



marine products

Delo[®] XLI Corrosion Inhibitor – Concentrate

Regional equivalents: Havoline XLI



Description

Delo[®] XLI Corrosion Inhibitor – Concentrate (Delo XLI) is a water-based, low toxicity, readily biodegradable, nitrite-free carboxylate inhibitor package. Based on patented Organic Additive Technology (OAT), Delo XLI provides long-life corrosion protection in aqueous solutions for all engine metals, including aluminum, iron, copper and solder alloys. Mixed with the appropriate amount of water, Delo XLI is recommended as a cooling water treatment. Delo XLI has been proven to provide effective protection for at least 32,000 hours in marine and stationary applications. It is compatible with glycol-based engine coolants.

Typical Characteristics

MPID	219900
Nitrate, amine, phosphate, borate, silicate	Nil
Colour	Green
Specific gravity, 20°C, kg/l, ASTM D 1122	1.06 Typical
pH, ASTM D 1287	9.4 Typical
Storage stability	12 months if stored in non-opaque containers 36 months if stored in opaque containers
Modified ASTM D1384 glassware corrosion tests	PASS (XLI 5% solution)
	5% Dilution
Specific gravity, 20°C, kg/l, ASTM D 1122	1.00 Typical
pH, ASTM D 1287	8.1 Typical
Effect on non-metals, GME 60 255	No Effect
Hard water stability, VW PV 1426	No Precipitate

Recommended Applications

Delo XLI can be used as an engine cooling water treatment, a flushing fluid, or a hot test fluid for new engine blocks. It is recommended for cooling water treatment operating below 100°C. For marine application the dosage may vary from 6.0–7.5% but a minimum of 5% volume of Delo XLI in water should be used. As an engine cooling water treatment, Delo XLI provides long-life corrosion protection. If Delo XLI is replenished regularly to compensate for leakage, the cooling water can be considered as fill for life. The use of soft water is preferred for dilution, though lab testing has shown that acceptable corrosion results are still obtained with water of 20°dH, containing not up to 500 ppm chlorides and 500 ppm sulphates.

Delo[®] XLI Is Suitable For Use In:

- ✓ **Detroit Diesel**
- ✓ **Deutz** TR0199-99-2091
- ✓ **GEC Alsthom Ruston**
- ✓ **Liebherr** MD 1-36-130 (DCA)
- ✓ **MaK**
- ✓ **MAN** 248
- ✓ **MAN Energy Solutions** 2-stroke engines (operating with cooling water temperature below 100°C)
- ✓ **MAN Energy Solutions** 4-stroke engines

- ✓ **MB** 312.0
- ✓ **MTU** 2000 & 4000 series engines
- ✓ **MWM**
- ✓ **Newman-Haas Racing**
- ✓ **Scania** TI 2-98 0813 TB
- ✓ **Ulstein Bergen**
- ✓ **Wärtsilä** 32-9011 and ZBS0503
- ✓ **Yanmar**
- ✓ **Hyundai-Himsen**



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Performance Benefits**1. Environment**

Delo XLI is based on low toxicity inhibitors and is readily biodegradable. The extended service life characteristic of this product reduces waste due to less frequent fluid disposal. The toxicological and environmental properties of Delo XLI were evaluated by an independent laboratory.

The results are listed below:

- o LD50 >2000 mg/kg
(Oral toxicity according to OECD Guideline No. 401)
- o LC50 >1000 mg/l
(Fish toxicity according to OECD Guideline No. 203)
- o Biodegradability: 92% (18 days)
(Test according to OECD Guideline No. 301E)

2. Corrosion Protection

Provides long-life protection against most forms of corrosion on the majority of metals including the aluminum heat transfer surfaces contained in modern engines.

3. Cavitation Protection

Offers cavitation protection without using nitrite or nitrite-based supplemental coolant additives (SCAs).

4. Seal Compatibility

Has no adverse effect on rubber hoses and gasket materials as shown in testing a wide range of seal materials.

5. Heat Transfer Efficiency

The carboxylic acid inhibitor forms a targeted mono-molecular protective layer on metal surfaces, thus providing efficient heat transfer.

6. Economics

Long life corrosion protection and low additive depletion often result in less maintenance and repair costs.



Disclaimer. Data provided in this PDS is based on standard tests under laboratory conditions and is indicative only. Minor variations which do not affect product performance are expected in normal manufacturing. This product should not be used for any purpose other than those expressly set out in this PDS. The user has sole responsibility for verifying that this product is suitable for the user's intended application. Recommendations differ between engine manufacturers so always consult your manual. Neither Chevron nor its subsidiaries make any warranty or representation as to the accuracy or completeness of this PDS and neither Chevron nor its subsidiaries accept liability for any loss or damage suffered as a result of the use of this product other than in accordance with the terms of this PDS. (January 2024)