OEMs and by large NA Truck Fleets
- Long service life helps minimize operating costs

Bottom line, Delo Extended Life Coolants are a world class line of coolants with a solid reputation for **long life, value, protection** and a great return on investment. We have satisfied OEMs and major fleet customers to prove it.

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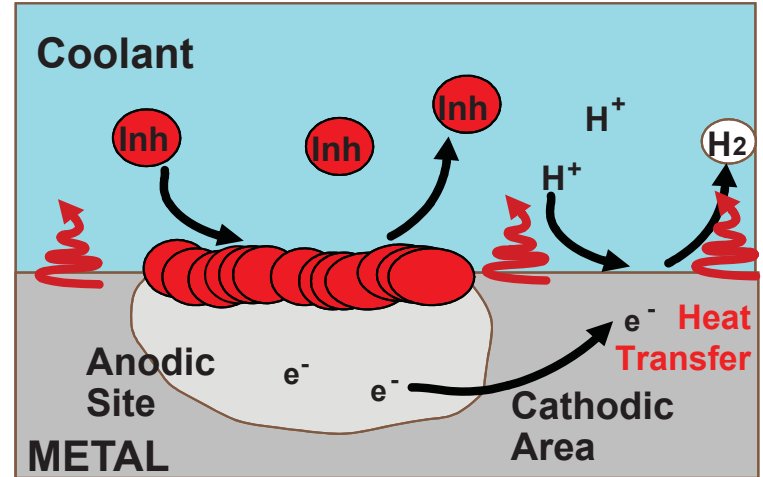
Older vs. Newer Technology in Corrosion Protection Mechanisms

Traditional Technology



Traditional Technology: Corrosion protection provided by blanket protection which reduces heat transfer performance.

Carboxylate/ OAT*

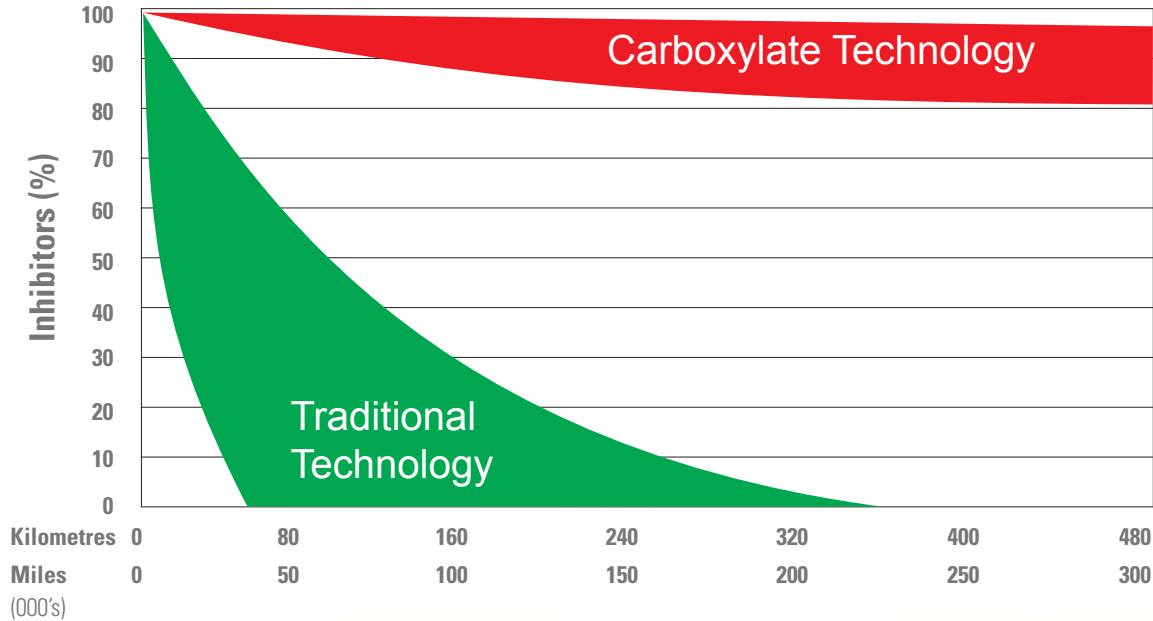


Carboxylate/OAT*: Prevents corrosion protection at the spot required and allows for maximum heat transfer performance.

*OAT = Organic Acid Technology

Extended Life vs. Traditional Technology

Rates of Additive Depletion



- Conventional coolants (green) require re-inhibition as early as 40K km (25K miles).
- Carboxylate / OAT Technology (Red) can achieve up to 1.2M km (750K miles) of coolant system life.

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Delo® ELC Family of Products

Delo ELC Technology is utilized industry wide.

- Factory fill choice of US heavy-duty truck OEMs
Volvo Trucks (worldwide) Kenworth
Mack Trucks Peterbilt
- After market choice of large, medium, and small fleets in North America



Delo® ELC

- Available in concentrate and premixed
- More than 1.2M km (750K miles)/15K hours/8 years of service life
- Fully tested against CAT EC-1
- Meets ASTM D6210
- Delo Warranty Plus Protection



Delo® XLC

- Available in concentrate and premixed
- More than 960K km (600K miles)/12K hours/6 years of service life
- Long life coolant for use in heavy-duty equipment requiring nitrite and silicate-free, meeting ASTM D6210.
- Approved for use under Detroit Diesel 93K217
- Approved for use under Mercedes-Benz DBL7700.30 MB class 325.3
- Recommended for Navistar MAXXFORCE® engines
- Delo Warranty Plus Protection



Delo® XLI® Corrosion Inhibitor Concentrate

Recommended for use in water-based applications

- Available in concentrate and premixed
- More than 960K km (600K miles)/12K hours/6 years of service life
- Low aquatic toxicity based on a recommended mix rate of 5.5 - 10% wt in water
- Extended life corrosion protection provided even in water-based solutions



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Delo® Extended Life Coolants Product Benefits

A proven formulation to meet the needs of today's heavy-duty engines.

Whether running old or new diesel engines, Delo® Extended Life Coolants are formulated to protect against corrosion, cavitation, and heat build up in diesel engines helping to optimize engine operation and long life durability. They have been extensively field tested and utilized in commercial and industrial applications.

Delo ELC/Delo XLI-N:

- Do not contain silicates, amines, phosphates or borates
- Include nitrites & molybdates for additional cylinder liner protection

Delo XLC/Delo XLI:

- Do not contain silicates, amines, phosphates or borates
- Developed for specific heavy-duty OEMs that require nitrite-free coolants

Competitor ELC products:

- May contain silicates that impede effective heat transfer
- May use Aromatic OAT which can compromise thermal stability leading to corrosion
- May contain phosphate that can lead to hard water scale deposits



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Extended Life Coolant Technology Differences

Technology	Chevron			Shell	Castrol	Mobil
Coolants	Delo [®] ELC	Delo [®] XLC	Delo [®] XLI	Shell Rotella Ultra ELC	Castrol Heavy-Duty ELC	Mobil Delvac ELC
Conventional Inhibitors						
Silicate	No	No	No	No	No	No
Nitrate	No	No	No	Yes	Yes	Yes
Liner Protection						
Nitrite/Molybdate	Yes	No	No	Molybdate Only	No	No
Carboxylates						
Aliphatic	Yes	Yes	Yes	No	No	No
Aromatic	No	No	No	Yes	Yes	Yes



Delo® ELC versus Competitor ELCs in Industry Coolant Tests

	Delo ELC	Delo XLC	Shell Rotella Ultra ELC	Castrol Heavy-Duty ELC	Mobil Delvac ELC
	Underwent Caterpillar EC-1 Testing				
Field Testing Caterpillar 3176 and 3600 engines, 500K km (300K miles)	Yes	No	No*	No*	No*
pH Stability Less than 1 unit drop in 300K	Yes	Yes	Not Published	No	No
	Meets Caterpillar SEBU 6251-12 Specifications				
Nitrite for liner protection Mixture of aliphatic carboxylates	Yes Yes	No Yes	No No	No No	No No
	Liner Protection				
John Deere Cavitation Test Pit Counts	83	134	Not Published	No	Not Published
	High Temperature Thermal Stability				
Demonstrated pH and glycol stability	Yes	Yes	Not Published	No	No

*No product claims by supplier of product undergoing CAT EC-1 field test in specified engines

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Delo® ELC Proof of Performance in Engine Cooling Systems

Delo® Extended Life Coolants have shown significant protection performance in customers' equipment – The parts below are examples of the engine and cooling system protection customers have experienced in various operations.

Cummins M11 Diesel Engine Piston Liner

No cavitation in severe waste truck service with 16K hours of operation.



Detroit Series 60 Engine Water Pump

Water Pump in very good condition after 2.4M km (1.5M miles) of operation.



Detroit Series 60 Diesel Engine Piston Liner

Show no cavitation/liner pitting or silicated layer build up after 2.4M km (1.5M miles).



Caterpillar C15 Engine Thermostat

Clean of deposits and silicated film after 1.7M km (1.1M miles) of service.



Chevron Kool Tools

Overview of Kool Tools Program



What is it?

- Chevron's development to focus on improving coolant maintenance
- Combination of written materials and "How To" videos to help customers understand coolants and application
- Provides the actual tools to help monitor best in class coolant system protection.

Why is it important?

- Allows for optimal use of Delo[®] ELC or Delo XLC
- Educate customers on key coolant issues and maintenance that needs to be done
- Provide the coolant tools to help execute a best in class program
- Allow for sustainability best in class coolant maintenance program

Who is it for?

- Current Chevron Delo ELC/Delo XLC coolant customers
- New customers who want to switch to Delo ELC/Delo XLC products
- OEM using Delo ELC/Delo XLC technology
- Maintenance personnel who want to develop a best in class maintenance program

The Delo Coolant Maintenance Kit is a one stop kit designed to support best in class coolant maintenance programs.

The kit comes in two configurations for testing either Nitrited or Non-Nitrited ELC coolants.

Kit Contents:

- Refractometer
- pH test strips
- Nitrite test strips
- Carboxylate test strips
- Dilution test kit
- Sampling tools
- Kool Tools materials



Contact your local Chevron Representative or Marketer for help in establishing a best in class coolants maintenance program.

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