



## **RUGGED™ ELC Extended Life** **Coolant & Antifreeze**

**RUGGED™ ELC Extended-Life Coolant & Antifreeze** features advanced hybrid organic acid technology (HOAT) chemistry that is compatible with most common types of heavy-duty and automotive coolants. It is recommended for heavy-duty applications with no need for additional SCA on initial fill. Chemical levels should be monitored at each service interval. Rugged™ ELC is compatible with most Heavy-Duty coolant filters.

**RUGGED™ ELC Extended-Life Coolant & Antifreeze** is recommended for use in all heavy-duty diesels, light trucks, and cars, foreign and domestic. It protects all cooling system metals including aluminum from corrosion and rust. **RUGGED™ ELC Extended-Life Coolant & Antifreeze** is blended 50/50 with demineralized water to minimize hard water deposits on heads and blocks. **RUGGED™ ELC** phosphate-free, low-silicate technology may extend the life of hoses, gaskets, thermostats and water pumps compared to high silicate and/or soluble oil coolant technologies.

**RUGGED™ ELC Extended-Life Coolant & Antifreeze**, used as directed, results in an engine coolant that may be used in virtually any engine cooling system. This technology is well proven over decades of use, and is engineered to resemble the extended life coolants used in some heavy-duty vehicle manufacturing plants as factory fill. **RUGGED™ ELC** meets ASTM D3306, ASTM D6210 and TMC RP-329 (EG). **RUGGED™ ELC Extended-Life Coolant & Antifreeze**, if used as directed, will provide satisfactory performance in most cars and trucks including but not limited to the following:

Heavy-Duty Diesels	Light-Duty Diesels	Acura
Audi	BMW	Chrysler
Ford	General Motors	Honda
Hyundai	Kia	Mazda
Mercedes-Benz	Mitsubishi	Nissan
Toyota	Volvo	VW

And most other makes.

Table of Properties and Typical ASTM Test Results

Test / Property	Method	Result
Color	Visual	Pink (Magenta)
Relative Density (Specific Gravity)	ASTM D1122	1.065
Freeze Point @ 50% in water	ASTM D1177	-29.2 F (-34 C)
Boiling Point (neat)	ASTM D1120	336 F (169 C)
Boiling Point (50% in water)	ASTM D1120	226 F (108 C)
pH 50% in water	ASTM D1287	10.8
Effect on Auto Finish	ASTM D1882	No effect
Chloride	ASTM D3634	9 ppm
Water content	ASTM D1123	50%
Reserve Alkalinity	ASTM D1121	5.9
Foaming Tendencies	ASTM D1881	50 ml / 1.6 sec. Break time
Silicate as Si	ASTM D6130	250
Nitrite (NO <sub>2</sub> )	ASTM D5827	1200
Molybdate (MoO <sub>4</sub> )	ASTM D5827	<1
Phosphate as P	ASTM D6130	<1
Sebacic acid	HPLC	800
Corrosion of heat rejecting aluminum surface	ASTM D4340	0.01 mg/cm <sup>2</sup> /week
Cavitation / Erosion-Corrosion of Aluminum Water Pump	ASTM D2809	9
Corrosion in Glassware	ASTM D1384	Copper 3 mg Solder 1 mg Brass 2 mg Steel 2 mg Cast Iron 2 mg Cast Aluminum -2 mg
Simulated Service	ASTM D2570	Copper 3 mg Solder 5 mg Brass 3 mg Steel 2 mg Cast Iron 0 Cast Aluminum 1 mg
Glycol %	ASTM E202	50% min
Military Compatibility		Pass
Military Storage Stability		Pass

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