



JTG Muir is pleased to be appointed by Interstate Chemical Company; manufacturer of INTERCOOL® BIOGREEN B; as the California/Nevada Area Distributor.
Ask your wholesaler for INTERCOOL® BIOGREEN B, stocked regionally in Oakland, California.



INTERCOOL® BIOGREEN B Glycol

The New Standard in Freeze Protection

Solar, Hydronics, Snowmelt, Geothermal, Ice Storage
The Big Breakthrough in Anti Freeze: INTERCOOL BIOGREEN B

INTERCOOL BIOGREEN B is a non toxic blend of 1,3 propanediol (**Susterra™**) made from renewable resources. **INTERCOOL BIOGREEN B** is corn based NSF listed anti-freeze with performance significantly superior to petroleum based propylene glycol.

Significantly Lower Acidic Degradation:

INTERCOOL® BIOGREEN B glycol out performs regular inhibited polypropylene in resistance to acidic degradation and oxidation. At a boiling point of 425F, **INTERCOOL® BIOGREEN B** has a ~ 100°F higher boiling temp than propylene glycol. Acidity degradation occurs primarily at a products boiling point. **INTERCOOL® BIOGREEN B** is a must for high temperature solar applications. Result: far longer service time between glycol replacements.

No Inhibitors Required. No clogging.

Years of complaints about inhibitors coming out of suspension at high temperatures (180°F+) and clogging circulators is now resolved. Anti acidity inhibitors are not required. Corrosion inhibitors are not required in truly closed loop applications.

The Right Performance:

INTERCOOL® BIOGREEN B has lower viscosity requiring 2.4x less pumping energy than petroleum based Propylene glycol.

The Right Price:

When oil prices go up, so does petroleum based propylene glycol. Corn based **INTERCOOL® BIOGREEN B** glycol is a lower cost alternative to conventional propylene glycol with more stable cost when oil prices are rising.

Truly Green:

The production of **INTERCOOL® BIOGREEN B** uses 40% less energy and reduces green house emissions by 20% when compared to petroleum based propylene glycol.

The Chemistry:

INTERCOOL® BIOGREEN B is produced from a proprietary fermentation process using corn sugar instead of petroleum-based feedstock's. **INTERCOOL® BIOGREEN B** is a chemical variant of conventional petro based 1,2 propanediol (H3C-CH-CH2-OH). **INTERCOOL® BIOGREEN B** is a 1,3 propanediol (HO-CH2-CH2-CH2-OH).

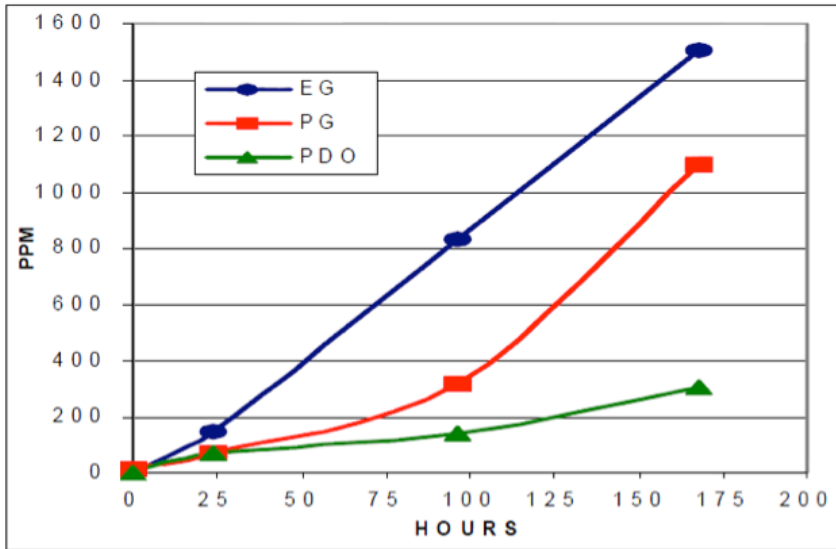
Premixed 50/50 or Concentrate:

INTERCOOL® BIOGREEN B is available as a concentrate or a 50/50 mix. It is packaged in 1, 5 and 55 gallon containers. Bulk purchases of concentrate and 50/50 are available. **INTERCOOL® BIOGREEN B** is stocked regionally in Oakland, CA.

INTERCOOL® BIOGREEN

Glycol Degradation Comparison

Testing measured the concentration of acids formed under constant pressure and temperature by ion chromatography



EG= Ethylene Glycol,
PG= propylene glycol,
PDO = INTERCOOL® BIOGREEN B

Test temperature= 150°C (302°F)

Recommended Replacement @ 5000 ppm organic acids

Comparison of Pumping Pressure - PG vs PDO

At -10 C, a 40% PG/ 60% water solution requires 2.4x's the pumping energy as a 40% PDO/60% water solution.

Thermophysical Properties at -10 C	40.5 wt % (~14 mol %) 1,2-propanediol	40 wt % (13.6 mol %) 1,3-propanediol
Absolute Viscosity (cP)	24.48 ¹	16.5 ²
Density (g/ml)	1.05 ¹	1.06 ³
Specific Heat (kJKg ⁻¹ K ⁻¹)	3.602 ¹	3.495 ⁴
Thermal Conductivity (Wm ⁻¹ K ⁻¹)	374 ¹	0.39 ⁵
Kinematic Viscosity (cSt) ⁶	23.3	15.5
Fp (C)	-20 ⁷	-20 ⁷

INTERCOOL® BIOGREEN FREEZE POINT PROTECTION

Volume %	FP °F	FP °C
0	32	0
5	29.3	-1.5
10	26.4	-3.1
15	23.2	-4.9
20	19.3	-7.1
25	14.6	-9.7
30	9.4	-12.6
35	3.4	-15.9
40	-4.1	-20.1
45	-11.5	-24.2
50	-20.5	-29.2
55	-33.9	-36.6
60	-49.8	-45.4
65	-65.1	-53.9
70	-82	-63.3
75	-105	-76.1
80	-130	-90
85	-125	-87.2
90	-84	-53.3
95	-32.8	-36
100	-13.3	-25.2

For complete technical Data and MSDS visit: www.jtgmuir.com/BIOGREEN B