marine lubricants

delo® XLI corrosion inhibitor – concentrate cooling water treatment

help extend the life of your engine with OAT corrosion inhibitor technology

The marine environment challenges your equipment.

Chevron marine products help you meet the challenge.

With one of the largest distribution networks in the industry, Chevron has the infrastructure to deliver the marine products and services you need. From our global operational reach to the depth of our experienced personnel, we stand for one thing above all else — **reliability**.

Delo® XLI cooling water treatment

Field and laboratory tests prove that Chevron's Delo® XLI Corrosion Inhibitor – Concentrate (Delo XLI) cooling water treatment helps provide maximum protection and lasts longer than many traditional technologies in your marine or power generation systems. It is recommended for cooling water treatment operating below 100°C. Delo XLI cooling water treatment combines performance with long service life to help keep your engines running for longer.

- Extended service life
- Improved heat transfer
- 92% biodegradable in 18 days
- Organic Acid Inhibitor Technology (OAT)
- Compatible with plastics and elastomers

32,000

number of hours recommended maximum service interval for Delo® XLI cooling water treatment.


92%
biodegradable in 18 days — Delo® XLI provides low toxicity.

Delo® XLI cooling water treatment has an extended service life, with recommended maximum service intervals of 32,000 hours.

important advantages

Extended service saves time and money
The Organic Acid Inhibitor Technology (OAT) in our Delo® XLI cooling water treatment has a very low additive depletion rate, helping to ensure long-term corrosion protection under all operating conditions. There is no need for supplementary additive top-ups. Delo XLI cooling water treatment has an extended service life, with recommended maximum service intervals of 32,000 hours.

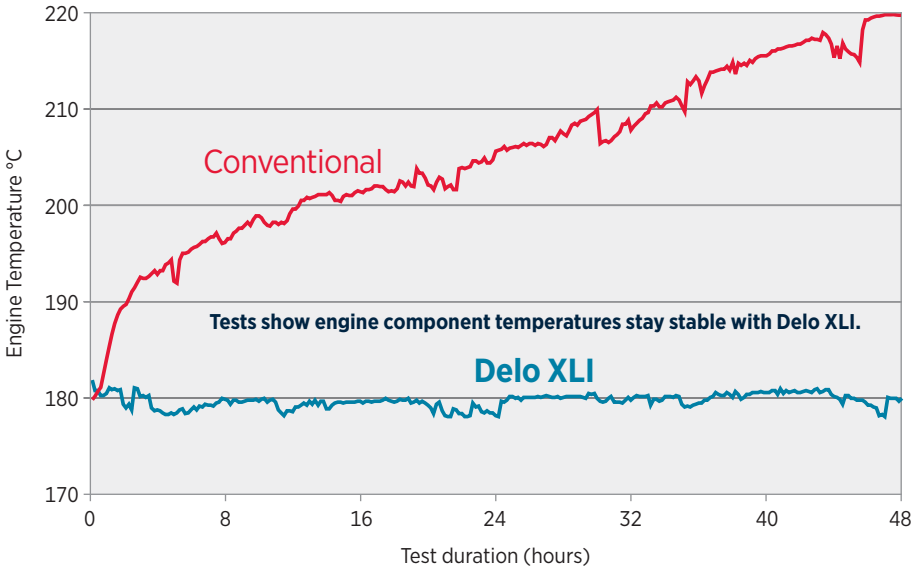
Caring for the environment
Delo XLI cooling water treatment is a water-based, low toxic, readily biodegradable, nitrite-free carboxylate inhibitor treatment.

Minimized maintenance costs
Delo XLI cooling water treatment has better heat exchange than many conventional coolants. Our technology inhibitor system is designed to protect against wet liner cavitation erosion and helps provide protection to aluminum and cast iron surfaces under heat transfer conditions.

performance at high temperatures

Tests show Delo XLI cooling water treatment remains stable at high temperatures and does not form a film that can hinder heat transfer. OAT helps to protect metal surfaces by physical absorption or by chemisorption only where needed, and does not impede heat transfer.

The graph below shows that with Delo XLI OAT, heat dissipation is stable over time, while with conventional cooling water treatment heat dissipation may decrease due to build-up of insolation layers (oxides and/or inhibitor salts), leading to increased component thermal stress.

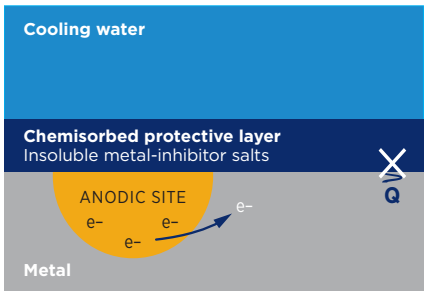


corrosion protection mechanism

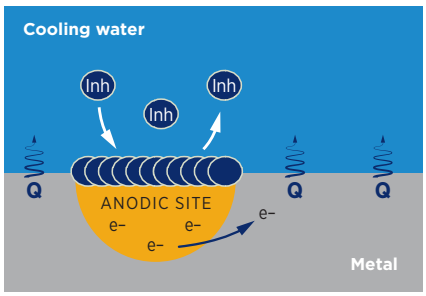
Corrosion is the combination of two processes, an oxidation-reduction of the metal surface and the electron flow from an anodic site to a cathodic site.

Conventional products help to limit corrosion by creating a protective layer over the complete metal surface, thus impeding heat transfer. Chevron's Delo® XLI cooling water treatment is designed to protect against corrosion by electronically bonding with the anodic sites throughout the cooling system.

This polarization process helps protect the metal surface against oxidation-reduction. Because Delo XLI cooling water treatment bonds only with the anodic sites, additive depletion is minimal and heat transfer performance is not impeded, giving the product significant advantages.



Conventional protection mechanism



Chevron Delo XLI cooling water treatment

Delo XLI is suitable for use in some of the most advanced engines in the world*, including:

Manufacturers

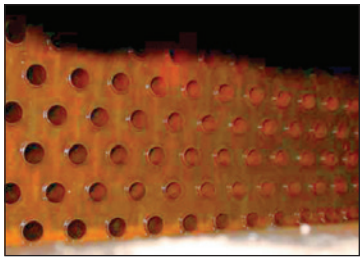
- MAN Energy Solutions
- Winterthur Gas & Diesel
- Rolls-Royce
- Deutz
- MaK/CAT

* Operating with cooling water temperature below 100°C

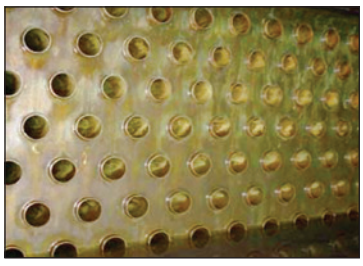
field test examples

Air cooler, Wärtsilä 12RTA84C-UG main engine — pipe bundle:

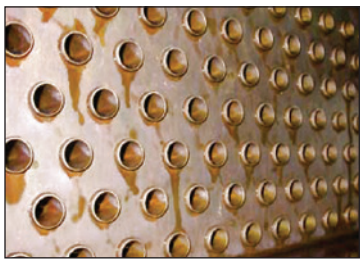
Before change-over



After 4,000 hours



After 13,000 hours



Cleaner inlet air coolers mean cooler inlet air and greater engine efficiency.

Pipe/pump housing connections:

3,000 hours service with conventional cooling water treatment

3,000 hours service with Delo XLI cooling water treatment

Field tests demonstrate Delo® XLI's corrosion and rust protection performance.

Deutz TBD 604BV16 after 43,000 hours (m/v *Le Ponant*).

12RTA96C engine after 21,000 hours (m/v *Cornelia Maersk*).

easy, cost-effective monitoring

Chloride and pH monitoring is easy
Delo XLI's OAT corrosion inhibitor system is designed to protect aluminum and other system metals at lower pH levels than conventional coolants. Acid and base indicator strips are used to easily measure pH balance. High chloride levels can significantly increase the risk of corrosion, and are also evidence of seawater contamination in the system.

For onboard testing, commercially available test strips can be used for quickly and conveniently measuring rough chloride levels in cooling water. Chevron recommends testing the Delo XLI cooling water treatment's concentration, pH value and chloride levels once a week.

Comprehensive FAST™ reports
Chevron provides in-depth onshore analysis of your cooling water samples at advanced global laboratories. We report on several parameters in your cooling water samples, including: pH, Cl, XLI concentration and elemental analysis.

Contact your sales office for more information.

Chevron provides in-depth onshore analysis of your cooling water samples at advanced global laboratories.

7.5%
recommended concentration of Delo® XLI when the cooling system is filled with good quality water.

designed
to protect rubber hoses, plastics, elastomers, gaskets and non-metal seal materials.

www.chevronmarineproducts.com

Chevron

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Our Family of Brands

Always confirm that the product selected is consistent with the original equipment manufacturer's recommendation for the equipment operating conditions and customer's maintenance practices.