

# WEBA TECHNOLOGY

## METALGUARD G5 is Formulated to meet these Industry Standards

- ASTM D3306
- ASTM D4985

Nearly all of OEM automotive light-duty and heavy-duty specifications are patterned after or identical to the ASTM standard specifications given above. For individual OEM specification compliance contact your sales representative. Note that the ASTM specifications listed include the key performance tests (ASTM D1384, D4340, D1881, D2570, D2809)

\*See page 3 for making specification claims.

## Technical Support

WEBA Technology can answer questions about ASTM standards and industry specifications as well as help with many other questions relating to antifreeze and glycols. To confirm that your finished product meets the required industry specifications, WEBA's laboratory can help you with problem solving and testing associated with any products containing our inhibitor package.

## Quality Control

WEBA Technology's additive packages must pass all our quality control tests prior to shipment. They are tested for conformance with product specifications and industry standards. Certificate of analysis are provided with every shipment. Complete ASTM performance tests are available by request.

## METALGUARD G5

Dehydrator, Line and Bath Heater Glycol Additive System

### Product Description and Applications

METALGUARD G5 is an additive system for mono- and di- and tri- glycols, including diethylene and triethylene glycols, which enhances their performance in applications such as the following:

- The use of monopropylene glycol (MPG) and monoethylene glycol (MEG) as heat transfer fluids in line and bath heaters
- The use of diethylene glycol (DEG) as a heat transfer fluid in line and bath heaters
- The use of DEG as a water removal agent in natural gas dehydration systems
- The use of triethylene glycol as a water removal agent in natural gas dehydration systems

When MEG/water or MPG/water solutions are used as the heat transfer fluid media in line heaters and bath heaters for natural gas gathering and pipeline transport systems, they must be inhibited to prevent rapid corrosion of metallic materials of construction in these systems. METALGUARD G5 can be used in two ways to improve the level of performance of the MEG or MPG in this application:

1. It can be used to inhibit glycol/water solutions down to concentrations as low as 30% glycol by volume. This will allow you to avoid the purchase of expensive finished heat transfer fluids by buying the appropriate glycol and inhibiting it yourself. METALGUARD G5 can be used to inhibit glycol/water solutions using deionized water.
2. METALGUARD G5 can be used to restore or boost the inhibitor levels in heat transfer fluids already in service. If you have heat transfer fluids that have been in use in line or bath heaters for one year or longer without being tested for inhibitor depletion, we recommend that you submit a sample to a laboratory for testing. If you send a copy of your test results, we can make recommendations for fortifying your inhibitor levels with METALGUARD G5 to extend the effective service life of your fluid.

DEG can be used as a base for heat transfer fluids used in line and bath heaters. DEG extends the upper temperature limit at which the fluid can be used by virtue of its higher boiling point, but it can create pump motor electrical system overload problems when the system is started up after downtime during cold weather periods due to the relatively high viscosity of DEG. METALGUARD G5 also contains viscosity modifying ingredients to prevent thickening of DEG during periods of downtime during cold weather, saving pump motors, fuses, breaker switch resetting and start-up problems, in general. METALGUARD G5 also serves as an outstanding corrosion inhibitor or reinhibitor additive package, and it extends the service life of DEG by controlling thermal and oxidative degradation to tars and preventing "coking."

DEG can be used as an effective water removal agent in natural gas dehydrators, but is limited to lower average operating temperatures than TEG due to its lower boiling point; however, it provides the significant advantage over TEG of a much lower tendency to absorb benzene from natural gas. Absorption of relatively high levels of benzene by TEG can make it a hazardous waste. METALGUARD G5 controls the thermal and oxidative degradation of DEG, extending the upper temperature limit at which it can be operated in dehydration systems by 50% or more.

When TEG is used as a water removal agent in natural gas dehydration systems, it will thermally and oxidatively degrade over time to form corrosive glycolic acids, and gummy tars and fouling coke deposits. METALGUARD G5 will both extend the upper temperature limit at which TEG can be used and retard the formation of glycolic acids, tars and carbonaceous coke to prolong its effective service life.

# METALGUARD® G5

## Product Specifications

### As concentrated METALGUARD G5 Inhibitor System:

Visual	Light amber liquid.
Specific Gravity @ 60°F	1.178-1.188
pH	12.0-12.0

## Blending and Use Instructions

**Blending:** Upon opening the drum, stir thoroughly. If you use only a portion of the drum (i.e. a few gallons at a time) you need to thoroughly mix the drum of additive prior to pulling out the required amount. If you use the entire drum to make a bulk blend you do not need to mix the drum prior to use.

**To make antifreeze concentrate:** First charge the desired quantity of glycol to the blending tank. Heat the glycol to 50°F (10°C) or higher, and adjust its pH range to a range of 7.0-9.5, if necessary. Maintain this temperature throughout the blending procedure. Based on the quantity of glycol being treated, add 2.2% by volume of the additive package while agitating or circulating glycol. Use 2.0 x 55-gallon drums (110 gallons) per 5,000 gallons (416 liters per 18,925 liters of glycol). Good agitation is vital to making a consistent and proper product. Continue to agitate for 30-60 minutes after all of the additive package has been transferred into the blending vessel. Visit [www.webacorp.com/customerarea.html](http://www.webacorp.com/customerarea.html) and download a self-calculating sheet.

**To make 50/50 (50% glycol/50% water):** Follow glycol instructions in concentrate section above, and then add 1.1% by volume of the additive package using the previous instructions. Use 1.0 x 55 gallon drum (55 gallons) per 5,000 gallons (208 liters per 18,925 liters) of 50% glycol/50% water mixture. Visit [www.webacorp.com/customerarea.html](http://www.webacorp.com/customerarea.html) and download a self-calculating sheet.

**Antifoam:** Although this additive package has antifoam as part of the formulation, depending upon your glycol base additional antifoam may need to be added. Add the proper amount of antifoam to allow your product to pass a foam test. You may not need any antifoam or a much reduced amount depending upon your finished product results. Maximum use rates for reclaimed glycol antifreeze concentrate use 1.5 gallons (5.68L) per 5000 gallons (18,925L) of antifreeze concentrate (0.75 gallons/2.84L in 50/50). More may be needed depending upon glycol-base quality. For virgin glycols use 1.0 gallons (3.79L) per 5000 gallons (18,925L) of antifreeze concentrate (0.5 gallons/1.89L in 50/50). Antifoam may be purchased in 5-gallon (18.93L) pails from WEBA Technology.

**Dye:** If you purchase undyed additive, the last step is to add the color of dye that you wish to use. If you need help determining dye colors or use rates you may contact us. We can help you to select the proper color for the antifreeze you wish to make. Dye can be ordered from WEBA Technology or from the dye company of your choice. We recommend and use dyes from Robert Koch Industries [www.kochcolor.com](http://www.kochcolor.com).

**Testing:** Test your finished product to be sure it conforms to specifications. See below paragraph on quality control.

**Storage:** Store concentrated the additive package above of 60°F (15.5°C) at all times. If a container arrives very cold to your warehouse, immediately place it in a hot room for 1-2 days then stir thoroughly prior to use. Once a container is opened there is a possibility of the liquid phase evaporating, so close the container tightly after each use. High temperatures, above 90°F (32°C), for an extended period of time may also cause degradation of the inhibitors. If you are in an area of the country with continuous high heat store the additive in a cooler area of your warehouse.

**Water Quality And Dilution:** When antifreeze concentrate is diluted to 50% by volume with water, the water of dilution must be of acceptable quality. Deionized water is the best to use, but other sources of water are acceptable as long as they contain less than 100 ppm total hardness measured as calcium and magnesium compounds. Higher hardness levels may cause excessive inhibitor consumption, scale deposits and metal pitting.

**Quality Control Procedures:** WEBA Technology strongly recommends that all antifreeze producers have an internal, complete quality control program in place for manufacturing and testing of all products made for sale. Visit the Customer Information Area at [www.webacorp.com/customerarea.html](http://www.webacorp.com/customerarea.html) for forms and more information on how to set-up a basic quality control program for your company.

## Making Claims for Antifreeze/Coolant Blended with WEBA Technology's Additive Packages

The specifications listed in this bulletin are based on antifreeze produced with WEBA Technology's additive packages, virgin glycol and deionized water. Antifreeze blenders must demonstrate independent compliance with ASTM or other specifications with their antifreeze/coolant, because proper blending and quality of the glycol/water used is as important as the additive package. Note that OEM's have placed limits on the percentage of recycled glycol that can be used in factory fills as have other purchasers of antifreeze. Glycol quality specifications have also been established. Obtain copies of the specifications that you wish to meet, thoroughly read them and conduct any required tests, prior to stating that your antifreeze produced meets the specifications. WEBA Technology can provide assistance locating the necessary specifications/standards. To confirm that your finished products meet the required industry specifications, WEBA Technology recommends that you test your glycol and finished products at an accredited laboratory. Glycol should be tested for conformance with ASTM E1177 and/or ASTM D7713, and finished products should be tested for the ASTM performance tests listed on this product bulletin. Additionally, if you are using a process other than distillation for recycling your glycol tests should use the ASTM D6471/D6472 standards to determine the quality of your product. WEBA Technology can assist your company in preparing your samples for testing with pre-tests performed at the accredited laboratory. WEBA Technology will warrant our additive packages only if these procedures and the recommended blending and storage procedures are properly followed. In addition, the glycol or other base fluid used with our additive systems must meet industry or ASTM standards unless specifically exempted in our literature.

## Technical Contact Information

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