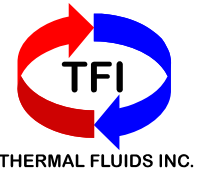


ThermalStar™



FULLY INHIBITED PROPYLENE GLYCOL HYDRONIC HEAT TRANSFER FLUID

Product Description

ThermalStar hydronic heat transfer fluid is a fully inhibited propylene glycol based solution designed for applications where incidental contact with humans, food, or beverage products could occur. It is for this reason that **ThermalStar** is produced using only new, virgin USP grade propylene glycol. The inhibitor package is scientifically formulated of new, food grade ingredients and blended into the propylene glycol under tightly controlled manufacturing procedures.

Applications

ThermalStar is recommended for use in all closed primary and secondary heating, cooling, and refrigeration systems. Other applications include radiant heat, snow melt, and various deicing, defrosting, and dehumidifying systems.

Health and Safety

Please refer to the **ThermalStar** material safety data sheets (MSDS).

Typical Physical Properties

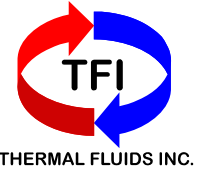
- ◆ Propylene glycol-USP Grade 95%
- ◆ Inhibitor Package & Water 5%
- ◆ Color Colorless
- ◆ pH of solution @50% glycol 9.0 – 10.5
- ◆ Specific gravity @ 60/60°F 1.050 – 1.060
- ◆ Reserve Alkalinity (min) 11.0 ml

Freeze and Burst protection

Temperature	Freeze Protection Volume %	Burst Protection Volume %
20	18	12
10	29	20
0	37	25
-10	44	29
-20	48	31
-30	53	34
-40	56	36
-50	59	36
-60	62	36

NOTE – Burst protection is based on tests performed on metallic components commonly used in industrial and commercial systems such as steel, copper, brass, and cast iron. Greater percentages of ThermalStar may be required in systems composed of, or containing, plastic or ceramic components.

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Dilution Water Quality

Water quality is essential to the proper effectiveness of the **ThermalStar**/Water solution. Thermal Fluids highly recommends the use of deionized or distilled water when diluting the concentration of **ThermalStar**. Total hardness should be less than 100 ppm expressed as ppm calcium carbonate. Both chlorides and sulfates should be less than 25 ppm each.

Introducing ThermalStar into the System

- 1) Prior to adding the **ThermalStar** solution into the system, a thorough pressure test must be completed.
- 2) Thoroughly clean new or mildly corroded systems with a 1% to 2% solution of trisodium phosphate in water then flush with clean water.
- 3) Calculate the total quantity of **ThermalStar** and high quality water for the entire system.
- 4) Add the **ThermalStar**/water solution allowing for any liquid expansion needed for all operating temperatures.
- 5) Circulate for a minimum of 24 hours and check the glycol concentration as previous cleanings and flushings may have left minor quantities of water in the system.