



## ETHYLENE & PROPYLENE GLYCOL HEAT TRANSFER SOLUTIONS

ATLANTIC CHEMICAL & EQUIPMENT COMPANY'S heat transfer products **ACE FROSTGUARD/FROSTSAFE (Ethylene Glycol-based)** and **PIPEGUARD/PIPESAFE (Propylene Glycol-based)** are the ideal answer to inadequate freeze protection of HVAC systems. Both glycol based fluids can provide fluid freeze protection to -60F and system burst protection below -100°F.

Additionally, ACE heat transfer fluids can be supplied with specially formulated inhibitors that are designed to prevent costly corrosion of system components. The inhibitors used in the products are blended to maintain a stable pH by reacting with any organic odors that may be formed. These odors, if left untreated, can lower the pH of the solution thereby creating a corrosive environment.

Due to different chemical properties and slight performance variations, the choice between ethylene glycol and propylene glycol based heat transfer solutions depends largely on the needs of the user and the specifications of the HVAC system or other application requiring an industrial heat transfer solution.

Both products provide effective freeze and burst protection in heat transfer fluid applications. Ethylene glycol offers slightly more effective freeze protection and better heat removal capabilities when used at higher concentrations. There is essentially no difference in burst protection of pipes, as a 35% solution of either glycol will provide safety down to -60\*

**ACE FROSTSAFE (EG)** has an effective temperature range of -60°F to -250°F. **ACE FROSTSAFE (EG)** is used in the food industry for the continuous defrosting of coils in large refrigeration and freezer units where temperatures are too low to use propylene glycol based products. **ACE FROSTSAFE (EG)** should not be used where direct contact with food products is possible due to its moderate oral toxicity.

In these circumstances, **ACE PIPESAFE PLUS (PGFG55)**, a USP food grade propylene glycol solution is recommended because of its low toxicity and virtual absence of odor. As with any fluid in food processing applications, good manufacturing practices are required. **ACE PIPESAFE PLUS (PGFG)** is manufactured from ingredients "generally regarded as safe" (GRAS) by the FDA as food additives under Parts 182 and 184 of the Food Additive Regulations.

**ACE PIPESAFE (PG)** is an industrial grade propylene glycol and has an effective temperature range of -28°F to 250°F for continuous use. The fluid can, however, be used to protect enclosed heat transfer systems from freeze damage at well below -60°F. **ACE PIPESAFE (PG)** should be used in "non-food contact" applications that require a material with lower toxicity than **ACE FROSTSAFE (EG)**

It is worth noting, when used at lower temperatures; the high viscosity of propylene glycol based fluids requires increased pump power capacity. Ethylene glycol's lower viscosity reduces pump power wear and subsequent maintenance costs.

If appropriately handled both fluids present little or no hazard to people who work with HVAC systems or in other industrial applications. Also, exposure to either product in these systems is usually minimal since heat transfer solutions with corrosion inhibitors typically exhibit life times in excess of 10 years.

The choice between ethylene and propylene based fluids should be determined by the performance

requirements of the specific application and the potential for exposure. In applications where the heat transfer fluid could come into contact with potable water, food or other consumables, propylene glycol based fluids are recommended due to their inherent lower toxicity.

#### Freeze/Boiling Points of Aqueous Solutions

Ethylene Freeze Temperature	Propylene Freeze Temperature	Glycol By Volume	Ethylene Boil Temperature	Propylene Boil Temperature
26	26	10	214	212
16	19	20	216	213
4	8	30	220	216
-12	-7	40	222	219
-34	-28	50	225	222
-60	-60	60	232	225

## FROSTGUARD & PIPEGUARD

ACE also offers **ACE FROSTGUARD (EG60)** and **PIPEGUARD (PG60)** of heat transfer solutions. These products are 60% glycol solutions and contain a corrosion inhibitor package. When applied to a system as a ready-to-use material, both products provide "burst protection" down to -100°F.

#### HEALTH and SAFETY

Test data indicates that both products biodegrade in the environment or when properly introduced into a wastewater treatment process. Large spills can however result in short term stress on the immediate environment by rapidly consuming oxygen during the biodegradation process.

Although inherently lower in toxicity if formulated with propylene glycol, both products should be treated with proper handling and safe disposal precautions regardless of their glycol content. Contact your local EPA office to determine correct disposal procedures.

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