Dow Industrial Solutions

Craft Breweries Keep it Cool and Consistent

DOWFROST™ Inhibited Propylene Glycol-Based Heat Transfer Fluid

Big Brewers, Small Brewers, Most Brewers Choose Dow

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.

From nationally known and widely admired brands like Deschutes Brewery of Oregon and Bell's Brewery of Kalamazoo Michigan, to smaller brewing operations like Mountain Town Brewing Company, which enjoys an excellent local reputation in mid-Michigan, brewers who care about quality know the importance of selecting the right heat transfer fluid for their system. That's why they choose DOWFROST™ inhibited propylene glycol heat transfer fluid.

In fact, so many beer and wine makers use DOWFROST™ fluid that it has led the industry for over 50 years. Bell's Brewery and Deschutes Brewery are among the top 15 largest craft breweries out of over 2,000 operating in the United States. Both produce hundreds of thousands of barrels each year and have grown rapidly largely based on their reputation for making quality beers.

Glycol and steam supply pipelines

Consistent Quality from Consistent Temperatures

Subtle differences between batch to batch brewing temperatures, particularly during primary and secondary fermentation stages, can affect the taste, color and aroma of beer. Just a few degrees higher means yeast will produce larger amounts of ester-based components; even when present at part per quadrillion levels, these can have a profound effect on flavor. DOWFROST™ fluid was selected by Bell's as their secondary coolant because their brewing operations leaders recognized the importance of consistent temperature control in making quality beer.


Brewery heat exchanger

"We have been using DOWFROST™ fluid here at Bell's for about 18 years," said John Mallett, director of operations for Bell's. "We would not be interested in considering another brand of coolant, because we know the quality we are getting with Dow."

Many craft brewers produce more individual brands than macrobrewers, frequently featuring a mix of top- and bottom-fermenting recipes that call for distinctly different temperature control profiles. Non-dedicated equipment used to produce more than one style of beer may require different temperature profiles throughout the year. Those are a few of the reasons craft brewers rely on a coolant like DOWFROST™ fluid that allows very precise control of temperature in wort coolers, primary fermenters, secondary fermenters, and other equipment. Used at 25 to 45% in aqueous solutions, this fluid provides dependable temperature control across an operating range from -50°F to 250°F (-46°C to 121°C).

Continuing to grow as their reputation for consistent quality spread, Bell's Brewery produced 373,000 barrels in 2015, but even much smaller brewing operations recognize the importance of dependability. Mountain Town Brewing Company's owner Jim Holton asserts that temperature control is vital to maintaining the quality and consistency of the regional brewer's beers.

"With our ales, it's very important that we keep temperatures very close to 70 degrees," said Holton. "Too much above that, and we could have trouble with off-flavors from wild yeast strains. We're very pleased with the temperature control we get with the DOWFROST™ fluid, and we plan to continue to use it as we grow our operation."

Deschutes Brewer, a much larger operation, produces over 250,000 barrels annually. A 200 HP primary chiller services 35 fermentation tanks, 15 bright beer tanks, and a flash pasteurizer. Deschutes produces more than twenty different beers in a wide range of styles, including porters, pale ales, IPAs, stouts, and many seasonal recipes. Deschutes also prides itself on its innovative "bold, small batch experiments". All of these recipes have unique temperature requirements according to Deschutes' Utilities Manager Tim Alexander.

"We're always looking for temperature control that's as accurate as we can get it," said Alexander. "Most of our production is top-fermenting ales between 60 and 65 degrees F, but we also brew lagers at 50 to 55 degrees. With some of our special Belgian beers, we ferment as high as 75 degrees. We rely a lot on the heat transfer fluid to provide consistent results from batch to batch. That's one of the reasons we've been using DOWFROST™ Fluid for as long as I can remember."

Safe for Food and Beverage Manufacturing

Like other food and beverage product manufacturers, craft brewers must take process safety very seriously. DOWFROST™ inhibited propylene glycol continues to be the safest, least toxic, and most trusted brand within the beer making industry. All components used in DOWFROST™ fluid are approved by the FDA as direct food substances and are affirmed to be generally regarded as safe (GRAS). The food safe corrosion inhibitor used in DOWFROST™ fluid not only helps prevent corrosion of metals commonly used for construction of brewery process equipment, but helps ensure long term thermal stability of the fluid. In the event of an accidental leak, the food grade status of DOWFROST™ fluid ingredients provides safety assurance.

When they started about 20 years ago as a small brewpub operation, Mountain Town Brewing wanted to ensure their peace of mind with a quality low toxicity fluid, according to Jim Holton.

"From the word 'go,' I wanted to be sure we were using all food-grade materials, and that was a key reason for us to specify DOWFROST™ fluid, "said Holton. "When we expanded our operation and built our brewery, there was no question that we'd continue to use the DOWFROST™ fluid. One of our considerations was the extra stress higher-volume processing can put on equipment like the heat exchangers in wort chillers. We get a lot of peace of mind with a non-toxic fluid."

Reliable, long-lasting, dependable.

Low toxicity	FDA & NSF regulation compliant
Efficient heat transfer	-18°C to 120°C 0°F to 250°F
Optimal freeze and burst protection	to -51°C / -60°F
Pharmaceutical grade monopropylene glycol purity	>99.8%

Tim Alexander confirmed that larger craft brewers like Deschutes stress these safety concerns.

"We're totally committed to using a food grade heat transfer fluid for controlling temperature in our fermenters, bright tanks, and flash pasteurizers," said Alexander. We have 35 different fermenters of different capacities plus a lot of other equipment, and we want an extra margin of safety in the event of a leak."

Energy Efficient

Refrigeration costs can add up to more than 30% of a brewer's electrical consumption. With energy prices already high and continuing to rise, paying attention to factors which affect efficiency can pay big dividends. Using a properly inhibited glycol like DOWFROST™ fluid helps keep heat transfer surfaces free of corrosion deposits, maintaining original design efficiencies. Many so called "bargain brand" or inferior fluids cannot provide the same long term corrosion protection as DOWFROST™ fluid can might contribute to loss of system efficiency and higher energy costs. Effective corrosion protection of pipes, pumps, chillers and tanks also ensures smooth operation, reduces maintenance costs and avoids expensive downtime needed for repair of leaks or damage to equipment which can be caused by corrosion.

Dow provides hands-on technical support.

- Advising on dilution to avoid corrosion and bio-fouling.
- Providing recommended dilution water quality for best performance.
- Offering free analytical support and technical service.

The Complete Solution

For brewing beer, a 25-45 percent solution of DOWFROST™ fluid is normally used because it provides dependable temperature control at lower temperature capabilities than water. Typically the DOWFROST™ fluid is chilled to zero degrees centigrade and re-circulates through cooling coils submerged within a tank or through an external "jacket" which surrounds the tank.

As a Master Brewer and author of numerous technical studies and a book, John Mallet of Bell's understands the careful sciences behind craft brewing better than almost anyone else.

"Using DOWFROST™ fluid allows us to control to temperatures plus or minus one degree throughout the brewing process," said Mallett. There is additional peace of mind knowing that Dow stands behind the product by providing comprehensive analytical and technical support.

Protecting expensive brewing equipment is one thing. Protecting the quality and reputation of your beer is another. Quality brewers like those featured here fully appreciate the importance of using a reliable and proven heat transfer fluid like DOWFROST™ inhibited propylene glycol-based fluid. Want more proof? Try pouring yourself a cold, refreshing glass of any of their classic brews and enjoy. Cheers!

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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