



Delo® XLI Corrosion Inhibitor

Product Data Sheet

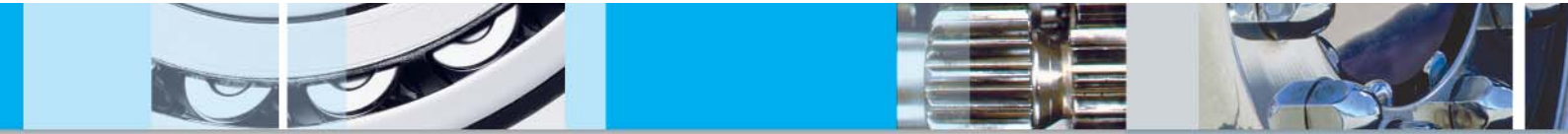
Product description

Delo® XLI Corrosion Inhibitor is a water based, low toxicity, environmentally friendly, nitrite free carboxylate inhibitor.

Customer benefits

- **Corrosion Protection** – Corrosion protection for engine metals, including aluminum, iron, copper and solder alloys.
- **Wide Service Application** – Recommended as a coolant for all types of cooling systems not requiring nitrite and where freeze protection is not required.
- **Long service life** – The corrosion inhibitors in Delo XLI Corrosion Inhibitor contain a synergistic combination of mono and di-carboxylates that provide superior protection for a minimum of 960,000 kilometers, 12,000 hours, 6 years in on-road and off-road engine applications and 32,000 hours or 6 years in stationary engines. This product does not require regular inhibitor additions if proper maintenance practices are used.
- **Compatibility** – Delo XLI Corrosion Inhibitor - Concentrate is a super concentrate and should be diluted to 5.5%-10% with good quality water before use. Compatible with glycol-based engine coolants but further dilution of the Delo XLI inhibitors by more than 25% with other corrosion inhibitor technologies will reduce the effectiveness of these products.
- **Heat Transfer** – Silicate and phosphate free formulation does not contribute to deposit build up, as can be seen with phosphate and silicate containing coolants, which can help maintain heat transfer efficiency.
- **Improved economics** – No regular inhibitor additions and longer service life means lower overall maintenance costs.
- **Excellent toxicological and environmental aspects** – based on low toxicity inhibitors these products are readily biodegradable. The extended service life characteristic of this product contributes to the protection of the environment due to less frequent fluid disposal.
- **Easy Testing** – inhibitor concentration testing can be easily done using a brix refractometer.

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Features

Delo XLI Corrosion Inhibitor provides long life corrosion protection by using optimized and patented aliphatic carboxylate organic inhibitors that provide long lasting protection for cooling system metals and components including hard to protect aluminum.

Delo XLI helps maintain excellent heat transfer since it does not contain silicates and phosphates which can over time create deposits on heat transfer surfaces.

Delo XLI exhibits low depletion rates and does not require the addition of supplemental coolant additives with correct maintenance practices. Dilution of Delo XLI by more than 25% will reduce inhibitor performance.

Delo XLI protects against erosion, corrosion and cavitation of cooling system components.

Applications

Recommended for the following OEM use as a cooling water inhibitor:

- Detroit Diesel
- Deutz (TR0199-99-2091)
- GEC Alsthom Ruston
- Liebherr MD 1-36-130 (DCA)
- MaK
- MAN 248
- MAN Diesel (2-stroke and 4-stroke engines)
- MB 312.0
- MTU MTL 5049
- MWM
- Newman-Haas Racing
- Scania TI 2-98 0813 TB
- Sulzer Diesel ZBS0503.doc
- Ulstein Bergen
- Wärtsilä 32-9011
- Yanmar

Delo[®] XLI is also recommended for use in any OEM equipment recommending a nitrite free, water based carboxylate based corrosion inhibitor.



Delo[®] XLI Corrosion Inhibitor

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Toxicological & environmental aspects

Delo XLI Corrosion Inhibitor is based on low toxicity inhibitors and is readily biodegradable. The extended service life characteristic of this product contributes to the protection of the environment due to less frequent fluid disposal. The toxicological and environmental properties of Delo XLI Corrosion Inhibitor was evaluated by an independent laboratory.

The results are listed below:

- LD50 >2000 mg/kg (oral toxicity according to OECD guideline No 401)
- LC50 >1000 mg/l (fish toxicity according to OECD guideline No 203)
- Biodegradability: 92% (18 days) (test according to OECD guideline No 301E)

Product Reference

Note: Bitterant is a flavor aversive that may help reduce the accidental ingestion of this product. These products contain bitterant.

Product Code: 510636

Delo XLI Corrosion Inhibitor - Concentrate

Product Code: 510547

Delo XLI Corrosion Inhibitor - Premixed

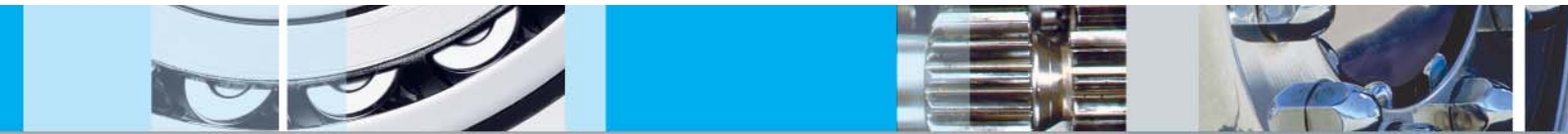
Typical test data

DELO XLI CORROSION INHIBITOR - CONCENTRATE	TEST METHODS	RESULTS
Technical Characteristics	Method	Delo XLI Corrosion Inhibitor - Concentrate
Inhibitor content	-	50% w/w
Water content	ASTM D1123	50% w/w
Nitrite, amine, phosphate, borate, silicate	-	Nil
Color	-	Green fluorescent
Specific gravity, 20°C	ASTM D1122	1.06 typical
pH	ASTM D1287	9.4 typical
Storage stability	-	12 months if stored in non-opaque containers, 36 months if stored in opaque containers.
Technical Characteristics	Method	Delo XLI Corrosion Inhibitor - 7.5% dilution
Specific gravity, 20°C	ASTM D1122	1.01 typical
pH	ASTM D1287	8.1 typical
Effect on non-metals	GME 60 255	no effect
Hard water stability	VW PV 1426	no precipitate
Technical Characteristics	Method	Delo XLI Corrosion Inhibitor - 5% dilution
Specific gravity, 20°C	ASTM D1122	1.00 typical
pH	ASTM D1287	8.1 typical
Effect on non-metals	GME 60 255	no effect
Hard water stability	VW PV 1426	no precipitate

Minor variations in product typical test data are to be expected in normal manufacturing.



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Corrosion Protection

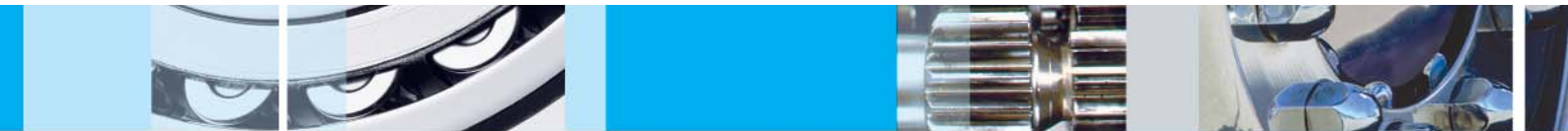
Table 1: Modified ASTM D1384 Glassware Corrosion Tests - 300 ppm chloride

	ASTM D1384 (MAX)	DELO XLI CORROSION INHIBITOR - 5% DILUTION
		- Weight loss in mg/coupon ¹
Copper	10 max	0.6
Solder	30 max	4.5
Brass	10 max	0.6
Steel	10 max	0.0
Cast Iron	10 max	0.7
Aluminum	30 max	9.8
AlMn	/	4.8

Table 2: Modified MTU High Temperature Corrosion Test (2000 W)

	WEIGHT LOSS IN MG/COUPON ²	
Test duration 116 hrs	Delo XLI Corrosion Inhibitor - 5% dilution in D9 water hot coupon	Delo XLI Corrosion Inhibitor - 5% dilution in FVV water hot coupon
Cast Iron	-1.3	-9.0
Aluminum		
SAE 329	9.3	-16.4
Aluminum		
AlMg Si1	1.8	40.7

^{1, 2} Weight loss AFTER chemical cleaning. All weight losses are in mg/coupon. Weight gain is indicated by a "-" sign.



Handling Practices

Delo® XLI Corrosion Inhibitor has a shelf life of 12 months if stored in non-opaque containers, 36 months if stored in opaque containers and a service life of at least 6 years with correct maintenance practices. This product is water based and will freeze. It is recommended that this product should be stored where it will not freeze. This product is not combustible.

ENVIRONMENT, HEALTH and SAFETY

Information is available on this product in the Material Safety Data Sheet (MSDS) and Customer Safety Guide. Customers are encouraged to review this information, follow precautions and comply with laws and regulations concerning product use and disposal.

To obtain a MSDS for this product, visit:
www.CaltexDelo.com.

This bulletin was prepared in good faith from the best information available at the time of issue. While the values and characteristics are considered representative, some variation, not affecting performance, can be expected. It is the responsibility of the user to ensure that the products are used in the applications for which they are intended.

Produced by:

Chevron Lubricants
- Asia Pacific

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