



COOLING WATER TREATMENTS

Havoline® XLI

**Description**

Havoline Extended Life Corrosion Inhibitor (XLI) is 100% nitrite free, designed with care for the environment in mind, and virtually nontoxic. Based on patented aliphatic acid technology, Havoline 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, Havoline XLI is recommended as a cooling water treatment. Havoline XLI has proven to provide superior protection for at least 32,000 hours in marine and stationary applications. It is compatible with glycol-based engine coolants.

Typical Characteristics

Code	032765 (16514)
Nitrite, amine, phosphate, borate, silicate	Nil
Color	Uncolored
Density at 20°C, kg/l, ASTM D 1122	1.058
pH, ASTM D 1287	9.4
Cloud point, °C	-15
Storage stability at 5% dilution	3 years
pH, ASTM D 1287	8.1
Foaming properties at 25°C, break time, sec., ASTM D 1881	1
Effect on non-metals, GME 60 255	None
Hard water stability, VW PV 1426	No precipitate

Recommended Uses

Havoline XLI can be used as an engine cooling water treatment, a flushing fluid, or a hot test fluid for new engine blocks. As an engine cooling water treatment, Havoline XLI provides long-life corrosion protection. If Havoline 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 up to 500 ppm chlorides and 500 ppm sulphates. Havoline XLI has been approved as cooling water by the following engine builders: Deutz/MWM (0199-2091), GEC Alsthom Ruston, MAN Diesel (D36 5600), Wärtsilä Switzerland (ZBS0503), Rolls Royce (2.13.01), Wärtsilä Finland (32-9011), Hyundai-Himsen and Caterpillar-MaK (A4.05.09.01).

Performance Benefits**1. Environment**

The carboxylic acids are environmentally friendly.

2. Corrosion Protection

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

3. Cavitation Protection

Offers excellent 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 single layer of protective molecules on metal surfaces, thus providing an efficient heat transfer.

6. Economics

Corrosion protection and low additive depletion result in less maintenance and repair costs.