



COOLING WATER TREATMENTS

Havoline® XLC

**Description**

Havoline Extended Life Antifreeze Coolant (XLC) is a cooling fluid and corrosion inhibitor for combustion engines and heat transfer systems. Havoline XLC is an ethylene glycol-based fluid that provides maintenance-free protection against freezing, boiling and corrosion. With patented silicate-free aliphatic acid technology, Havoline XLC provides long-life corrosion protection for all engine metals, including aluminum and ferrous alloys. During extensive fleet testing Havoline XLC has proven to provide protection for at least 32,000 hours.

Typical Characteristics

Code	030379 (7994)	
Ash content, mass %, ASTM D 1119	1.1	
Nitrite, amine, phosphate, borate, silicate	Nil	
Color	Orange	
Density at 20°C, kg/l, ASTM D 1122	1.113	
Equilibrium boiling point, °C, ASTM D 1120	172	
Reserve alkalinity (pH 4.5), ASTM D 1121	20.4	
Storage stability at 20°C	3 years	
	50% dilution	33% dilution
pH, ASTM D1287	–	8.3
Foaming at 25°C, break time, sec., ASTM D 1881	5	–
Freeze protection, °C	–40	–20
Effect on non-metals, GME 60 255	None	None
Staining characteristics, ASTM D 1882	–	None
Hard water stability, VW PV 1426	No precipitate	–

Recommended Uses

Havoline XLC provides long-life freeze and corrosion protection. To ensure good corrosion protection it is recommended to use at least 33 volume percent of Havoline XLC in solution. Havoline XLC may be used in engines manufactured from cast iron, aluminum or a combination of the two metals, and in cooling systems made of aluminum or copper alloys. Havoline XLC is compatible with most other ethylene glycol-based cooling water treatments. 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 XLC has been approved by the following engine builders: Deutz/MWM (0199-2091), MAN Diesel (D36 5600), Wärtsilä Switzerland, Rolls-Royce (2.13.01), Wärtsilä Finland (32-9011) and Caterpillar-MaK (A4.05.09.02). Havoline XLC meets or exceeds the following specifications: ASTM D3306 and D4656/4985, BS 6580, and NATO S-759.

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 the metal surfaces, thus providing a very efficient heat transfer.

6. Economics

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