

# ORISON

## ICECLEAR® AF

### Non-Glycol Anti-Freeze



IceClear® AF is a non-glycol, bio-based anti-freeze / heat transfer fluid with multi-metal corrosion inhibitor. Designed for industrial anti-freeze / heat transfer applications, IceClear® AF is made from highly refined and/or food-grade materials.

It is specifically formulated as a drop in alternative to petroleum derived propylene glycol (PG) based fluids in non-engine applications such as:

- Solar Systems
- Floor Heating Systems
- Hydrostatic Pressure Testing
- Ballast Fluid
- Directional Drilling Fluid
- Secondary Refrigerant Systems
- All Season Dust Suppressant



NSF registered and acceptable for use where there is possibility of incidental food contact (HT1).

Derived from agricultural materials or bio-based processes, this environmentally friendly product is engineered to match the freezing point performance of conventional antifreeze products based on 50% (ready-to-use) glycol fluids (see Figure 1), but with the following advantages:

**Environmentally Friendly.** IceClear® AF is non-toxic, contains no salts, no glycols, heavy metals or solvents, it is non-corrosive, fully biodegradable (with a lower BOD/COD than glycol), and it will not affect combustion processes.

**Cost-effective.** IceClear® AF is formulated from complex carbohydrates derived from renewable resources and/or process side streams that are not subject to the market swings of glycols.

**Better Physical Properties.** IceClear® AF is more viscous than conventional antifreeze materials. As such, it adheres to particle surfaces and clings to transportation and conveying equipment with little run-off and settling. This prevents freezing, clumping and sticking, and keeps product moving freely.

**Won't Dry Out.** Due to its viscous nature and hygroscopic character, IceClear® AF will not dry out after initial application, making it effective for extended periods of time as an antifreeze and a dust suppressant.

The chart below is supplied as a guide for diagnostic / maintenance purposes. The values are calculated values and are only approximations. IceClear® AF is designed as a ready-to-use and dilution is possible, however, the result would weaken the corrosion inhibitor package. Custom blending is available to meet specific physical properties such as freeze point and/or heat transfer capabilities.

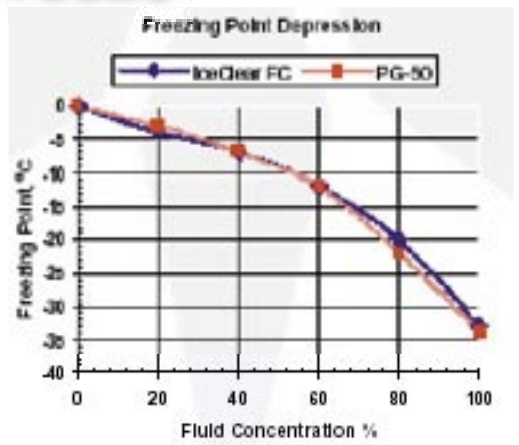


Figure 1. Performance Comparison - Freezing Point of IceClear® AF vs. (50%) Propylene Glycol

#### Physical Properties

- Color: Clear Liquid
- Odor: Mild
- pH: 7
- Water Solubility: 100%
- Specific Gravity: 1.17
- Density: @ 9.5 lbs/gallon
- Viscosity @ 20°C (cSt): 11.0
- Freeze Point: -34 °C (-30 °F)



IceClear® AF %	Brix Value (Refractometer)	Freeze Point °F / °C	Boiling Point °F / °C	Specific Heat @ 35° F	Viscosity cSt @ 68° F (20° C)
100	46.6	-30° / -34°	228° / 109°	.74	11
90	42.1	-17° / -27°	225° / 107°	.776	8
80	37.5	-6° / -21°	223° / 106°	.808	6
70	33.1	2° / -17°	219° / 104°	.832	4
60	28.7	9° / -13°	218° / 103.5°	.856	3
50	24.1	15° / -10°	217° / 102.8°	.87	2.5

HMIS	
HEALTH	0
FLAMMABILITY	0
INSTABILITY	0
SPECIFIC	0