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## WATER TREATMENT

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Koolant Koolers recommends that an inhibited ethylene glycol solution be used in its chillers. Inhibited ethylene glycol solutions will prevent rust in ferrous material systems and it will keep algae and bacteria from growing inside the system. Use a minimum of 25% glycol (by volume) mixed with water. Use a maximum of 50% if freeze protection is required. If low toxicity glycol is desired or required, use an inhibited propylene glycol.

**CAUTION:** Do not mix brand names or types of glycol as this may result in the inhibitors precipitating out of solution.

**CAUTION:** Galvanized steel is not recommended because the zinc will react with the inhibitor in the fluids, causing precipitate formation, depletion of the inhibitor package, and removal of the protective zinc coating, particularly above 100°F. Precipitation can also lead to localized corrosion.

**Always refer to the original equipment manufacturer's water quality treatment requirements to which the chiller is connected before treating water.**

**NOTE:** The use of automotive antifreeze in an industrial system can cause extensive damage to the cooling system. Automotive antifreeze contains a corrosion inhibitor system that is best suited for today's car cooling system, with its large number of aluminum components and its intermittent system operation. The silicate/silicone inhibitors in antifreeze provide corrosion protection by coating the aluminum surfaces to protect when the system is not operating (>50% of the time). This coating, while protecting against corrosion, reduces the capacity of the metal to transfer heat and to cool the engine. In an industrial system which operates continuously, and which contains little to no aluminum, the silicate/silicone inhibitor system merely serves to reduce heat transfer and cooling capacity and is not beneficial in protecting against corrosion of the non-aluminum surfaces.

In addition to reducing the heat transfer and cooling capacity of the system, automotive antifreeze poses a more long-term, but more detrimental, threat to the system. The long term solubility and compatibility of the silicate/silicone inhibitor system with the ethylene glycol is poor. Over time, the silicates will react with the glycol to form a gel-like film. This gel further reduces heat transfer by coating cold surfaces, restricts flow in the system, and may plug piping completely, potentially causing catastrophic failure. When phosphates or water hardness ions are present in the system with the silicate inhibitor, gritty sand may form along with the gel. As these gritty particles circulate with

the coolant, they are very abrasive and may erode and corrode the metal walls of the system. Additionally, as a result of this abrasiveness, pump seal failure is more likely. <sup>2</sup>

Pure ethylene glycol must not be used, as it is more corrosive than untreated water.

This is why we recommend the following companies.

For further information or for the nearest distributor contact:

1. Dow Chemical Company, 1-800-447-4369
  - A. Ethylene glycol - Dowtherm®<sup>1</sup> SR1
  - B. Propylene glycol - Dowfrost®<sup>1</sup>
2. Union Carbide Company, 1-800-568-4000
  - A. Ethylene glycol – Ucatherm
3. In addition to the companies listed above, Koolant Koolers offers its own brand of inhibited ethylene glycol called “K-Kool E” as a service to its customers. Call 1-800-968-5665 (1-800-YOU-KOOL) and ask for the parts department for more information.

If you have any other questions regarding the use of glycol or other water treatment issues for your Koolant Koolers chiller, please contact the factory at the 800 number listed above and ask for the service department.

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<sup>1</sup> Dowtherm and Dowfrost are registered trademarks of the Dow Chemical Company

<sup>2</sup> Ucartherm Technical Bulletin # F-80160