

## Inhibited Propylene Glycol Heat Transfer Fluids

### Process Applications

- HVAC/R
- Food & beverage
- Solar applications
- Data centers
- Process cooling & heating
- Ice & snow melting systems
- Refrigeration systems
- Line heaters
- Plastic extrusion
- Geothermal energy
- Winterization
- Cooling towers

### Dynalene PG Series Overview

Propylene glycol (PG), also known as monopropylene glycol or 1,2-propanediol, is a colorless, odorless, slightly viscous fluid that is miscible in water. Dynalene propylene glycol products are comprised of inhibited and uninhibited non-toxic propylene glycol solutions from <10% PG to up to 100% PG. Dynalene also offers raw or inhibited USP (United States Pharmacopoeias) food grade propylene glycol (with purity greater than 99.8%) depending on your application. Our line of propylene glycol heat transfer fluids provides users with stable, safe, and efficient products for applications where freeze protection is needed. We only use high quality virgin glycol in our glycol products, never recycled. All raw materials are tested and approved by our quality control department prior to use. Microbial growth is not an issue at PG concentrations > 25%, and biocide is available for PG concentrations < 25%. Properly used and maintained, Dynalene propylene glycols provide excellent thermophysical properties while protecting your system from corrosion and degradation. Each individual propylene glycol-based product has its own advantages, and custom blends can be readily made to meet your system's requirements.

Product	Description	Temperature Range
<b>Dynalene PG</b>	Inhibited propylene glycol	-50°F to 250°F / -46°C to 121°C
<b>Dynalene PG-FG</b>	Food grade inhibited propylene glycol	-50°F to 250°F / -46°C to 121°C
<b>Dynalene PG-XT</b>	High-temperature inhibited propylene glycol	-50°F to 350°F / -46°C to 177°C
<b>Dynalene Raw PG</b>	Uninhibited technical & food grade propylene glycol	Contact Dynalene

### Corrosion Protection

Dynalene's inhibited propylene glycol products utilize a unique corrosion inhibitor package made from non-toxic raw materials. These inhibitors offer superior corrosion protection for most metals including carbon steel, brass, copper, stainless steel, and cast iron by creating a corrosion-preventing passive layer on the surface that contacts the Dynalene propylene glycol, thereby increasing lifetime of the system components. It also stabilizes the pH of the fluid, keeping it in the range that is suitable for the metals in your system. The corrosion inhibitors are easily topped off, thus decreasing time between the fluid replacements.

#### Corrosion test results, based on corrosion test ASTM D1384, in mils per year (mpy)

Metal	Deionized Raw PG Water	(50 vol%)	Dynalene PG (50 vol%)
Solder	3.10	2.26	0.08
Aluminum	13.2	13.3	+0.39*
Copper	0.08	0.15	0.15
Brass	0.22	0.20	0.11
Greycast Iron	21.1	28.1	+0.01
Carbon Steel	9.69	17.5	0.01

\* For applications using Aluminum alloys at temperatures exceeding 60°C, Dynalene recommends using Dynalene PG-V1. Call or email Dynalene for more information.

**For health and safety information or to request a Safety Data Sheet, contact our Dynalene sales representatives.**

### Quantity & Availability

Dynalene propylene glycol products are offered in 1, 2.5, 5, 30, 55, and 265-gallon containers as well as 5,000-gallon tankers. Pricing depends on quantity, and Dynalene, Inc. will work with you to try to fit your budget.

### Dynalene's Fluid Care Program

Coupling our Dynalene fluids with a fluid care program can extend the life of your systems significantly. We offer yearly testing of the heat transfer fluid in your system and can track changes in the fluid year to year so adjustments can be made to keep your system working at its best.

**Dynalene recommends using deionized water when blending glycol and water**

Water Ion	Dynalene Spec.
Chloride	< 25 ppm
Sulfate	< 25 ppm
Other	< 50 ppm

### Benefits of Choosing Dynalene PG

- Pre-mixed solutions
- Custom blends with pH adjusted
- Non-toxic
- Can be re-inhibited
- Proven performance
- Dye options available: fluorescent green, FD&C colors: red, pink, blue, and yellow
- Biocide is available.
- Dynalene LC-PG available for low conductivity needs\*
- Dynalene PG-V1 available for high-temperature aluminum systems
- Available worldwide
- Cost-effective
- Total fluid care option

\*For applications requiring **low electrical conductivity**, please contact our sales team about Dynalene LC-PG.

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Dynalene, Inc. is an ISO 9001 certified company

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# General Properties

	Dynalene PG / PG-FG	Dynalene PG-XT	Dynalene Raw PG
<b>pH</b>	8.0 – 9.5	8.5 – 10.5	6.0 – 8.0
<b>Reserve Alkalinity</b>	>10.5 mL	>16.0 mL	0 mL
<b>Operating Range</b>	-50 to 250°F	-50 to 350°F	Contact Dynalene
<b>Flash Point (100% Concentration)</b>	227°F (108.5°C)	231°F (110.5°C)	224°F (107°C)
<b>Flash Point (Concentration &lt; 85%)</b>	None	None	None
<b>Color</b>	Clear	Clear	Clear
<b>Odor</b>	Little or none	Little or none	Little or none

The following table can be used to determine the freezing point, burst point and other properties at different glycol percentages.

Vol. % PG	Wt. % PG	Freezing Point		Burst Point		Boiling Point °F	*Reserve Alkalinity (mL)	Specific Gravity 22°C (72°F)
		°F	°C	°F	°C			
0	0.0	32	0	32	0.0	212	0	1.000
5	5.2	29	-1.7	27	-2.7	212	≥ 0.5	1.005
10	10.5	26	-3.3	22	-5.6	212	≥ 1.0	1.010
15	15.6	23	-5.0	19	-7.5	212	≥ 1.5	1.015
20	20.8	19	-7.2	11	-11.8	213	≥ 2.0	1.020
25	25.9	14	-10.1	-1	-18.4	214	≥ 2.5	1.025
26	27.0	13	-10.6	-4	-20.1	214	≥ 2.6	1.026
27	28.0	12	-11.1	-7	-21.8	214	≥ 2.7	1.027
28	29.0	10	-12.2	-10	-23.6	215	≥ 2.8	1.028
29	30.1	9	-12.8	-14	-25.5	216	≥ 2.9	1.029
30	31.1	8	-13.3	-18	-27.5	216	≥ 3.0	1.030
31	32.1	7	-13.9	-21	-29.6	216	≥ 3.1	1.031
32	33.1	5	-15.0	-24	-31.1	216	≥ 3.2	1.032
33	34.1	4	-15.6	-30	-34.4	216	≥ 3.3	1.032
34	35.1	2	-16.7	-38	-38.9	217	≥ 3.4	1.033
35	36.1	1	-17.2	-46	-43.3	217	≥ 3.5	1.034
36	37.2	-1	-18.3	-53	-47.2	217	≥ 3.6	1.035
37	38.2	-3	-19.4	-60	-51.1	218	≥ 3.7	1.036
38	39.2	-4	-20.0	<-60	<-51.1	218	≥ 3.8	1.037
39	40.2	-6	-21.1	<-60	<-51.1	219	≥ 3.9	1.038
40	41.2	-8	-22.2	<-60	<-51.1	219	≥ 4.0	1.039
41	42.2	-10	-23.3	<-60	<-51.1	219	≥ 4.1	1.040
42	43.2	-12	-24.4	<-60	<-51.1	219	≥ 4.2	1.041
43	44.2	-14	-25.5	<-60	<-51.1	219	≥ 4.3	1.042
44	45.2	-16	-26.7	<-60	<-51.1	220	≥ 4.4	1.043
45	46.2	-18	-27.8	<-60	<-51.1	220	≥ 4.5	1.044
46	47.2	-21	-29.4	<-60	<-51.1	220	≥ 4.6	1.045
47	48.2	-23	-30.6	<-60	<-51.1	221	≥ 4.7	1.046
48	49.2	-26	-32.2	<-60	<-51.1	221	≥ 4.8	1.047
49	50.2	-28	-33.3	<-60	<-51.1	222	≥ 4.9	1.048
50	51.2	-31	-35.0	<-60	<-51.1	222	≥ 5.0	1.049
55	56.2	-46	-43.3	<-60	<-51.1	223	≥ 5.5	1.052
60	61.2	<-60	-51.1	<-60	<-51.1	225	≥ 6.0	1.055
65	66.1	<-60	-51.1	<-60	<-51.1	227	≥ 6.5	1.057
70	71.0	<-60	-51.1	<-60	<-51.1	230	≥ 7.0	1.057
80	80.8	<-60	-51.1	<-60	<-51.1	246	≥ 8.0	1.059
90	90.4	<-60	-51.1	<-60	<-51.1	270	≥ 9.0	1.056
95	95.2	<-60	-51.1	<-60	<-51.1	310	≥ 9.5	1.052

\* Reserve Alkalinity measured according to ASTM D1121 indicates the buffering capacity of the inhibited glycol-water mixture

# Viscosity

1 cP= 0.001 Pa·s

Dynalene Propylene Glycol Series, Viscosity, cP									
Temp, °F	Volume								
	20%	25%	30%	35%	40%	45%	50%	55%	60%
-30									498
-20									299
-10							96.0	140	183
0					40.9	51.1	61.3	88.2	115
10			13.4	20.2	27.0	33.8	40.6	57.4	74.2
20	5.36	7.63	9.89	14.2	18.5	23.2	27.8	38.6	49.3
30	4.23	5.85	7.46	10.3	13.1	16.4	19.7	26.7	33.7
40	3.41	4.58	5.75	7.68	9.60	12.0	14.3	19.0	23.7
50	2.79	3.66	4.52	5.87	7.21	8.96	10.7	13.9	17.1
60	2.32	2.97	3.62	4.59	5.56	6.85	8.13	10.4	12.6
70	1.95	2.45	2.94	3.66	4.38	5.36	6.34	7.93	9.51
80	1.66	2.05	2.43	2.98	3.52	4.28	5.04	6.19	7.34
90	1.43	1.74	2.04	2.46	2.88	3.48	4.08	4.93	5.77
100	1.25	1.49	1.73	2.07	2.4	2.88	3.35	3.99	4.62
120	0.97	1.14	1.30	1.52	1.73	2.05	2.36	2.74	3.11
140	0.78	0.90	1.01	1.16	1.31	1.53	1.75	1.99	2.22
160	0.64	0.73	0.82	0.93	1.04	1.20	1.35	1.51	1.66
180	0.54	0.61	0.68	0.77	0.85	0.97	1.08	1.19	1.29
200	0.46	0.52	0.58	0.65	0.71	0.80	0.88	0.96	1.04
220	0.40	0.45	0.50	0.56	0.61	0.68	0.74	0.80	0.86
240	0.36	0.40	0.44	0.49	0.53	0.59	0.64	0.69	0.73

# Thermal Conductivity

1 Btu/hr·ft·°F = 1.73 W/mK

Dynalene Propylene Glycol Series, Thermal Conductivity, Btu/hr·ft·°F									
Temp, °F	Volume								
	20%	25%	30%	35%	40%	45%	50%	55%	60%
-30									0.171
-20							0.188	0.181	0.174
-10							0.191	0.184	0.176
0					0.211	0.203	0.194	0.186	0.178
10			0.235	0.225	0.215	0.206	0.196	0.188	0.179
20	0.262	0.251	0.239	0.229	0.218	0.209	0.199	0.190	0.181
30	0.267	0.255	0.243	0.233	0.222	0.212	0.201	0.192	0.183
40	0.272	0.260	0.247	0.236	0.225	0.215	0.204	0.194	0.184
50	0.277	0.264	0.251	0.239	0.227	0.217	0.206	0.196	0.186
60	0.281	0.268	0.254	0.242	0.230	0.219	0.208	0.198	0.187
70	0.285	0.272	0.258	0.246	0.233	0.222	0.210	0.199	0.188
80	0.289	0.275	0.261	0.248	0.235	0.223	0.211	0.200	0.189
90	0.292	0.278	0.263	0.250	0.237	0.225	0.213	0.202	0.190
100	0.295	0.281	0.266	0.253	0.239	0.227	0.214	0.203	0.191
120	0.298	0.283	0.268	0.255	0.241	0.228	0.215	0.204	0.192
140	0.306	0.290	0.274	0.260	0.245	0.232	0.218	0.206	0.194
160	0.309	0.293	0.277	0.262	0.247	0.234	0.220	0.207	0.194
180	0.312	0.296	0.279	0.264	0.249	0.235	0.221	0.208	0.195
200	0.314	0.297	0.280	0.265	0.249	0.235	0.221	0.208	0.194
220	0.314	0.297	0.280	0.265	0.249	0.235	0.220	0.207	0.194

1 Btu/lb<sub>m</sub>·°F = 4,186 J/kg·°C

# Specific Heat

Dynalene Propylene Glycol Series, Specific Heat, Btu/lb·°F									
Temp, °F	Volume								
	20%	25%	30%	35%	40%	45%	50%	55%	60%
-30									0.740
-20							0.799	0.773	0.746
-10							0.804	0.778	0.752
0					0.855	0.832	0.809	0.784	0.758
10			0.898	0.879	0.859	0.837	0.814	0.789	0.764
20	0.936	0.919	0.902	0.883	0.864	0.842	0.820	0.795	0.770
30	0.938	0.922	0.906	0.887	0.868	0.847	0.825	0.801	0.776
40	0.941	0.925	0.909	0.891	0.872	0.851	0.830	0.806	0.782
50	0.944	0.929	0.913	0.895	0.877	0.856	0.835	0.811	0.787
60	0.947	0.932	0.917	0.899	0.881	0.861	0.840	0.817	0.793
70	0.950	0.935	0.920	0.903	0.886	0.866	0.845	0.822	0.799
80	0.953	0.939	0.924	0.907	0.890	0.870	0.850	0.828	0.805
90	0.956	0.942	0.928	0.911	0.894	0.875	0.855	0.833	0.811
100	0.959	0.945	0.931	0.915	0.899	0.880	0.861	0.839	0.817
120	0.965	0.952	0.939	0.924	0.908	0.890	0.871	0.850	0.828
140	0.970	0.958	0.946	0.931	0.916	0.899	0.881	0.861	0.840
160	0.976	0.965	0.953	0.939	0.925	0.908	0.891	0.872	0.852
180	0.982	0.972	0.961	0.948	0.934	0.918	0.902	0.883	0.864
200	0.988	0.978	0.968	0.956	0.943	0.928	0.912	0.894	0.875
220	0.994	0.985	0.975	0.963	0.951	0.937	0.922	0.905	0.887
240	0.999	0.991	0.982	0.971	0.960	0.946	0.932	0.916	0.899

1 lb<sub>m</sub>/ft<sup>3</sup> = 16 kg/m<sup>3</sup>

# Density

Dynalene Propylene Glycol Series, Density, lb/ft <sup>3</sup>									
Temp, °F	Volume								
	20%	25%	30%	35%	40%	45%	50%	55%	60%
-30									67.05
-20							66.46	66.70	66.93
-10							66.35	66.58	66.81
0					65.71	65.97	66.23	66.46	66.68
10			65.00	65.30	65.60	65.86	66.11	66.33	66.54
20	64.23	64.57	64.90	65.19	65.48	65.73	65.97	66.18	66.38
30	64.14	64.47	64.79	65.07	65.35	65.59	65.82	66.02	66.22
40	64.03	64.35	64.67	64.94	65.21	65.44	65.67	65.86	66.05
50	63.92	64.23	64.53	64.80	65.06	65.28	65.50	65.69	65.87
60	63.79	64.09	64.39	64.65	64.90	65.12	65.33	65.51	65.68
70	63.66	63.95	64.24	64.49	64.73	64.94	65.14	65.31	65.47
80	63.52	63.80	64.08	64.32	64.55	64.75	64.95	65.11	65.26
90	63.37	63.64	63.91	64.14	64.36	64.55	64.74	64.89	65.04
100	63.20	63.47	63.73	63.95	64.16	64.35	64.53	64.67	64.81
120	62.85	63.09	63.33	63.54	63.74	63.90	64.06	64.19	64.32
140	62.46	62.68	62.90	63.09	63.27	63.42	63.57	63.68	63.79
160	62.03	62.23	62.43	62.60	62.76	62.90	63.03	63.13	63.22
180	61.56	61.74	61.92	62.07	62.22	62.34	62.45	62.53	62.61
200	61.05	61.21	61.37	61.50	61.63	61.73	61.83	61.90	61.97
220	60.50	60.64	60.78	60.89	61.00	61.09	61.17	61.23	61.28
240	59.91	60.03	60.15	60.25	60.34	60.41	60.47	60.51	60.55

1 psi = 6,895 Pa = 0.069 bar = 0.0681 atm = 51.7 mmHg = 21.7 inH<sub>2</sub>O

# Vapor Pressure

Dynalene Propylene Glycol Series, Vapor Pressure, psia									
Temp, °F	Volume								
	20%	25%	30%	35%	40%	45%	50%	55%	60%
100	0.9	0.9	0.9	0.9	0.9				
110	1.9	1.6	1.2	1.2	1.2	1.2	1.1	1.1	1.0
120	1.7	1.7	1.6	1.5	1.5	1.5	1.5	1.5	1.4
130	2.2	2.2	2.1	2.1	2.0	2.0	1.9	1.9	1.8
140	2.8	2.8	2.7	2.7	2.6	2.6	2.5	2.4	2.3
150	3.6	3.6	3.5	3.5	3.4	3.4	3.2	3.0	3.0
160	4.6	4.5	4.4	4.4	4.3	4.2	4.1	4.0	3.8
170	5.8	5.8	5.6	5.4	5.4	5.3	5.2	5.0	4.8
180	7.2	7.1	7.0	6.9	6.7	6.6	6.5	6.2	5.9
190	9.0	8.9	8.7	8.5	8.3	8.2	8.1	7.8	7.4
200	11.0	10.9	10.7	10.5	10.2	10.1	9.9	9.5	9.1
210	13.5	13.5	13.1	12.8	12.5	12.3	12.1	11.6	11.1
220	16.4	16.4	15.9	15.6	15.2	15.0	14.8	14.2	13.6
230	19.8	19.5	19.2	18.8	18.4	17.8	17.8	17.1	16.4
240	23.8	23.4	23.0	22.5	22.0	21.7	21.4	20.6	19.7
250	28.4	27.9	27.4	26.9	26.3	26.0	25.6	24.6	23.5

## Product Disclaimer

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