



TECHNICAL BULLETIN

ZEREX® G-05® Formula Phosphate FREE – Long Life Hybrid Organic Acid Technology (HOAT)

Zerex G-05 antifreeze coolant is a long life, ethylene glycol-based formulation suitable for passenger cars, light trucks and heavy duty vehicles. The formulation is designed for both gasoline and diesel engines. Its lower-silicate, low pH, phosphate free European technology protects all cooling system metals, including aluminum, from corrosion. **Zerex G-05** is a fully formulated coolant designed to protect diesel engine cylinder liners from cavitation. It contains a reduced silicate level for improved compatibility. The ASTM and other test data shown on this sheet reflect the high performance corrosion inhibitor package.

When diluted 50% with water, **Zerex G-05** protects modern engine components from winter freezing and summer boil over. The chart at the top right provides mixing information. A 50% to 70% concentration range is suggested for optimum corrosion protection. **Zerex G-05** is compatible with better brands of coolant commonly available. It contains a high quality defoamer system and will not harm hoses, plastics or original vehicle finishes.

Zerex G-05 is approved by Daimler-Chrysler for worldwide applications. It is also suitable for use in Cummins power and approved by Ford North America for all newer models.

Zerex G-05 antifreeze coolant meets or exceeds the performance requirements of the following antifreeze specifications and/or recommended practices:

Chrysler MS 9769 Approved	Ford WSS-M97B51-A1 Approved
Daimler-Chrysler Approved	DDC/MTU Approved
Fed. Spec. A-A-870A	Deere & Company Approved
Mercedes Benz Approved	ASTM D3306
GM 1825M	ASTM D6210
GM 1899 M	SAE J814
TMC RP 329	

Zerex G-05 Formula Antifreeze Coolant Freeze/Boil Protection		
% Antifreeze	Freezing Point, °F/°C	Boiling Point**, °F/°C
40	-12/-24	260/126
50	-34/-36	265/128
70*	-90/-67	277/135

* Maximum freeze protection is at 70%.

** Boiling point shown using conventional 15 psi radiator cap.

Typical Physical Properties		
Antifreeze Glycols	mass %	94
Corrosion Inhibitors	mass %	5.4
Water	mass %	2.0
Flash Point	°F/°C	250/121
Weight per gallon @ 60°F/16°C	lbs./KG	9.4642
Silicon, as Si	PPM	252-308
Phosphates, as PO ₄	PPM	30 max.

Aluminum Water Pump Tests ASTM D2809 Pump Cavitation (Extended Test)		
Test Period	Results	Specification
100 hours	9	8

ASTM cavitation corrosion rating: 10 - perfect 1 - perforated

Valvoline recommends that spent coolant never be disposed of by dumping into a septic system, storm sewer or onto the ground. Instead, contact your state or local municipality for instructions on where to and how to properly dispose of this coolant and protect our environment.

If any coolant is spilled onto the ground, contain the spill and call the state authorities and ask for proper instruction on how to clean up the spill.

Zerex® is a registered trademark of Valvoline

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This information only applies to products manufactured in the following location(s): USA

Effective Date:
05-23-06

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Characteristic	Specifications	Typicals	ASTM Method
Chloride	25 PPM, max.	<25	D3634
Silicon, as Si	252 - 308 ppm	290 ppm	-
Specific gravity, 60/60° F	1.110 - 1.145	1.1375	D1122
Freezing point, 50% V/V	-34°F/-36°C	-34°F/-36°C	D1177
Boiling point, undiluted	325°F/162°C	330°F/164°C	D1120
Boiling point, 50% V/V	226°F/107°C	226°F/107°C	D1120
Effect on engine or vehicle finish	No Effect	No Effect	-
Ash content, mass %	5 max.	<2	D1119
pH, 50% V/V	7.5 - 11.0	8.0	D1287
Reserve alkalinity*	10 min.	17.9	D1121
Water mass %	5 max.	1.93	D1123
Color	Distinctive	Yellow	-
Effect on nonmetals	No adverse effect	No adverse effect	-
Storage stability	-	3 years	-
Foaming	150 ml vol., max. 5 sec. break, max.	35 ml 2.1 sec.	D1881 D1881
Cavitation-erosion rating	8 min.	9	D2809

**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 number.*

Typical ASTM Corrosion Test Results			
Glassware Corrosion Test	Weight Loss Mg/Specimen		
	Spec.	Actual	ASTM Method
Copper	10	0	D1384
Solder	30	0	
Brass	10	1	
Steel	10	-3	
Cast iron	10	1	
Aluminum	30	-2	
Simulated Service Test			
Copper	20	2	D2570
Solder	60	2	
Brass	20	1	
Steel	20	-1	
Cast iron	20	-1	
Aluminum	60	-2	
Hot Surface Corrosion			
Specimen weight loss	1.0	0.15	D4340

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