Technical Bulletin

Zerex Original Green

ANTIFREEZE/COOLANT

Aluminum Protection, Low Silicate Conventional Formula

Zerex 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 antifreeze coolant protects modern engine components from winter freezing and summer boil over. The chart at the top right provides mixing information. Zerex 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 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 antifreeze coolant is formulated to meet or exceed the following antifreeze specifications and/or recommended practices:

ASTM D3306	SAE J814c
ASTM D4985	SAE J1941
Chrysler MS7170	TMC of ATA RP-302B
GM 1899M	Detroit Diesel 7SE298
GM 1825M	Thermo King - Approved
Ford ESE-M97B44-A	Cummins 90T8-4
SAE J1034	Federal Specification A-A-870A
Clarke - Approved	

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

Zerex Antifreeze 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 psig radiator cap.

Typical Physical Properties		
Antifreeze Glycols	mass %	96.0
Corrosion Inhibitors	mass %	2
Water	mass %	2
Flash Point	°F/°C	2.250/121
Weight per gallon @ 60°F/16°C	lbs./KG	9.363/4.247
Silicates	PPM	250 max.

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

ASTM cavitation corrosion rating: 10 – new 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.

Characteristic	Specifications	Typicals	ASTM Method
Chloride	25 PPM, max.	<25	D3634
Silicon	250 PPM, max.	<250	-
Specific gravity, 60/60° F	1.110 - 1.145	1.1272	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.	1.1	D1119
pH, 50% V/V	7.5 - 11.0	10.4	D1287
Reserve alkalinity*	10 min.	11	D1121
Water mass %	5 max.	2	D1123
Color	Distinctive	Green	-
Effect on nonmetals	No adverse effect	No adverse effect	-
Storage stability	-	>1 year	-
Foaming	150 ml vol., max.	75 ml	D1881
	5 sec. break, max.	2 sec.	D1881
Cavitation-erosion rating	8 min.	8	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	1	D1384
Solder	30	2	
Brass	10	1	
Steel	10	0	
Cast iron	10	2	
Aluminum	30	0	
Simulated Service Test			
Copper	20	2	D2570
Solder	60	3	
Brass	20	3	
Steel	20	1	
Cast iron	20	4	
Aluminum	60	2	
Hot Surface Corrosion	$mg/cm^2/wk$		
Specimen weight loss	1.0	0.1	D4340
Repassivation of Aluminum Surfaces	Minimum, mV		
Average of 3 Tests	>-400	-171	D6208

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

Effective Date:	Expiration Date:	Replaces:	Author's Initials:	Code
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