



Technical Bulletin



Zerex® Extended Life

ANTIFREEZE / COOLANT

Fully-Formulated Coolant
for Heavy Duty Diesel Engines

Zerex® 618-1 Extended Life antifreeze coolant meets Cummins 14603, DDC, Terex, Cat® EC-1 and other heavy duty diesel engine requirements. Fully formulated **Zerex® Extended Life** 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** 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** 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 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.

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



Call 1-800- TeamVal with questions

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.

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

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

* Maximum freeze protection is at 70%.

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

| Zerex® Extended Life Typical Physical Properties | | |
|---|-------|-------------|
| Antifreeze Glycols | mass | 92.0 |
| % | | 4.5 |
| Corrosion Inhibitors | mass | 3.5 |
| % | | 250/121 |
| Water | mass | 9.415/4.271 |
| % | | 10 max |
| Flash Point | °F/°C | |
| Weight per gallon @ 60°F/16°C | | |
| lbs./KG | | |
| Phosphates | | |
| PPM | | |

| Zerex® Extended Life 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.

| Characteristics | Specifications | Typical | 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. | 3.5 | D1121 |
| Color | Distinctive | Red | D1123 |
| Effect on nonmetals | No Adverse Effect | No Adverse Effect | - |
| Storage stability | - | > 3 year | - |
| Foaming | 150 ml Vol., max. | 48 ml | - |
| | 5 sec. Break, max. | 4.4 sec. | D1881 |
| | 8 min. | 8 | D1881 |
| Cavitation-erosion rating | | | 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 |

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

| | | | | | |
|-----------------|------------------|------------|--------------------|--------|-------|
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