



# PRODUCT SPECIFICATION DATA SHEET



BOSS LUBRICANTS

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**BOSS MULTIGARD E.G. (ETHYLENE GLYCOL)**  
**BOSS MULTI GARD P.G. (PROPYLENE GLYCOL)**

Fully-Formulated Glycol-Based Heat Transfer Fluid for Aluminum Systems

## Product Features

- Inhibitor system is phosphate and nitrates free
- Can be used safely in all-aluminum systems
- Stable in water hardness up to 350ppm
- Operating range of -60°F (-51°C) to +350°F (176°)
- Unique additive package:
  - Controls corrosion of metals
  - Helps prevent scaling and fouling of heat transfer surfaces
  - Buffers the pH to maintain it in The optimum operating range

Organic-Acid-based with 3 organic acid salts and sodium tolyltriazole as the primary corrosion inhibitors.

- Organic Acid-protects "white" or "hard" metals (cast iron, steel, aluminum), and the "soft" or "yellow metals."
- Tolyltriazole-back-up protection "yellow" or "soft" metals, brass Bronze, copper, solder
- All-organic formulation

Protects all metals,, including aluminum  
From -50/45.5°C to 400°F/204°C

Should have a service life of 10-15 years. Has a longer life than phosphate-based HTF and a longer life before analysis or maintenance is required.

Multigard additive is much less sensitive to temperature: it can experience temperatures below 20°F/-6°C without any fall-out.

Additives add about 5°F/-15°C to  
Freeze point depression at 50/50

## OVERVIEW

**BOSS MULTIGARD E.G./ MULTIGARD P.G.** is a heat transfer fluid that is based on organic acid technology. It was designed for multi- metal systems and also systems made entirely or partly of aluminum. Traditional heat transfer fluids are usually phosphate-based, exhibit relatively high pH levels from 9.0-10.7, and protect aluminum at operating temperatures up to a maximum of 150°F (65°C). While these 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 can cause great damage to all-aluminum systems operating above 150°F, especially all-aluminum boiler systems.

**BOSS MULTIGARD E.G. / MULTIGARD P.G.** organic acid-based formulation contains no nitrites, amines, borates or phosphates and provides a pH of 8.0-8.5 in 50% heat transfer fluid. It protects all commonly used metals, including aluminum up to at least 350°F (176°C), and it is compatible with most plastics and elastomers. **BOSS MULTIGARD E.G. / MULTIGARD P.G.** can be used in any heating/cooling system but it is the best choice for high-aluminum- content systems operating above 150°F (65°). The organic acid salts used in BOSS MULTIGARD E.G./ MULTIGARD P.G. 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.

## BOSS MULTIGARD E.G. / MULTIGARD P.G.

### Applications – All-Aluminum Systems Including

- HVAC system freeze/burst/corrosion protection
- Process cooling/heating
- Solar heating
- Refrigeration warehouse floor heating
- Cold room dehumidify
- Ice skating rinks
- Sidewalk snow melting systems

### Operating Temperature Range and Freeze/Burst Protection

**BOSS MULTIGARD E.G. / MULTIGARD P.G.** has a recommended operating temperature of -60°F (-51°C) to +350°F (176°C).

**BOSS MULTIGARD E.G. / MULTIGARD P.G.** can be used to provide both freeze and burst protection for systems which may be exposed to very low temperatures. To obtain adequate freeze protection, select a glycol concentration with a freeze point at least 5°F below the lowest anticipated ambient temperature. (The concentration should be at least 30% to maintain adequate corrosion inhibitors).

### Corrosion Protection

**BOSS MULTIGARD E.G. / MULTIGARD P.G.** provides outstanding corrosion protection for copper, brass solder, steel, and cast iron and aluminum. It meets or exceeds ASTM D 1384, the standard industry corrosion test for these metals. It is also completely compatible with most plastics, elastomers and types of rubber. Its corrosion protection system includes organic acid technology which coats iron, steel and aluminum metal surfaces to protect them from acidic attack and rust formation with a thin molecular coating that doesn't cause fouling or significantly reduce heat conduction through the metal heat transfer surfaces. **BOSS MULTIGARD E.G. / MULTIGARD P.G.** also contains tolytriazoles to protect copper, brass and solder from attack and oxygen scavengers to provide further protection from rust and pitting. A very effective buffering system neutralizes acids formed by the normal thermal and oxidative degradation of glycols, thus maintaining the pH in its optimum range.

### Water Quality Requirements

Water used to dilute **BOSS MULTIGARD E.G. / MULTIGARD P.G.** can be low-hardness, city water or well water, although the use of **deionized** water or distilled water is best. It is recommended that water with no more than 350 ppm hardness be used to dilute **BOSS MULTIGARD E.G. / MULTIGARD P.G.** or be used as make-up water.

## BOSS MULTIGARD E.G. / MULTIGARD P.G.

### Typical Properties

Physical Property	Temp (°F)	15% Glycol Solution	30%Glycol Solution	40%Glycol Solution	50%Glycol Solution	60%Glycol Solution
Thermal Conductivity [BTU/(hr-ft3) (°F/°Fft)]	40	0.265	0.253	0.234	0.215	0.199
	180	0.307	0.291	0.267	0.241	0.220
	250	0.310	0.293	0.269	0.245	0.224
Specific Heat [BTU/(lb°F)]	40	0.885	0.862	0.820	0.774	0.724
	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

<b>Characteristics</b>		Vol. % Ethylene Glycol	Vol. % Multigard E.G.	Freezing Point °F	Boiling Point °F @ 760 mm Hg
<b>Composition (Concentrate)</b> Ethylene/Propylene glycol 96.0 volume % max Inhibitors & deionized water 4.0 volume % min.					
<b>Color</b>	Multigard P.G. Purple Multigard E.G. Clear	15	15.6 30	23.6 31.2	215 3.7 220
<b>pH</b>		40	41.6	-2.7	223
	50% solution 8.0-8.5	50	52.1	-34.6	226
	30% solution 7.8-8.3	60	62.5	-60.0	228
<b>Specific Gravity (60°F) Ethylene Glycol</b>		Vol. % Propylene Glycol	Vol. % Multigard P.G.	Freezing Point °F	Boiling Point °F @ 760 mm Hg
	96% solution 1.112 min				
	50% solution 1.055 min				
<b>Specific Gravity (60°F) Propylene Glycol</b>					
	96% solution 1.035 min	15	15.6	22.7	213
	50% solution 1.015 min	30	31.2	8.4	216
<b>Flash Point Ethylene Glycol</b>		40	41.6	-6.7	218
	96% solution 240°F min	50	52.1	-28.6	222
	50% solution none	60	62.5	-59.9	226
<b>Flash Point Propylene Glycol</b>					
	96% solution 220°F min				
	50% solution none				

In order to continue to provide superior quality, BOSS LUBRICANTS reserves the right to change composition of its products without notice. For the location of the Distributor nearest you, please call 1-800-844-9457 or fax (403) 279-2272 #112, 6303 30<sup>th</sup> Street S.E. Calgary, AB T2C 1R4

Website: [www.bosslubricants.com](http://www.bosslubricants.com)