

- **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**

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

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

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