METALGUARD® H80

Heat Transfer Fluid Additive Package for High Aluminum Content HVAC Applications

Overview

METALGUARD H80 is a heat transfer fluid additive package that is based on organic acid technology (OAT). It was designed for multi-metal systems and systems made entirely or partly of aluminum. Traditional heat transfer fluids are usually phosphate-based (like fluids made with METALGUARD H50) and have a relatively high pH compared to OAT chemistry. While phosphate-based fluids provide good protection for most HVAC systems, and other heating/cooling systems made primarily of steel with some copper, cast iron and brass, they are not well-suited for all-aluminum systems operating above 150°F (65°C), especially all-aluminum boiler systems.

METALGUARD H80's organic acid-based formulation contains no nitrites, borates, or phosphates and provides a pH of 8.0-9.0 in 50% heat transfer fluid. It protects all commonly used metals, including aluminum, and it is compatible with most plastics and elastomers. Heat transfer fluids made with METALGUARD H80 can be used in any heating/cooling system, but it is the best choice for high-aluminum-content systems operating above 150°F (65°C). The organic acid salts used in METALGUARD H80 coat all metal surfaces for protection from corrosion. Azoles are included to supplement "soft" metal protection (copper, brass, solder and aluminum). Organic acid depletion rates are very slow, resulting in a fluid life at least as long as phosphate-based fluids without the necessity of boosting the phosphate content periodically.

Features & Benefits

- Designed especially for all-aluminum systems.
- Has a lower pH to protect aluminum.
- All-organic based formulation
- Does not contain borate, phosphate, nitrate, nitrite or 2-ethylhexanoic acid.
- Can be blended with ethylene glycol, propylene glycol or glycerin bases.
- Contains ingredients to protect all system metals.
- Compatible with most plastics, elastomers and types of rubber.

Industry Applications

Used to make finished fluids for:

- Best for use with aluminum boiler systems
- HVAC Systems, closed-loop systems
- Process heating and cooling systems

Specifications

Formulated to meet:

- **ASTM D8039**
- **ASTM D8040**
- **Tested using D1384 with limits well below those outlined in ASTM D3306.**

Quality Control & Technical Support

WEBA's products must pass rigorous quality control tests. They are tested for conformance with product specifications and industry standards. Certificates of analysis are provided with every shipment. WEBA Technology can help with many technical questions relating to the finished fluids our additives create, types of glycol and other bases, and assist with issues on products containing our inhibitor packages.

WEBA TECHNOLOGY

info@webacorp.com
www.webacorp.com

500 Cummings Center, Suite 6050
Beverly, MA 01915 USA
+1 812-822-3658

METALGUARD® H80

Version date: May 22, 2026
Supersedes: September 24, 2025

Product Specifications

As concentrated inhibitor package:		
Visual	Clear to slightly cloudy, clear to amber liquid	
Specific Gravity; 70ºF/21.1ºC	1.157-1.167	
pH	8.8-9.8	
As concentrated Heat Transfer Fluid		
	Ethylene glycol base	**Propylene glycol base**
Specific Gravity; 70ºF/21.1ºC	1.110-1.145	1.040-1.060
pH	8.0-9.0	8.0-9.0
Reserve Alkalinity	6 ml min	6 ml min
Freeze Point @ 50%	-34ºF (-36ºC) max.	-34ºF (-36ºC) max.

Blending & Use Instructions

Blending: Upon opening the drum of additive, stir thoroughly. Do not use high speed agitation. If you use only a portion of the drum (i.e. a few gallons at a time) you need to 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 heat transfer fluid concentrate: First charge the desired quantity of glycol to the blending tank. Heat the glycol to 50ºF (10ºC) or higher. Maintain the minimum temperature throughout the blending procedure. Good agitation is vital to making a consistent and proper product; agitate for 30-60 minutes after the addition of the additive package.

Use Rates

Light- duty applications: concentrated heat transfer fluid should be made by thoroughly blending METALGUARD H80 into ethylene glycol, propylene glycol or glycerin in an amount equal to 4% (by volume) of the glycol being treated. This H80 concentrate should be used in HVAC systems where constant circulation is present. The concentrate may be diluted down to a minimum of 30% by volume with deionized water. Blending can be done with glycol/additive temperatures as low as 50°F (10°C). Antifoam is also required.

Heavy-duty applications: use rate is 5.0% by volume in concentrate and 2.5% in 50/50. Antifoam is required where constant circulation is present.

For static use applications: such as fire protection system, freeze/corrosion protection or winterizing antifreeze, H80 treat rate in glycol concentrate should be from 2.6% to 4.0% by volume. Lower H80 concentrations may be used in shorter term situations, or situations in which glycol losses may be high (as in some line heaters and dehydrators).

Antifoam: For systems with circulation and pumps, add the appropriate amount of antifoam to allow your product to pass a foam test. Use 0.01% by volume or 0.5 gallon (1.90L) per 5000 gallons (18,925L) of heat transfer fluid concentrate (0.25 gallons/0.95L in 50/50). More may be needed depending upon glycol-base quality. Antifoam may be purchased in 5-gallon (18.93L) pails from WEBA.

Dye: As the last step add the color of dye that you wish to use. If you need help determining dye colors or use rates you may contact us.

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

Storage: Store concentrated additive packages above 60ºF (15.5ºC). If a container arrives cold to your warehouse, immediately place it in a hot room for 1-2 days then stir thoroughly prior to use. Alternatively, heating blankets may be used (follow local regulations regarding their usage) 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 100ºF (38ºC) for an extended duration, 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 heat transfer fluid concentrate is diluted with water, the water for dilution must be of acceptable quality. Deionized water is the best to use, but other sources of water are acceptable if they meet the water quality limits outlined in ASTM D8039.

Quality Control Procedures: WEBA strongly recommends that all heat transfer fluid producers have an internal, complete quality control program in place for manufacturing and testing of all products made for sale. It is recommended that in-service heat transfer fluids be inspected every 3-6 months to detect any obvious contamination, phase separation, cloudiness, precipitation or significant pH change. WEBA recommends a full analysis of the fluid at least once a year or when monitored physical properties indicate a problem.

METALGUARD® H80

Typical Properties

Typical Properties of Propylene Glycol Based Heat Transfer Fluids made with METALGUARD H80

Physical Property	*Temp (°F)*	*15% Glycol Solution*	*30% Glycol Solution*	*40% Glycol Solution*	*50% Glycol Solution*	*60% Glycol Solution*
Thermal Conductivity	40	0.265	0.253	0.234	0.215	0.199
[BTU/(hr • ft3) (°F/ft)]	180	0.307	0.291	0.267	0.241	0.220
	250	0.310	0.293	0.269	0.245	0.224
Specific Heat	40	0.885	0.862	0.820	0.774	0.724
[(BTU/(lb • °F)]	180	0.933	0.915	0.883	0.849	0.816
	250	0.958	0.944	0.913	0.882	0.845
Viscosity, Centipoise	40	3.11	3.59	4.94	6.81	9.93
	180	0.59	0.66	1.82	0.96	1.09
	250	0.37	0.40	0.47	0.55	0.59
Density, (lb/ft3)	40	65.19	65.71	66.61	67.50	68.33
	180	62.90	63.31	64.10	64.83	65.55
	250	61.05	61.42	62.15	62.81	63.44

Characteristics	**Using EG/PG Glycol**
Composition (Concentrate)	
Ethylene/Propylene glycol	96.0 volume % max.
Inhibitors & deionized water	4.0 volume % min.
pH	
50% solution	8.0-8.9
30% solution	7.8-8.5

Specific Gravity (60 °F)	Ethylene Glycol	Propylene Glycol
96% solution	1.110 min.	1.040 min.
50% solution	1.055 min.	1.015 min.

Flash Point	Ethylene Glycol	Propylene Glycol
96% solution	240 °F min.	220 °F min.
50% solution	none	none

Vol. % Ethylene Glycol	Vol. % Finished Product	Freezing Point °F	Boiling Point °F @760mmHg
15	15.6	23.6	215
30	31.2	3.7	220
40	41.6	-2.7	223
50	52.1	-34.6	226
60	62.5	-60.0	228

Vol. % Propylene Glycol	Vol. % Finished Product	Freezing Point °F	Boiling Point °F @760mmHg
15	15.6	22.7	213
30	31.2	8.4	216
40	41.6	-6.7	218
50	52.1	-28.6	222
60	62.5	-59.9	226

ASTM D1384 Results

METALGUARD H80 heat transfer fluid:

Specimen	#1	#2	#3	Avr.	Max*
Copper	1	1	1	1	10
Solder	1	1	1	1	30
Brass	0	0	0	0	10
Steel	1	1	1	1	10
Cast Iron	0	0	0	0	10
Cast Alum.	8	2	1	4	30

Tested using D1384 with limits well below those outlined in ASTM D3306. Maximum corrosion weight loss as specified by ASTM D3306.

The specifications listed in this bulletin are based on products produced with WEBA's additive packages, virgin glycol and deionized water. To confirm that your finished products meet the required industry specifications, WEBA recommends that you test your glycol and finished products at an accredited laboratory. WEBA will warrant our additive packages only if this procedure and the recommended blending and storage procedures are properly followed and documented. In addition, the glycol or other base fluid used with our additive systems should meet industry or ASTM standards unless specifically exempted in our literature.