



Dow Industrial Solutions

Protect Quality & Peace of Mind with DOWFROST™

Heat Transfer Fluid for Craft Breweries

Benefits of DOWFROST™ Inhibited Propylene Glycol-Based Heat Transfer Fluid as a Coolant in Brewing

Cool & Consistent

Propylene glycol has attractive health and safety characteristics that enable preferred solutions for heat transfer fluids, especially in food and beverage manufacturing. However, not all propylene glycol-based heat transfer fluids perform the same. For craft brewers, who work tirelessly to perfect the quality of their beer, this distinction could have a significant impact on their breweries and product. Heat transfer fluids made from inferior grades of propylene glycol and those containing excessive contaminants can cause corrosion and fouling, shorten equipment life, impair temperature control, and adversely affect flavor characteristics of the beer itself. DOWFROST™ inhibited propylene glycol-based heat transfer fluid provides peace of mind by enabling reliable, long-lasting, and dependable performance.

Improving Temperature Control

Craft brewers select and combine the right ingredients and brewing method to achieve distinctive flavor, color and body so passionately that it may be considered an art but so carefully that it resembles a science. The diligent brewer ensures that the science throughout the entire



brewing process reflects that commitment to quality and also to safety. That requires selecting the right heat transfer fluid for your system.

The ability to accurately control temperature throughout the brewing process plays an important role in producing high quality beer and in having desirable and reproducible flavor characteristics. DOWFROST™ inhibited propylene glycol works in conjunction with a non-ozone depleting primary refrigerant like ammonia to provide necessary cooling and refrigeration for secondary fermentation vessels. DOWFROST™ fluid is capable of

providing effective heat transfer down to temperatures as low as 0° degrees Fahrenheit. Made from food grade propylene glycol that meets FDA and NSF regulations for low toxicity, DOWFROST™ fluid provides peace of mind for brewers. In the event of accidental spills or leaks, DOWFROST™ fluid is essentially non-toxic, non-flammable, and considered environmental friendly. Even minor external leaks from pump seals or valves can represent regulatory reporting headaches if the heat transfer fluid has toxicity or industrial handling safety issues, making non-toxic food grade propylene glycol the ideal choice for a heat transfer fluid solution.

Protecting Your System

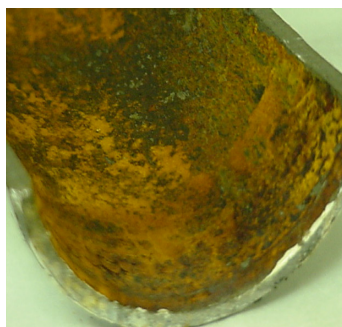
DOWFROST™ heat transfer fluid uses only high purity raw materials and contains food grade corrosion inhibitors. Inferior products may offer lower cost but they cannot provide long term protection of pipes, pumps, tanks and chillers. Registered with NSF, DOWFROST™ is acceptable for use as a heat transfer fluid where there is possibility of incidental food contact. DOWFROST™ fluid does not contain toxic compounds or harmful contaminants which can cause significant corrosion of common metals like steels and copper.

Improperly formulated propylene glycol accentuates corrosion and fouling problems. Excessive impurities and contaminants cause corrosion and fouling of heat transfer surfaces which will compromise temperature control and shorten equipment life. Normally fixing these problems requires taking your refrigeration system off-line to allow for cleaning and repair of damaged equipment and replacement of the defective, contaminated heat transfer fluid. Avoid the pitfalls of operating with an inferior fluid by choosing DOWFROST™ fluid for your brewery's system. Dow provides hands-on technical support to appropriately formulate your system's fluid, advising on dilution to avoid corrosion and bio-fouling, providing recommended dilution water quality for best performance, and offering analytical support.

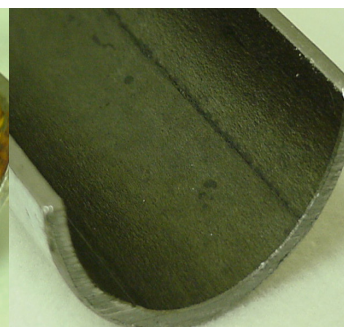


**Propylene Glycol
without Inhibitors**

**Water
without Inhibitors**



**Exposed to plain
Polyglycol + Water**



**Protected by DOWFROST™
Inhibited PG**



Protecting Quality & Peace of Mind

The importance of quality raw materials remains a key factor. Of course, every heat transfer fluid will degrade over its lifetime. Degradation compounds will build over time and combine with impurities originally present in the new fluid. This is natural and unavoidable. Once the total amount of impurities and degradation compounds exceed the critical threshold, where corrosion inhibitors become overwhelmed, the fluid must be replaced. No amount of additional corrosion inhibitors or additives can negate or undo their potential harmful effects. To prolong fluid lifetime and lower your cost of ownership, DOWFROST™ fluid is the only inhibited glycol made with Dow PuraGuard™ Propylene Glycol USP/EP, a pharmaceutical grade of monopropylene glycol with specified purity greater than 99.8%.

Protecting expensive brewing equipment is one thing. Protecting the quality and reputation of your beer is another. Pick a fluid that provides you the peace of mind you deserve so that you can focus on perfecting your craft.





Product Stewardship

Dow has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our product stewardship philosophy by which we assess the safety, health, and environmental information on our products and then take appropriate steps to protect employee and public health and our environment. The success of our product stewardship program rests with each and every individual involved with Dow products - from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

Customer Notice

Dow strongly encourages its customers to review both their manufacturing processes and their applications of Dow products from the standpoint of human health and environmental quality to ensure that Dow products are not used in ways for which they are not intended or tested. Dow personnel are available to answer your questions and to provide reasonable technical support. Dow product literature, including safety data sheets, should be consulted prior to use of Dow products. Current safety data sheets are available from Dow.

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