

WEBA TECHNOLOGY

Heat Transfer Fluid Additive Packages

WEBA Technology has developed its own proprietary additive packages for glycol/water type heat transfer fluids covering the range of application requirements from light-duty heating and air conditioning systems to heavy-duty compressor engine cooling systems and chemical processing heat exchangers. All the WEBA METALGUARD heat transfer fluid additive packages blend readily with glycol and provide corrosion prevention, fluid longevity, and consistent finished product quality. These additive packages may be used with either ethylene or propylene glycol.

METALGUARD H60 is Formulated to meet the following Specification

- ASTM D1384

This ASTM performance test includes all metals found in heat transfer fluid systems: steel, cast iron, aluminum, copper, brass and solder.

ASTM D1384 Results

As concentrated 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

*Maximum corrosion weight loss as specified by ASTM D3306

Technical Support

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

Quality Control

WEBA'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® H60

Food Grade/USP, Propylene Glycol-Based Heat Transfer Fluid Inhibitor Package



Nonfood Compounds Program Listed HTX-1 Registration # 147644

Product Description and Applications

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. For example it could 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 use and it also makes an excellent additive package to make RV storage 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 (Fourth Edition). See the bottom of the next page for the regulation.

The METALGUARD H60 inhibitor package contains ingredients that help prevent corrosion of metals, minimizes scaling and fouling of heat transfer surfaces, and buffers the pH to maintain it in the optimum operating range. The inhibitor system is based on a balanced high phosphate formulation and is compatible with all common metals in heat transfer fluid systems and is compatible with most plastic construction materials.

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 amount of water with which the concentrated product is mixed (see table on page 2). METALGUARD H60 can be used to provide both freezing protection and burst protection for systems which may be exposed to very low temperatures.

Propylene glycol containing METALGUARD H60 may be formulated to any concentration, with deionized water (see next page). METALGUARD

Typical Product Specifications

As concentrated METALGUARD H60 inhibitor package:

Visual	Clear liquid
Specific Gravity; 70°F/21°C	1.25-1.30
pH	10.0-11.0

As concentrated HTF (made with PG and METALGUARD H60):

Specific Gravity; 70°F/21°C	1.04-1.06
pH 50% glycol/water	9.0-10.5
Reserve Alkalinity	10 ml min

Technical Contact Information

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METALGUARD is a registered trademark



METALGUARD® H60

Food Grade/USP Propylene Glycol Based Heat Transfer Fluid Additive Package

NSF International
Performance Excellence
Program Listed HTX-1
Registration # 147644

Blending & Use Instructions

For heavy-duty applications such as use in cooling systems for large stationary engines, use a rate of at least 4% by volume (based on the quantity of glycol being treated) is recommended. METALGUARD H60 in glycol (either ethylene or propylene) will provide inhibitor levels consistent with those given above as typical, and will provide outstanding coolant performance and equipment protection.

For less demanding uses, shorter term applications or situations in which glycol losses may be high (as in certain line heaters and dehydrators) use rates from 2.6% to 4.0% often provide more than adequate protection from glycol oxidation and metal corrosion.

Water Quality And Dilution: Propylene or ethylene glycol-containing METALGUARD H60 may be diluted to levels in the 30-50% glycol range with deionized water. Higher hardness levels may cause excessive inhibitor consumption, scale deposits and metal pitting.

Storage: Store concentrated METALGUARD H60 additive package above of 60°F (15.5°C) at all times. Once a container is opened there is a possibility of the water base 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.

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 for information on creating a basic quality control program for your company.

Fluid Maintenance: Heat Transfer Fluids made with METALGUARD H60 should be examined every 6-12 months. If at 6-months a visual observation reveals no color change, precipitate formation or phase separation and a pH check indicates that the parameter is in its proper range, no action is required. A full analysis of the fluid at 12 months is recommended.

Finished Fluid Typical Properties for Reference in Blending Finished Fluids

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.