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CRYO-TEK™ SOLAR SYSTEM Anti-Freeze

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Hercules Cryo-Tek Solar System Anti-Freeze is a blend of virgin (not recycled) propylene glycol and high purity Triple Protection additives, formulated for use in closed loop anti-freeze heat exchanger systems. **Solar System Anti-Freeze** can also be used in radiant tube heating systems and geothermal loops. Hercules exclusive Triple Protection formula stabilizes pH to prevent acid corrosion, chelates hard water minerals, and inhibits formation of scale and sediment. These components work together to keep the system clean and operating efficiently by eliminating system deposits, improving heat transfer and minimizing wear to moving parts and seals. **Solar System Anti-Freeze** is compatible with PEX and elastomeric radiant tubing, commonly used materials for seals and bushings, and provides corrosion protection for aluminum, steel, stainless steel, rubber and most plastic components. **Solar System Anti-Freeze** is a 94-98% efficient heat transfer solution in most application dilutions. Certified Performance: Freeze Protection Down to -60°F / -51°C, Pumpable* down to -70°F / -57°C, and Burst Protection Down to -100°F / -73°C. It has a lower freeze point and higher boiling point than water and is non-flammable, odorless, non-toxic, and non-irritating.



*"Pumpable" down to protection levels are estimated and are dependent on system and equipment. Attempting to circulate fluid below freeze point may overload and/or cause pump failure.

APPROVALS & LISTINGS

The virgin propylene glycol used in **Cryo-Tek** is "GRAS" (Generally Recognized As Safe) for incidental contact with food.

SPECIFIC USES

For use in solar systems, heating or cooling systems with aluminum, steel, stainless steel, rubber and most plastic components.

SPECIFIC APPLICATIONS*

Use Solar System Anti-Freeze in solar heating systems that require freeze protection. Add Solar System Anti-Freeze to protect pipes from freezing and bursting. Operating Temperature Range for Closed System: Up to 250°F.

*For special applications which may not be covered on this or other Oatey literature, please contact Oatey Technical Services Department by phone 1-800-321-9532, or fax 1-800-321-9535, or visit our technical database web-site at www.Oatey.com.

DIRECTIONS FOR USE (see product label for further details)

1. **CLEAN THE SYSTEM** - It is recommended that any system, whether new or existing, be thoroughly cleaned prior to being charged. Any system contaminated with dirt and other materials reduces efficiency and wears the system prematurely. New systems need to be free of flux, solder residue, grease and any foreign particles. See product label for further cleaning recommendations.
2. **MEASURE THE TOTAL CAPACITY OF THE SYSTEM** – Either by measuring the capacity directly or by estimating to total capacity. See container for detailed estimating procedures.
3. **SELECT DESIRED TEMPERATURE COVERAGE**

% Concentration of Solar Antifreeze	Mixing Ratio		Freeze Protection Down to	Protections	
	Parts of Solar Antifreeze	Parts of Water		Pumpable Down to	Burst Protection Down to
100%	undiluted	-	-60°F / -51°C	-70°F / -57°C	-100°F / -73°C
75%	3	1	-18°F / -28°C	-32°F / -35°C	-75°F / -60°C
60%	3	2	+2°F / -17°C	-20°F / -29°C	-50°F / -46°C
50%	1	1	+12°F / -11°C	+5°F / -15°C	-20°F / -30°C

4. **DETERMINE AMOUNT OF PRODUCT REQUIRED IN SYSTEM**-Determine the amount of product needed in system by multiplying total system capacity in gallons by the concentration factor (first column in chart above).

$$\text{Total System Capacity (gal)} \times \text{Concentration Factor of Product (\%)} = \text{Amount of Product to be used (gal)}$$

5. **CHARGING THE SYSTEM**-System should be completely empty with pumps shut off. All internal valves, including zone valves, should be open.
THE ENTIRE SYSTEM SHOULD BE OPEN TO PREVENT ANY AREA OF IT FROM BEING ISOLATED. First, add the computed amount of product, second add water if necessary. The main objective is to fill the system with little or no air trapped in it.
 - a. After providing for an air exit, pump solution into system through the drain valve using a small pump. OR
 - b. Pour solution through a removed air vent at the HIGHEST point in the system.
6. **PURGE THE AIR IN SYSTEM**– Air (which includes oxygen) trapped in a system not only results in inefficiencies in the operation of the system (wasted energy and excessive noise), it can also cause corrosion. To prevent this, the system, once filled, needs to be purged of all air. For best results, system may need to be purged several times.
7. **TEST THE SYSTEM**-Once installed and fully operational, use **Hercules Refractometer** and **pH Meter** or **Hercules Cryo-Tek Test Strips** to test fluid to assure proper freeze and corrosion protection.
8. **MAINTENANCE**-Any system with anti-freeze products installed must be tested annually for product concentration and inhibitor levels using **Hercules Refractometer** and **pH Meter** or **Hercules Cryo-Tek Test Strips**. If product concentration levels are low, add additional product. If inhibitor tests low, add **Cryo-Tek AI Inhibitor** (Item 35274) per label instructions.

PHYSICAL PROPERTIES

pH:	7.0 - 8.5
Specific Heat:	BTU/lb°F@160°F: 0.806
Density (lb/gal):	60°F - 65°F: 8.74 lb./ gal
Boiling Point:	230°F / 110°C
Specific Gravity:	60°F - 65°F: 1.050
Appearance and color:	Green, Odorless

WARNINGS OR CAUTIONS

- Read all cautions and directions carefully before using this product.
- **KEEP OUT OF REACH OF CHILDREN.**
- **Solar System Anti-Freeze is not recommended:**
 1. For use in systems containing galvanized components.
 2. For use in systems with CPVC pipe and fittings, check with pipe manufacturer.
 3. For open solar systems and systems where operating stagnation temperatures are regularly over 300°F / 150°C.
 4. For systems with concentrating solar collectors or evacuated tube solar collectors.
 5. For use in steam systems.
 6. For use in internal combustion engines as a coolant.

CAUTION REGARDING COMPETITIVE PRODUCTS:

Solar System Anti-Freeze is formulated using virgin propylene glycol and high purity Triple Protection Additives for assurance of materials compatibility and non-toxicity characteristics. Dilution or mixing of this product with other manufacturers' products may compromise these critical requirements and is not recommended.

MATERIAL SAFETY INFORMATION

FOR MORE INFORMATION ON THIS PRODUCT, REQUEST SAFETY DATA SHEET (SDS) #7382E

For Delivery By Fax	Call 1-800-321-9535
Internet	See SDS section of www.Oatey.com

HMIS® ratings Health: 0
 Flammability: 0
 Physical hazard: 0