

METALGUARD® H60

Food Grade/USP Heat Transfer Fluid Inhibitor Package

Overview

METALGUARD H60 is an NSF registered food grade heat transfer fluid additive package that is mixed with a USP grade propylene glycol base. It is used where it may come into incidental or accidental contact with food, beverage products or drinking water may occur. It may also be used in HVAC systems, fire systems, solar heating, refrigeration warehouse floor heating, sidewalk/playing field subsurface heating/cooling, cold room dehumidification systems, cosmetic or pharmaceutical processing, and it also makes an excellent additive package to make RV/marine winterizing antifreeze.

METALGUARD H60 contains food grade dipotassium phosphate as its primary inhibitor. All ingredients are classified as GRAS, or generally recognized as safe, by the FDA and acceptable as food additives (Food Additives Regulations, Subparts 182 and 184). The regulation for dipotassium phosphate is CFR 182.6285. It also meets Food Chemicals Codex. The METALGUARD H60 inhibitor package contains ingredients that help prevent corrosion of metals and buffers the pH to maintain it in the optimal range.

The recommended operating temperature range of METALGUARD H60 is -45°F (-50°C) to +250°F (120°C). The lowest temperature to which the finished product can be exposed depends upon the balance of glycol and water. METALGUARD H60 can be used to provide both freezing protection and burst protection for systems which may be exposed to very low temperatures.



Nonfood Compounds
Program Listed HTX-1
Registration # 147644



Features & Benefits

- NFS Approved and GRAS
- For use with propylene glycol
- Can be used for RV and marine storage antifreeze
- Provides both freeze and burst protection
- Contains ingredients to protect all system metals.
- Compatible with most plastics, elastomers and types of rubber.



Industry Applications

Used to make finished fluids for:

- Food Processing and Storage Facilities
- Refrigeration Coil Defrosting
- Blending and Food Packaging Plants
- Ice Skating Rinks
- Solar Heating Systems
- Sidewalk Deicing
- Farm systems
- RV and marine winterizing



Specifications

- 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.



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Product Specifications

As concentrated inhibitor package:

Visual	Clear to slightly cloudy, clear liquid
Specific Gravity; 70°F/21.1°C	1.127-1.133
pH	9.0-10.0

As concentrated Heat Transfer Fluid

	Propylene glycol base
Specific Gravity; 70°F/21.1°C	1.040-1.060
pH	9.0-10.5
Reserve Alkalinity	8 ml min
Freeze Point @ 50%	-34°F (-36°C) 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 50°F (10°C) 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 Rate: For concentrate add 4% by volume (based on the quantity of glycol being treated).

Dilutions: Glycol-containing METALGUARD H60 may be diluted to levels in the 30-50% glycol range with deionized water with no less than 1.2% by volume in any dilution.

Antifoam: Antifoam should not be added to Food Grade fluids. For industrial PG fluids and 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/10.95L 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 60°F (15.5°C). 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 100°F (38°C) 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.

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.

METALGUARD® H60



Typical Properties

Typical Properties of Propylene Glycol Based Heat Transfer Fluids made with METALGUARD H60

Physical Property	Temp (°F)	15% Glycol Solution	30% Glycol Solution	40% Glycol Solution	50% Glycol Solution	60% Glycol Solution
Thermal Conductivity [BTU/(hr • ft ³) (°F/ft)]	40	0.282	0.253	0.231	0.211	0.190
	180	0.327	0.285	0.255	0.228	0.199
	325	0.321	0.284	0.254	0.217	0.189
Specific Heat [(BTU)/(lb • °F)]	40	0.955	0.915	0.855	0.802	0.740
	180	0.989	0.967	0.924	0.886	0.839
	325	1.010	0.992	0.995	0.973	0.942
Viscosity, Centipoise	40	2.85	5.69	9.58	14.01	23.11
	180	0.49	0.62	0.81	1.00	1.21
	325	0.20	0.38	0.34	0.37	0.39
Density, (lb/ft ³)	40	63.67	64.76	66.33	67.00	67.60
	180	61.36	62.01	62.91	63.79	64.11
	325	58.28	58.61	58.73	59.02	59.04

Characteristics	Using Propylene Glycol
Composition (Concentrate)	
Propylene glycol	96.0 volume % max.
Inhibitors & deionized water	4.0 volume % min.
PH	
50% solution	9.0-10.5
30% solution	9.0-10.5
Specific Gravity (60 °F)	
96% solution	1.040 min.
50% solution	1.020 min.
Reserve Alkalinity	
96% solution	10.0 ml. min.
50% solution	5.0 ml. min.
Flash Point Propylene Glycol	
96% solution	220 °F min.
50% solution	none

Vol. % Propylene Glycol	Vol. % Finished Product	Freezing Point °F	Boiling Point °F @ 760 mm Hg
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

The regulation for propylene glycol is 21 CFR 184.1666 and for dipotassium phosphate it is 21 CFR 182.6285. WEBA Technology Corp's METALGUARD H60 is registered with the NSF, registration #147644; category code HTX1. WEBA Technology Corp's company number is: C0149720. For proof of registration letter, please email info@webacorp.com and request a copy of the NSF registration letter. Registration may also be confirmed by visiting www.nsf.org.

ASTM D1384 Results

METALGUARD H60 heat transfer fluid

Specimen	#1	#2	#3	Avr.	Max
Copper	5	6	6	6	10
Solder	1	1	1	1	30
Brass	1	1	1	1	10
Steel	0	0	1	0	10
Cast Iron	1	1	1	1	10
Cast Alum.	0	1	0	0	30

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