

- **Precharged, Extended Life, Universal, Hybrid Organic Acid Technology (HOAT), Low-Silicate Antifreeze Concentrate**
- **Formulated to meet “G-05” Type Specifications**

This antifreeze/coolant concentrate is a universal, hybrid organic acid technology (HOAT), extended life, low-silicate, phosphate-free antifreeze/coolant suitable for automotive/light duty and heavy duty diesel applications. This product was formulated to meet Ford WSS M97B51-A1 and Chrysler MS 9769 and other “G-05” type specifications, as well as ASTM D3306, D4985 and D6210/11. Since this is a HOAT extended life antifreeze/coolant it combines carboxylate organic acid salts with conventional inorganic salts and azoles; this makes it compatible with all types of both extended life and conventional technology antifreeze/coolants.

This antifreeze is precharged, meaning that it contains a minimum of 2400 ppm nitrites and 1560 ppm total nitrites plus molybdates with at least 600 ppm of both. These additives effectively control wet sleeve cylinder liner pitting/corrosion in heavy duty diesel engines. The primary corrosion inhibition system consists of a combination of salts of carboxylic and phosphono-carboxylic acids. These inhibitors deplete very slowly relative to conventional inorganic salt compounds, providing the extended service life of this antifreeze. It utilizes a low-silicate level (250 ppm as silicon) and is free of phosphates (<15 ppm) and amines. It provides a higher reserve alkalinity than most extended life products, with a minimum of 10 milliliters.

In automobiles, light trucks, SUV’s, vans and other light duty applications, This product will provide a service life in excess of 5 years or 150,000 miles. In heavy-duty diesel applications, it can provide a service life of 600,000

miles with the addition of our heavy-duty supplemental coolant additive at 300,000 miles.

This extended-life antifreeze/coolant concentrate meets the following industry specifications:

- ASTM D3306 (automotive/light-duty)
- ASTM D4985 (heavy-duty diesel/low silicate)
- ASTM D6210/11 (fully formulated and precharged)
- ASTM D1384, D4340
- SAE J1034, J814
- GM 1825M, 1899M
- GM 6277M
- Ford WSS M97B51-A1
- Ford WSE M97B44-B
- Ford ESE M97B44-A
- Chrysler MS 9769
- Daimler-Chrysler Automotive
- MTU
- TMC of ATA RP 329/330
- Federal Specification A-A-870A

“G-05” type antifreeze/coolants are used as factory fills for the following vehicles (antifreeze color given in parentheses)

- 1984 – Present: Mercedes (light yellow)
- 1990 – Present: Deer & Company vehicles (green)
- 2001 – Present: Chrysler, Dodge and Jeep vehicles (orange)
- 2002 – Present: Ford, Lincoln, and Mercury trucks and SUV’s (yellow)
- 2003 – Present: Ford, Lincoln, and Mercury automobile (yellow)

**BOIL/FREEZE PROTECTION
MAXIMUM FREEZE PROTECTION IS AT 70%**

Percentage Antifreeze	Freezing Point		Boiling Point*	
	°F	°C	°F	°C
40	-12 max.	-24 max.	260 min.	126 min.
50	-34 max.	-36 max.	265 min.	128 min.
70	-90 max.	-67 max.	270 min.	135 min.

*Boiling point shown using conventional 15 psi radiator cap.

PHYSICAL PROPERTIES

Antifreeze Glycols	mass %	94.5 min.
Corrosion Inhibitor System	mass %	2.2
Total Water	mass %	2.9
Flash Point	°F	250
Weight per gallon 60° F	lbs.	9.43-9.46
Silicon	ppm	250 typical
Phosphate	ppm	15 max.

Used antifreeze coolant in most states is not hazardous unless it contains more than 5 ppm of lead. We recommend that spent coolant never be disposed of by dumping into a storm sewer or onto the ground. Instead, contact your local municipality for instructions on where to and how to properly dispose of this coolant and protect our environment.

Characteristic	Ford WSS M97B51-A1	Company Typicals	ASTM Method
Chloride	25 ppm, max.	<25	D3634
Silicon	250 ppm, max. (ASTM)	250	Ion Chromatograph
Nitrite	2100-2600 ppm min.	2550	D 5827
Specific gravity, 60/60°F	1.110-1.145	1.125	D1122
Freezing point, 50% V/V	-34°F/-37°C max.	-34°F/-36°C	D1177
Boiling Point, undiluted	325°F/162°C min.	330°F/164°C	D1120
Boiling Point, 50% V/V	226°F/107°C min.	226°F/107°C	D1120
Effect on engine or vehicle finish	no effect greater than DI water	no effect	-
Ash content, mass %	5 max.	< 2	D1119
pH, 50% V/V	7.0-9.0	9.5	D1287
Reserve alkalinity*	10 ml min.	10 min.	D1121
Water mass %	5 max.	2.9	D1123
Color	distinctive	Yellow or orang	-
Storage stability	Pass	Pass	-
Foaming	150 ml vol., max.	35 ml	D1881
	3 sec. break, max.	1.5 sec.	D1881

**Reserve alkalinity (RA) is a term used to indicate the amount of alkaline inhibitors present in an antifreeze formulation. It is incorrect to relate a high RA with a high-quality antifreeze. Present, state-of-the-art antifreeze formulations contain many new inhibitors which give added protection to certain metals but do not raise the RA numbers.*

Typical ASTM Corrosion Test Results

	Weigh loss (Mg/Specimen)	
	Ford WSS M97B51-A1	Actual
Glassware Corrosion Test (ASTM D1384)		
Copper	10	1
Solder (low lead)	10	3
Solder (high lead)	Report	
Brass	10	0
Steel	10	-1
Cast Iron	10	1
Aluminum	10	3
Simulated Service Test (ASTM D2570)		
Copper	20	2
Solder	60	4
Brass	20	1
Steel	20	0
Cast Iron	20	2
Aluminum	60	4
Hot Surface Aluminum Corrosion (ASTM D4340)		
Specimen weight loss	1.0 mg/cm ² /wk	< 0.25

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