Technical Bulletin

Zerex® Extended Life Heavy Duty 618-1

ANTIFREEZE / COOLANT

Fully-Formulated Coolant for Heavy Duty Diesel Engines

Protection for 3 years, 7000 hrs or 300,000 miles

Valvoline's Zerex® Extended Life HD 618-1 antifreeze coolant meets Cummins 14603, DDC, Terex, Cat® EC-1 and other heavy duty diesel engine requirements. Fully formulated **Zerex® Extended Life HD** incorporates organic acid technology and heavy duty corrosion inhibitors to protect diesel engines from liner pitting and hard water scale deposits for 3 years, 7000 hours or 300,000 miles on initial fill. The patented* chemistry protects all cooling system metals from corrosion including aluminum. **Zerex® Extended Life HD** can be used in gasoline engines, stationary power, marine and light duty applications.

A 50% to 70% concentration range is suggested for optimum performance. **Zerex® Extended Life HD** is compatible with major long life and conventional brands of ethylene glycol based coolant. However long life characteristics may be diminished by mixing with light duty or non-fully formulated coolants. Applications requiring a water filter should use blank filters (without SCA/DCA) and follow engine manufacturers filter change guidelines. Valvoline recommends always topping off with **Zerex® Extended Life HD coolant**, keeping the system full, and using 3 way test strips to check concentration and freeze point regularly. Add one bottle of extender per 50 quarts of system capacity at 300,000 miles, 3 years or 7000 hours for another equivalent distance/time. Replace the fluid after one extender cycle, 6 years/600,000 miles or 14,000 hours. Call 1-800- Team Val with questions.

Zerex® Extended Life HD fully formulated engine coolant meets the performance requirements of ASTM D 6210 for heavy duty diesel engines. **Zerex® EL HD** antifreeze coolant meets or exceeds the performance requirements of the following antifreeze specifications and/or recommended practices.

ASTM D6210	Caterpillar EC-1
ASTM D3306	Federal Specification A-A-870A
SAE J814	SAE J1034
GM 1899M	Detroit Diesel 7SE298
GM 1825M	Thermo King
TMC of ATA RP-329B	Link Belt
TMC of ATA RP-338	Cummins 3666286
Cummins 14603	Terex Approved
	John Deere

*U.S. Patent 6,126,852 and 6,235,217

Zerex® Extended Life HD 618-1 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.

Zerex® Extended Life HD 618-1 Typical Physical Properties		
Antifreeze Glycols	mass %	92.0
Corrosion Inhibitors	mass %	4.5
Water	mass %	3
Flash Point	°F/°C	250/121
Weight per gallon @ 60°F/16°C	lbs./KG	9.415/4.271
Phosphate Free	PPM	10 max

Zerex® Extended Life HD 618-1 Aluminum Water Pump Tests		
ASTM D2809 Pump Cavitation (Extended Test)		
Test Period	Results	Specification
100 hours	8	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.

The information contained herein is correct to the best of our knowledge. The recommendations or suggestions contained in this bulletin are made without guarantee or representation as to results. We suggest that you evaluate these recommendations and suggestions in your own laboratory prior to use. Our responsibility for claims arising from breach of warranty, negligence or otherwise is limited to the purchase price of the material. Freedom to use any patent owned by Ashland or others is not to be inferred from any statement contained herein.

Characteristics	Specifications	Typicals	ASTM Method
Chloride	25 ppm, max.	3 typical	D3634
Specific gravity, 60/60° F	1.110 – 1.145	1.1237	-
Freezing point, 50% V/V	-34°F/-36°C	-34°F/-36°C	D1122
Boiling point, undiluted	325°F/162°C	325°F/162°C	D1177
Boiling point, 50% V/V	226°F/107°C	226°F/107°C	D1120
Effect on engine or vehicle finish	No Effect	No Effect	D1120
Ash content, mass %	5 max	2.12 typical	-
pH, 50% V/V	7.5 – 11.0	9.0	D1119
Reserve alkalinity*	Report	6.0	D1287
Water mass %	5 max.	3	D1121
Color	Distinctive	Red	D1123
Effect on nonmetals	No Adverse Effect	No Adverse Effect	-
Storage stability	-	> 3 year	-
Foaming	150 ml Vol., max.	15 ml	D1881
	5 sec. Break, max.	1 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	0	
Brass	10	5	
Steel	10	0	
Cast iron	10	0	
Aluminum	30	0	
Simulated Service Test			
Copper	20	4	D2570
Solder	60	1	
Brass	20	4	
Steel	20	0	
Cast iron	20	0	
Aluminum	60	0	
Hot Surface Corrosion	$mg/cm^2/wk$		
Specimen weight loss	1.0	0.2	D4340

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

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