Technical Bulletin

G 05

ANTIFREEZE/COOLANT

Phosphate Free, Long Life Hybrid

Valvoline's Zerex® G 05® antifreeze coolant is a long life, fully formulated ethylene glycol-based fluid suitable for passenger cars, light trucks and heavy duty vehicles. The formulation is designed for both gasoline and diesel engines. Its lower-silicate, reduced pH, phosphate free European technology protects all cooling system metals, including aluminum, from corrosion. Zerex® G 05 is a nitrite containing coolant designed to protect diesel engine cylinder liners from cavitation. It contains deposit control additives for protection from hard water deposits and scale. 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 DaimlerChrysler for world-wide applications. It is also suitable for use in Cummins Deere, Detroit Diesel, Mercedes, MTU, CAT, Navistar, Isuzu and Yanmar diesel engines. Zerex® G 05 is 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:

DaimlerChrysler MS 9769 Approved
Ford WSS-M97B51-A1 Approved
MTU/DDC Approved
Detroit Diesel 7SE298
Deere & Company Approved
Mercedes Benz Approved
Cummins 14603 Approved
ASTM D6210
Perkins Diesel
SAE J1034 / SAEJ814
GM 1825M / GM 1899M
TMC of the ATA RP 329
GE Wind Turbines

Zerex® G 05Antifreeze Coolant Boil/Freeze 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
%		5.4
Corrosion Inhibitors	mass %	2.0
Water	mass	250/121
%		9.4642
Flash Point	°F/°C	252-308
Weight per gallon @ 60°F/16°C	lbs.	30 max.
Silicon	PPM	
Phosphates	PPM	

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.

.

Important: While the information and data contained in this bulletin are presented in good faith and believed to be reliable, they do not constitute a part of our terms and conditions of sale unless specifically incorporated in our Order Acknowledgment.

Property	Specifications	Typicals	ASTM Method
Chloride	25 PPM, max.	<25	D3634
Silicon, from Silicate	220 – 250 ppm	240 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*, mls	10 min.	17.9	D1121
Water, wt %	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.	35 ml	D1881
	5 sec. break, max.	2.1 sec.	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			
	Weight Loss Mg/Specimen		
Glassware Corrosion Test	**Spec.**	**Actual**	**ASTM Method**
Copper	10	0	
Solder	30	0	D1384
Brass	10	1	
Steel	10	-3	
Cast iron	10	1	
Aluminum	30	-2	
Simulated Service Test			
Copper	20	2	
Solder	60	2	D2570
Brass	20	1	
Steel	20	-1	
Cast iron	20	-1	
Aluminum	60	-2	
Hot Surface Corrosion	$mg/cm^2/wk$		
Specimen weight loss	1.0	0.15	D4340

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

Effective Date:	Expiration Date:	Replaces:	Author's Initials:	Code
09-08-09	09-08 -12	06-24-07	DET	