

# HUSSMANN®

## Inhibited Propylene Glycol Secondary Fluid System Requirements

Hussmann's laboratories have tested the concept, function, and reliability of inhibited propylene glycols for use as a secondary fluid for refrigerated systems in accordance with ASHRAE guidelines, UL and NSF standards.

The installation of a secondary fluid system must comply with the Safety Standard for Refrigeration Systems (ANSI/ASHRAE Standard 15), Refrigeration Piping Standard (ASME B31.5) and State and municipal building codes. Failure to follow requirements outlined in this document may result in corrosion of components.

Do NOT use Ethylene Glycol. Use of any secondary fluid other than inhibited propylene glycol is prohibited and voids the Hussmann limited warranty.

Hussmann merchandisers are designed to operate in a controlled environment of 75°F (24°C) and less than 55% R.H. Merchandisers will not operate properly in environments of extreme temperature and humidity [above 75°F (24°C) and 55% Relative Humidity].

Refer to the glycol usage tables at [Hussmann.com](http://www.hussmann.com):  
<http://www.hussmann.com/ServiceAndParts/Pages/GlycolUsage.aspx>

Settings in these tables should be the starting point when setting up a glycol refrigerant system, with adjustments to flow rate to compensate for external environmental effects such as:

- ambient temperature
- relative humidity
- external air flow patterns
- external heat sources such as:  
(ovens, grills, etc.)

Additional adjustment may be required

- if shelves are added, moved, or removed
- if the product load changes significantly
- during heavy shopping seasons

### Piping Requirements

All field-installed materials that meet pressure and temperature ratings, material compatibility requirements and state and local building codes may be used for secondary systems with inhibited propylene glycol.

#### Plastic

Any plastic piping used must be reliably proven, before installation, to meet all pressure, temperature and material compatibility requirements. Before using unproven plastic piping, check with the manufacturer to determine the suitability of the material for use with inhibited propylene glycol. ABS is recommended over other types for this application because of the operating temperature.

#### Copper

Copper pipe of M, K, or L grades can be used. Warning: Only flux materials formulated from water-soluble compounds that do not contain zinc or zinc compounds may be used for soft soldering. Copper to copper joints may be soft soldered or brazed. Soft solder must be used where the component manufacturer's installation instructions recommend.

#### Steel

Schedule 40 carbon steel pipe or stainless steel pipe (or tubing) is acceptable. Piping, valves and fittings can be made of ordinary steel or ductile iron but not gray steel. Do not use galvanized steel.

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### System Fluids

Only distilled or deionized water is approved by Hussmann. Never mix fluids from different manufacturers. Use premixed fluid, not concentrated. However, a small amount of concentrate should be kept on hand to allow for adjustment to the solution during start-up. If the mixing is to be done on site, use only distilled or de-ionized water.

A refractometer, calibrated for fluids at room temperature, is used to measure dilution. Inhibited propylene glycol used in the system must be approved for use by the FDA.

Hussmann recommends using DOWFROST™ inhibited propylene glycol. Pre-diluted solutions (35% inhibited propylene glycol) of DOWFROST™ are available from Dow. The ingredients in DOWFROST™ have been approved by the FDA and are listed as chemically acceptable by USDA.

The Dow Chemical Company  
Midland, MI 48674  
1-800-447-4369  
www.dow.com

Requirements on system fluid:  
Pre-mixed 35% inhibited propylene glycol

#### Typical Fluid Properties

Solution Composition	35% inhibited propylene glycol by weight
pH of Solution	8.0 – 10.0
Specific Gravity (at 60°F)	1.033
Viscosity (at 20°F)	14.2 cP
Boiling Point of Solution	217°F
Freezing Point of Solution	2°F
Refractive Index (at 72°F)	1.3733

### System Balancing

Balancing is required to provide adequate coolant flow to each circuit in order to maintain the required case or room temperature and ensure food integrity. Balancing is achieved through the setting of balance valves located throughout the system piping.

The installation contractor must consult and be familiar with the manufacturer's Material Safety Data Sheets (MSDS) before handling any secondary fluid. The MSDS contains proper disposal and safety methods.

### Pre-Installation System Cleaning

Dow recommends the new piping system be cleaned using a 1-2% solution of trisodium phosphate (TSP), or equivalent cleaner and distilled or deionized water to remove grease, mill scale, or other residues from construction. Repeat this process if necessary until the drained solution is clear and free from visible debris. The system should then be drained and flushed again using distilled or deionized water.

Hussmann only recommends distilled or deionized water for system flushing with 2% TSP. Dry nitrogen can be used for the initial pressure test, (60 to 75 psi), hold for three hours.

### NOTICE

**Use only distilled or de-ionized water for flushing with 2% TSP. Use a pre-mixed inhibited glycol solution. If the mixing is to be done on site, use only distilled or de-ionized water. Do not use city water.**