

## Low electrical conductivity, inhibited ethylene glycol/water-based coolant

### Process Applications

- Coolant for PEM fuel cells
- Computer cooling
- Optical devices
- Electronics cooling
- Process cooling & heating
- Medical devices
- Portable fuel cell systems
- Battery cooling
- Charging stations

### ■ Dynalene LC-EG Overview

Dynalene LC-EG (ethylene glycol-based) is specially designed for cooling PEM fuel cells, electronics, computers, and for other applications requiring low electrical conductivity coolants. It provides efficient heat transfer that prevents your system from overheating while simultaneously acting as an electrical insulator. LC products use a non-ionic corrosion inhibitor package that prevents corrosion and contaminants from degrading your system.

Dynalene LC-EG is a customizable coolant that can be formulated using any concentration of ethylene glycol that your system requires. Our LC-EG blends are non-flammable and safer to handle than alternative low-conductivity fluids, such as chlorinated hydrocarbons.

### ■ Corrosion Protection & Ion Suppression

Dynalene LC-EG utilizes a non-ionic corrosion inhibitor package that offers superior corrosion protection for most metals, including aluminum, brass, copper, stainless steel, and many other alloys. The inhibitors create a passive layer on metal surfaces in contact with the fluid, preventing corrosion and ion-leaching, which can cause an increase in electrical conductivity.

### ■ Benefits of Choosing Dynalene LC-EG

- Maintains low electrical conductivity
- Uses non-ionic corrosion inhibitor package
- Can be used with active deionizing systems
- Cost-effective
- Enhances fuel cell performance
- Available worldwide
- Proven performance
- Total fluid care option
- Non-flammable

### ■ 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 systems working at its best.

### Recommended Temperature Range:

For closed systems:

-50°C (-58°F) to 93°C (200°F)

### ■ Properties of Dynalene LC-EG

A comprehensive list of all thermo-physical properties of Dynalene LC-EG can be found on pages 2-5. For health and safety information or to request a Safety Data Sheet, contact our Dynalene sales representatives.

Composition:	Ethylene glycol, water, non-ionic inhibitors
Appearance:	Clear
Odor:	None
pH:	Not applicable for low-conductivity fluid
Electrical conductivity:	< 5 µS/cm
Flash Point:	None*
Autoignition Temp:	None*

\* for ≤ 85% concentration

### ■ Dynalene's Deionizing Cartridges

Dynalene recommends using a de-ionizing cartridge with our LC products. Corrosion inhibitors prevent significant corrosion, but cannot guarantee 100% prevention. In a low-conductivity environment, even a small amount of corrosion can generate enough ions to raise the conductivity to unacceptable levels. A de-ionizing cartridge removes these ions to maintain the desired electrical conductivity. Contact Dynalene for information about the de-ionizing cartridges we offer.

### ■ Quantity & Availability

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

# General Properties

Vol. %	Wt. %	Freeze Point		Burst Point		Boiling Point	Refractive Index	Specific Gravity
LC-EG	LC-EG	°F	°C	°F	°C	°F	22°C (72°F)	22°C (72°F)
0	0	32	0.0	32	0.0	212	1.3328	1.000
5	5.6	29	-1.7	27	-2.7	213	1.3380	1.008
10	11.2	26	-3.3	23	-4.9	214	1.3440	1.020
15	16.6	22	-5.5	17	-8.6	215	1.3495	1.026
20	22.0	16	-8.5	8	-13.2	216	1.3551	1.033
25	27.3	10	-12.2	-2	-18.8	218	1.3606	1.040
26	28.4	9	-12.8	-4	-20.1	219	1.3618	1.041
27	29.4	8	-13.3	-6	-21.4	219	1.3628	1.042
28	30.5	6	-14.4	-9	-22.7	220	1.3640	1.044
29	31.5	5	-15.0	-11	-24.0	220	1.3651	1.045
30	32.6	4	-15.6	-14	-25.4	220	1.3662	1.047
31	33.6	3	-16.1	-16	-26.8	220	1.3674	1.048
32	34.7	1	-17.2	-20	-28.9	220	1.3685	1.049
33	35.7	0	-17.8	-25	-31.7	221	1.3695	1.050
34	36.7	-2	-18.9	-33	-36.1	221	1.3706	1.052
35	37.7	-3	-19.4	-45	-42.8	221	1.3717	1.053
36	38.8	-5	-20.6	< -60	< -51.1	221	1.3728	1.054
37	39.8	-7	-21.7	< -60	< -51.1	222	1.3738	1.056
38	40.8	-9	-22.8	< -60	< -51.1	222	1.3749	1.057
39	41.9	-11	-23.9	< -60	< -51.1	222	1.3761	1.058
40	42.9	-13	-25.0	< -60	< -51.1	223	1.3773	1.060
41	43.9	-15	-26.1	< -60	< -51.1	223	1.3784	1.061
42	44.9	-17	-27.2	< -60	< -51.1	224	1.3795	1.062
43	46.0	-19	-28.3	< -60	< -51.1	224	1.3807	1.064
44	47.0	-21	-29.4	< -60	< -51.1	224	1.3817	1.065
45	48.0	-24	-31.1	< -60	< -51.1	224	1.3828	1.066
46	49.0	-26	-32.2	< -60	< -51.1	224	1.3838	1.068
47	50.0	-29	-33.9	< -60	< -51.1	225	1.3848	1.069
48	51.0	-31	-35.0	< -60	< -51.1	225	1.3859	1.070
49	52.0	-33	-36.1	< -60	< -51.1	225	1.3869	1.072
50	53.0	-36	-37.8	< -60	< -51.1	226	1.3879	1.073
55	57.9	-50	-45.6	< -60	< -51.1	228	1.3930	1.081
60	62.8	< -60	< -51.1	< -60	< -51.1	232	1.3982	1.086
70	72.4	< -60	< -51.1	< -60	< -51.1	244	1.4077	1.100
75	77.2	< -60	< -51.1	< -60	< -51.1	251	1.4132	1.106
80	81.8	-52	-46.7			263	1.4171	1.110
90	91.0	-20	-28.9			290	1.4266	1.118

1 cP= 0.001 Pa-s

## Viscosity (cP)

Dynalene Ethylene Glycol Series, Viscosity, cP									
Temp, °F	Volume								
	20%	25%	30%	35%	40%	45%	50%	55%	60%
-30									89.7
-20							40.4	50.5	60.5
-10							27.3	34.7	42.1
0					13.8	16.6	19.3	24.7	30.1
10			6.83	8.47	10.1	12.2	14.3	18.2	22.1
20	3.90	4.64	5.38	6.56	7.74	9.32	10.9	13.8	16.6
30	3.14	3.74	4.33	5.21	6.09	7.29	8.48	10.6	12.7
40	2.59	3.07	3.54	4.23	4.91	5.84	6.77	8.34	9.90
50	2.18	2.57	2.95	3.50	4.04	4.77	5.50	6.68	7.85
60	1.86	2.18	2.49	2.94	3.38	3.97	4.55	5.44	6.33
70	1.61	1.87	2.13	2.50	2.87	3.34	3.81	4.49	5.17
80	1.41	1.63	1.84	2.15	2.46	2.85	3.23	3.76	4.28
90	1.24	1.42	1.60	1.87	2.13	2.45	2.76	3.17	3.58
100	1.11	1.26	1.41	1.64	1.87	2.13	2.39	2.71	3.03
120	0.90	1.01	1.11	1.29	1.46	1.64	1.82	2.03	2.23
140	0.74	0.82	0.90	1.04	1.17	1.30	1.43	1.56	1.69
160	0.63	0.69	0.75	0.85	0.95	1.05	1.15	1.24	1.32
180	0.54	0.59	0.63	0.71	0.79	0.87	0.94	1.00	1.06
200	0.47	0.51	0.54	0.61	0.67	0.73	0.78	0.82	0.86
220	0.41	0.44	0.46	0.52	0.57	0.62	0.66	0.69	0.72

1 Btu/hr-ft-°F = 1.73 W/mK

## Thermal Conductivity (Btu/hr-ft-°F)

Dynalene Ethylene Glycol Series, Thermal Conductivity, Btu/hr-ft-°F									
Temp, °F	Volume								
	20%	25%	30%	35%	40%	45%	50%	55%	60%
-30									0.178
-20							0.193	0.187	0.181
-10							0.197	0.191	0.184
0					0.216	0.208	0.200	0.193	0.186
10			0.238	0.229	0.220	0.212	0.204	0.197	0.189
20	0.264	0.254	0.243	0.234	0.224	0.216	0.207	0.199	0.191
30	0.269	0.258	0.247	0.237	0.227	0.219	0.210	0.202	0.194
40	0.274	0.263	0.251	0.241	0.231	0.222	0.212	0.204	0.196
50	0.279	0.267	0.255	0.245	0.234	0.225	0.215	0.207	0.198
60	0.284	0.272	0.259	0.248	0.237	0.228	0.218	0.209	0.200
70	0.288	0.276	0.263	0.252	0.240	0.230	0.220	0.211	0.202
80	0.292	0.279	0.266	0.255	0.243	0.233	0.223	0.214	0.204
90	0.296	0.283	0.269	0.258	0.246	0.236	0.225	0.216	0.206
100	0.299	0.286	0.272	0.260	0.248	0.238	0.227	0.218	0.208
120	0.305	0.291	0.277	0.265	0.253	0.242	0.230	0.220	0.210
140	0.311	0.297	0.282	0.269	0.256	0.245	0.233	0.223	0.213
160	0.315	0.300	0.285	0.272	0.259	0.248	0.236	0.226	0.215
180	0.318	0.303	0.288	0.275	0.262	0.250	0.238	0.228	0.217
200	0.320	0.305	0.290	0.277	0.263	0.252	0.240	0.229	0.218
220	0.321	0.306	0.291	0.278	0.265	0.253	0.240	0.230	0.219

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

## Specific Heat (Btu/lb·°F)

Temp, °F	Glycol percent by volume								
	20%	25%	30%	35%	40%	45%	50%	55%	60%
-30									0.669
-20							0.730	0.702	0.674
-10							0.735	0.708	0.680
0					0.792	0.766	0.740	0.713	0.686
10			0.845	0.821	0.796	0.771	0.745	0.719	0.692
20	0.894	0.871	0.848	0.825	0.801	0.776	0.751	0.725	0.698
30	0.897	0.875	0.852	0.829	0.805	0.781	0.756	0.730	0.704
40	0.900	0.878	0.856	0.833	0.810	0.786	0.761	0.736	0.710
50	0.903	0.882	0.860	0.837	0.814	0.790	0.766	0.741	0.716
60	0.907	0.886	0.864	0.842	0.819	0.796	0.772	0.747	0.722
70	0.910	0.889	0.868	0.846	0.824	0.801	0.777	0.753	0.728
80	0.913	0.892	0.871	0.850	0.828	0.805	0.782	0.758	0.734
90	0.916	0.896	0.875	0.854	0.833	0.807	0.781	0.761	0.740
100	0.919	0.899	0.879	0.858	0.837	0.815	0.793	0.770	0.746
120	0.925	0.906	0.887	0.867	0.846	0.825	0.803	0.780	0.757
140	0.931	0.913	0.895	0.875	0.855	0.835	0.814	0.792	0.769
160	0.938	0.920	0.902	0.884	0.865	0.845	0.824	0.803	0.781
180	0.944	0.927	0.910	0.892	0.874	0.855	0.835	0.814	0.793
200	0.950	0.934	0.918	0.901	0.883	0.864	0.845	0.825	0.805
220	0.956	0.941	0.925	0.909	0.892	0.874	0.856	0.837	0.817

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

## Density (lb/ft<sup>3</sup>)

Temp, °F	Glycol percent by volume								
	20%	25%	30%	35%	40%	45%	50%	55%	60%
-30									70.40
-20							69.26	69.76	70.26
-10							69.12	69.61	70.10
0					67.93	68.45	68.97	69.46	69.94
10			66.68	67.24	67.79	68.31	68.82	69.30	69.78
20	65.36	65.96	66.55	67.10	67.64	68.15	68.66	69.13	69.60
30	65.23	65.82	66.41	66.95	67.49	67.99	68.49	68.96	69.43
40	65.10	65.69	66.27	66.80	67.33	67.83	68.32	68.78	69.24
50	64.97	65.54	66.11	66.64	67.17	67.66	68.14	68.61	69.08
60	64.83	65.40	65.96	66.48	66.99	67.48	67.96	68.41	68.86
70	64.68	65.24	65.79	66.31	66.82	67.30	67.77	68.22	68.66
80	64.52	65.07	65.62	66.13	66.63	67.11	67.58	68.02	68.46
90	64.36	64.91	65.45	65.95	66.44	66.91	67.38	67.82	68.25
100	64.20	64.74	65.27	65.76	66.25	66.71	67.17	67.60	68.03
120	63.85	64.37	64.88	65.36	65.84	66.29	66.74	67.16	67.58
140	63.47	63.98	64.48	64.95	65.41	65.85	66.28	66.69	67.10
160	63.07	63.56	64.05	64.50	64.95	65.38	65.80	66.21	66.61
180	62.65	63.12	63.59	64.03	64.47	64.89	65.30	65.70	66.09
200	62.20	62.66	63.11	63.54	63.97	64.38	64.78	65.16	65.54
220	61.72	62.17	62.61	63.03	63.44	63.84	64.23	64.61	64.98

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

## Vapor Pressure (psia)

Temp, °F	Glycol percent by volume								
	20%	25%	30%	35%	40%	45%	50%	55%	60%
100	0.9	0.9	0.8						
110	1.2	1.2	1.1	1.1	1.0				
120	1.6	1.6	1.5	1.5	1.4	1.4	1.3	1.2	1.1
130	2.0	2.0	2.0	1.9	1.8	1.8	1.7	1.6	1.5
140	2.7	2.6	2.5	2.5	2.4	2.3	2.2	2.1	2.0
150	3.5	3.4	3.3	3.2	3.1	3.1	2.8	2.6	2.6
160	4.4	4.3	4.2	4.1	3.9	3.8	3.6	3.5	3.3
170	5.6	5.5	5.3	5.2	5.0	4.8	4.6	4.4	4.2
180	7.0	6.6	6.2	6.3	6.3	6.1	5.8	5.6	5.3
190	8.7	8.5	8.3	8.1	7.8	7.5	7.2	6.9	6.6
200	10.8	10.6	10.3	10.0	9.7	9.7	9.0	8.2	8.2
210	13.2	12.9	12.6	12.2	11.8	11.4	11.0	10.5	10.0
220	16.4	15.9	15.3	14.9	14.4	13.9	13.4	12.9	12.3
230	19.4	19.0	18.5	18.0	17.5	16.9	16.2	15.6	14.9
240	23.3	22.8	22.3	21.7	21.0	20.3	19.5	18.7	17.9
250	27.9	26.6	26.6	25.9	25.1	25.1	23.3	21.4	21.4
260	33.1	32.4	31.6	30.7	29.8	28.8	27.7	26.6	25.4
270	39.1	38.2	37.3	36.3	35.2	34.0	32.8	31.5	30.1
280	46.0	45.0	43.9	42.7	41.4	40.0	38.5	36.9	35.3
290	53.8	52.6	51.3	49.9	48.4	46.7	45.0	43.2	41.3
300	62.6	61.2	59.7	58.0	56.3	56.3	52.4	48.1	48.1
310	72.6	70.9	69.2	67.2	65.2	63.0	60.7	60.7	55.7
320	83.7	81.8	79.8	77.5	75.2	72.6	69.9	67.1	64.3
330	96.2	94.0	91.7	89.1	86.4	83.4	80.3	77.1	73.8
340	110.2	107.6	105.0	102.0	98.9	95.4	91.8	88.1	84.4
350	125.7	122.7	119.7	116.2	112.7	108.7	104.6	100.4	96.2

### Product Disclaimer

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