

ORISON

BioFROST™ ECO CONCENTRATE

DESCRIPTION

BioFROST™ ECO is a concentrated, biobased propylene glycol heat transfer fluid formulated from USP Grade propylene glycol to safely provide optimum heat transfer, freeze protection and corrosion protection. Designed to be diluted with DI or RO water 30%-70%, the fluid contains an orange dye for leak detection, however, it can be provided clear for industrial heat transfer applications.

PERFORMANCE

BioFROST™ ECO offers an operating range from -50°F to 250°F and meets the requirements of ASTM D3306, including ASTM D1384 and others (see analytical list on page 2). Our superior NAP FREE (No Nitrites, Amines, or Phosphates) corrosion package, provides outstanding extended corrosion protection of steel, copper, brass, solder, cast aluminum, and cast iron. BioFROST™ ECO lubricates pumps and valves, provides scaling resistance, is fully compatible with gaskets, seals, elastomers and other non-metallic pump and system parts.



SAFETY/ENVIRONMENT

BioFROST™ ECO is formulated from USP Grade biobased PG which is generally recognized as safe (GRAS) by the FDA. BioFROST™ ECO is not a petroleum derived product, it utilizes propylene glycol made from patented renewable processes which converts biobased glycerin into PG. Simply put, if you insist on a PG fluid, BioFROST™ ECO is the safest and most environmentally friendly product.

APPLICATIONS

Designed for most industrial and environmentally sensitive antifreeze, coolant/heat transfer applications, BioFROST™ ECO can be used in:

- Closed Loop Systems
- Light Duty Automotive Cooling Systems
- Waste Heat Recovery
- Solar Systems
- Floor Heating Systems
- HVAC
- Geothermal Systems
- Hydrostatic/Pressure Testing

Typical Properties

Color: Orange (clear option)
pH: 8-10
Specific Gravity (70F): 1.046
Freeze Point: below -60°F
Boiling Point: 311°F

HMIS	
HEALTH	0
FLAMMABILITY	1
INSTABILITY	0
SPECIFIC	0

Note: Solutions of BioFROST™ ECO less than 30% may be at risk for bacterial contamination.

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The chart(s) below is/are supplied as a guide for diagnostic / maintenance purposes. The values are calculated values and are only approximations. This is not a specification. Custom blending is available to meet specific physical properties such as freeze point and/or heat transfer capabilities.

BioFROST™ ECO % (vol.)	Specific Gravity @70°F	Freeze Point °F / °C	Boiling Point °F / °C	Specific Heat @ 70° F	Viscosity cSt @ 68° F (20° C)
100	1.046	< -60° / < -51°	311° / 155°	0.6	51
90	1.045	< -60° / < -51°	255° / 123.8°	0.65	25
80	1.044	< -60° / < -51°	237° / 114°	0.72	16
70	1.043	< -60° / < -51°	228° / 108.8°	0.77	11
60	1.042	-40° / -40°	223° / 106°	0.82	8
50	1.039	-21° / -29.4	221° / 105°	0.85	6
40	1.032	-2.5° / -19°	218° / 103°	0.89	4
30	1.025	10.5° / -12°	215° / 102°	0.92	3

Temperature °F	%vol. BioFROST™ ECO Required	
	BioFROST™ ECO Freeze Protection	BioFROST™ ECO Burst Protection
20	19.1*	12.8*
10	30.9	21.3*
0	38.3	25.5
-10	44.7	29.8
-20	48.9	31.9
-30	53.2	35.1
-40	57.4	37.2
-50	60.6	37.2
-60	63.8	37.2

*These dilutions result in glycol concentrations <20% which may be at risk of bacterial contamination and low inhibitor levels. Recommended dilutions are 30%-70% with DI or RO water.

PERFORMANCE TESTING

ASTM D3306, Including:

ASTM D1881

Foaming Tendencies

ASTM D2809

Cavitation Corrosion and Erosion-Corrosion Characteristics of Aluminum Pumps With Engine Coolants.

ASTM D4340

Corrosion of Cast Aluminum Alloys in Engine Coolants Under Heat-Rejecting Conditions

ASTM D1384

Corrosion Test for Engine Coolants in Glassware

ASTM D2570

Simulated Service Corrosion Testing of Engine Coolants