



## Technical Bulletin



# 5/100

## ANTIFREEZE/COOLANT Aluminum Protection, Low Silicate Formula

Zerex® 5/100 antifreeze coolant is a universal ethylene glycol-based formulation suitable for passenger cars, light trucks and heavy duty vehicles. The formulation is designed for both gasoline and diesel engines and has a service life of up to five years or 100,000 miles. Its patented\* low silicate formulation protects all engine cooling system metals from corrosion including aluminum. The ASTM test data shown on this sheet reflects the high performance corrosion inhibitors package.

When diluted 50% with water, Zerex 5/100 antifreeze coolant protects modern engine components from winter freezing and summer boil over. The chart at the top right provides mixing information. Zerex 5/100 antifreeze coolant is compatible with major American brands of coolant. It contains a high quality defoamer and will not harm gaskets, hoses, plastics or original vehicle finishes.

Zerex 5/100 antifreeze coolant meets ASTM specification D3306 for automobiles and light trucks and ASTM D4985 for heavy duty trucks. It contains less than 250 parts per million of silicon as required by the heavy duty trucking industry. Valvoline recommends the use of a supplemental coolant additive (SCA) for heavy duty applications.

Zerex 5/100 antifreeze coolant is formulated to meet or exceed the following antifreeze specifications and/or recommended practices:

ASTM D3306  
 ASTM D4985  
 GM 1899M  
 GM 1825M  
 Ford ESE-M97B44-A  
 Chrysler MS 7170  
 SAE J1034, SAEJ814c, SAE J1941  
 TMC of ATA RP-302B  
 Detroit Diesel 7SE298  
 Cummins 90T8-4  
 Federal Specification A-A-870A

\*U.S. Patent 4,548,787 and 6,203,719

<Enter Product Name> Antifreeze Coolant Boil/Freeze Protection		
% Antifreeze	Freezing Point, °F/°C	Boiling Point**, °F/°C
20	+16/-8	253/122
33 1/3	0/-17	256/123
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 %	95.0
Corrosion Inhibitors	mass %	2.3
Water	mass %	3.0
Flash Point	°F/°C	250/121
Weight per gallon @ 60°F/16°C	lbs./KG	9.388/4.258
Silicates	PPM	250 max.

Aluminum Water Pump Tests		
ASTM D2809 Pump Cavitation (Extended Test)		
Test Period	Results	Specification
100 hours	9	8
300 hours	9	-
600 hours	9	-
1000 hours	8.5	-

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.**

ASTM D4985	Specifications	Typicals	ASTM Method
Chloride	25 PPM, max.	<25	D3634
Silicon	250 PPM, max.	<250	-
Specific gravity, 60/60° F	1.110 - 1.145	1.1276	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.	<310.6	D1119
pH, 50% V/V	7.5 - 11.0	12.4	D1287
Reserve alkalinity*	10 min.	3.0	D1121
Water mass %	5 max.	Green	D1123
Color	Distinctive	No adverse effect	-
Effect on nonmetals	No adverse effect	>1 year	-
Storage stability	-	45 ml	-
Foaming	150 ml vol., max.	1 sec.	D1881
	5 sec. break, max.	9	D1881
Cavitation-erosion rating	8 min.		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	-0.7	D1384
Solder	30	9.0	
Brass	10	-1.5	
Steel	10	0.4	
Cast iron	10	3.5	
Aluminum	30	0.0	
Simulated Service Test			
Copper	20	2.3	D2570
Solder	60	0.8	
Brass	20	4.6	
Steel	20	-0.1	
Cast iron	20	-3.5	
Aluminum	60	-6.7	
Hot Surface Corrosion	mg/cm <sup>2</sup> /wk		
Specimen weight loss	1.0	0.3	D4340

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

Effective Date:      Expiration Date:      Replaces:      Author's Initials:      Code  
03-26-2001      03-26-2003      05-18-2000      DET

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