



# Technical Bulletin



## DEX-COOL® 5/150 ANTIFREEZE/COOLANT

Zerex® DEX-COOL® Life 5/150 antifreeze coolant is the latest long life automotive engine coolant development from Valvoline. The patented\* carboxylate formulation has a service life of up to five years or 150,000 miles. It incorporates state-of-the-art organic acid technology in an ethylene glycol base for protection of all cooling system metals including aluminum. Zerex® DEX-COOL® 5/150 antifreeze coolant is approved by General Motors to the GM 6277M specification.

Zerex® DEX-COOL® 5/150 antifreeze coolant contains no phosphates, silicates, borates, nitrates, amines and nitrites. It's global formulation meets the phosphate-free requirements of European automobile manufacturers and the silicate free requirement of Asian automobile manufacturers like Toyota, Scion, Acura, Hyundai, Kia, Honda, Isuzu and others. It can be mixed with any DEX-COOL® and is approved by Opel, Dae Woo and Saab. It is dyed orange to distinguish it's unique chemistry from traditional green and yellow silicate coolants.

When diluted 50% with water, Zerex® DEX-COOL® 5/150 protects modern engine components from winter freezing and summer boiling. The chart at the top right provides detailed mixing information. Zerex® DEX-COOL® 5/150 antifreeze coolant is storage stable for up to five years as both a concentrate or diluted with water. It contains a high quality defoamer and will not harm gaskets, hoses, plastics or original vehicle paint.

Zerex® DEX-COOL® 5/150 antifreeze coolant meets or exceeds the following coolant specifications:

|                 |                             |
|-----------------|-----------------------------|
| ASTM D3306      | Ford WSS-M97B44-D           |
| SAE J1034, J814 | Saab, Opel Approved         |
| SAE J1941       | Navistar CEMS B-1 Type IIIA |
| TMC of the ATA  | GM 6277M DEX-COOL® Approved |
| RP - 302B       |                             |

GM Approved DEX-COOL®  
Silicate & Phosphate Free Formula

| Zerex® DEX-COOL® 5/150 Antifreeze Coolant<br>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 %  | 93.5        |
| Corrosion Inhibitors          | mass %  | 3.5         |
| Water                         | mass %  | 3.0         |
| Flash Point                   | °F/°C   | 250/121     |
| Weight per gallon @ 60°F/16°C | lbs./KG | 9.299/4.218 |
| Si from silicates             | in PPM  | 10 max.     |
| Phosphates                    | in PPM  | 30 max.     |

| Aluminum Water Pump Tests  |         |               |
|----------------------------|---------|---------------|
| ASTM D2809 Pump Cavitation |         |               |
| 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.

\* US patents 6,235,217 and 6, 126,852

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.

| Characteristic                     | Specifications     | Zerex <sup>0</sup> Typicals | ASTM Method |
|------------------------------------|--------------------|-----------------------------|-------------|
| Chloride                           | 25 PPM, max.       | <25                         | D3634       |
| Silicon from silicate              | 10 PPM, max.       | <10                         | -           |
| Specific gravity, 60/60° F         | 1.11 - 1.14        | 1.112                       | D1122       |
| Freezing point, 50% V/V            | -34°F/-36°C        | -34°F/-36°C                 | D1177       |
| Boiling point, undiluted           | 325°F/162°C        | 330°F/162°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.             | 1.36                        | D1119       |
| pH, 50% V/V                        | 8.3 - 8.8          | 8.6                         | D1287       |
| Reserve alkalinity*                | Report*            | 4.8                         | D1121       |
| Water mass %                       | 5 max.             | 3.0                         | D1123       |
| Color                              | Distinctive        | Orange                      | -           |
| Effect on nonmetals                | No adverse effect  | No adverse effect           | -           |
| Storage stability                  | -                  | 5 years                     | -           |
| Foaming                            | 150 ml vol., max.  | 31.7 ml                     | D1881       |
|                                    | 5 sec. Break, max. | 3 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<br>Mg/Specimen |        |             |
| Glassware Corrosion Test            | Spec.                      | Actual | ASTM Method |
| Copper                              | 10                         | 2      | D1384       |
| Solder                              | 30                         | 6      |             |
| Brass                               | 10                         | 3      |             |
| Steel                               | 10                         | 0      |             |
| Cast iron                           | 10                         | 0      |             |
| Aluminum                            | 30                         | 0      |             |
| Simulated Service Test              |                            |        |             |
| Copper                              | 20                         | 2      | D2570       |
| Solder                              | 60                         | 5      |             |
| Brass                               | 20                         | 1      |             |
| Steel                               | 20                         | 1      |             |
| Cast iron                           | 20                         | 0      |             |
| Aluminum                            | 60                         | 0      |             |
| Hot Surface Corrosion               | mg/cm <sup>2</sup> /wk     |        |             |
| Specimen weight loss                | 1.0                        | 0.1    | D4340       |
| Electrochemical                     | MV                         |        |             |
| Ford Pitting Test                   | -400                       | -120.7 | FLTM BL5-1  |

DEX-COOL® is a trademark of General Motors. Used under license DC-4.

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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