

Aluminum-Safe Inhibited Ethylene Glycol Heat Transfer Fluid

Process Applications

- Data center cold plates
- Bitcoin & cryptocurrency
- Solar applications
- Boilers & heat exchangers
- Process cooling & heating
- Ice & snow melting systems
- HVAC/R
- Line heaters
- Plastic extrusion
- Geothermal energy
- Laser cooling
- Energy applications

■ Dynalene EG-A1 Overview

Dynalene EG-A1 is an OAT-based inhibited ethylene glycol heat transfer fluid which offers users a stable, efficient, and aluminum-safe product for applications where freeze protection is needed. Properly used and maintained, Dynalene EG-A1 offers excellent thermophysical properties all while protecting your system from corrosion and degradation for years.

Dynalene EG-A1's inhibitor package is specifically formulated to protect systems using aluminum materials and alloys even at temperatures > 60°C (140°F). Systems using EG-A1 can operate continuously up to 90°C (194°F) and intermittently up to 100°C (212°F), in contact with aluminum surfaces up to 115°C (239°F).

■ Corrosion Protection

Unlike traditional glycol heat transfer fluids, Dynalene EG-A1 provides long-term corrosion protection against aluminum-specific problems such as gelling, white particulate formation, and rapid pH increase, making it ideal for use with aluminum heat sinks, cold plates, ASICs, pumps, and other components.

EG-A1 utilizes a multi-component corrosion inhibitor package, which offers superior corrosion protection for aluminum and most other metals, including carbon steel, brass, copper, stainless steel, cast iron, and solder, by creating a corrosion-preventing passive layer on the surface that contacts the Dynalene EG-A1. The inhibitor also stabilizes the pH of the fluid.

■ Benefits of Choosing Dynalene EG-A1

- Pre-mixed solutions
- Custom blends
- Standard color is yellow. Different dye color may be available if desired.
- Can be re-inhibited
- Proven performance
- Available worldwide
- Cost-effective
- Total fluid care option

■ 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 the changes in the fluid year to year so adjustments can be made to keep your systems working at its best.

Recommended Temperature Range:

-51°C (-60°F) to 90°C (194°F)

■ Properties of Dynalene EG-A1

A comprehensive list of all thermo-physical properties of Dynalene EG-A1 can be found on pages 2, 3, 4, and 5. For health and safety information or to request a Safety Data Sheet, contact our Dynalene sales representatives.

Composition:	Ethylene glycol, inhibitors
Appearance:	Clear, yellow
Odor:	Little or none

pH:	8.3 - 8.7
Flash Point:	None
Reserve Alkalinity:	> 3.0 mL
ASTM D4340 (corrosion rate):	< 1 mg/ cm ² -week

■ ASTM D1384 / D8040

Metals	Mean Corrosion Rate (mpy)	
	Raw EG 50%	EG-A1 50%
Copper	0.27	0.00
Solder	2.50	0.03
Brass	1.52	0.06
Carbon Steel	19.08	-0.04
Greycast Iron	29.52	-0.13
Cast Aluminum	10.32	0.07

■ Quantity & Availability

Dynalene EG-A1 is 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.

To ensure the inhibitor package provides the best corrosion protection, Dynalene sells this product as pre-mixed solutions up to 60%.

General Properties

Vol. % Dynalene EG-A1	Wt. % Dynalene EG-A1	Freeze Point °F	Freeze Point °C	Boiling Point °F	Specific Gravity 22°C (72°F)
0	0.0	32	0	212	1.000
5	5.6	29	-1.7	212	1.011
10	11.2	26	-3.3	212	1.018
15	16.6	23	-5	212	1.025
20	22.0	19	-7.2	213	1.032
25	27.3	14	-10.1	214	1.039
26	28.4	13	-10.6	214	1.040
27	29.4	12	-11.1	214	1.042
28	30.5	10	-12.2	215	1.043
29	31.5	9	-12.8	216	1.045
30	32.6	8	-13.3	216	1.046
31	33.6	7	-13.9	216	1.047
32	34.7	5	-15.0	216	1.049
33	35.7	4	-15.6	216	1.050
34	36.7	2	-16.7	217	1.052
35	37.7	1	-17.2	217	1.053
36	38.8	-1	-18.3	217	1.054
37	39.8	-3	-19.4	218	1.056
38	40.8	-4	-20.0	218	1.057
39	41.9	-6	-21.1	219	1.059
40	42.9	-8	-22.2	219	1.060
41	43.9	-10	-23.3	219	1.062
42	44.9	-12	-24.4	219	1.063
43	46.0	-14	-25.5	219	1.064
44	47.0	-16	-26.7	220	1.066
45	48.0	-18	-27.8	220	1.067
46	49.0	-21	-29.4	220	1.069
47	50.0	-23	-30.6	221	1.070
48	51.0	-26	-32.2	221	1.071
49	52.0	-28	-33.3	222	1.073
50	53.0	-31	-35.0	222	1.074
55	57.9	-46	-43.3	223	1.081
60	62.8	<-60	-51.1	225	1.088

Viscosity

1 cP= 0.001 Pa·s

Dynalene EG-A1, 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

Thermal Conductivity

1 Btu/hr·ft·°F = 1.73 W/mK

Dynalene EG-A1, 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_m·°F = 4,186 J/kg°C

Specific Heat

Dynalene EG-A1, Specific Heat, Btu/lb·°F									
Temp, °F	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_m/ft³ = 16 kg/m³

Density

Dynalene EG-A1, Density, lb/ft ³									
Temp, °F	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 inH₂O

Vapor Pressure

Dynalene EG-A1, Vapor Pressure, psia									
Temp, °F	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

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