Dynalene PG-D Series

DYNALENE
Tomorrow's Solutions Flow Through Us

Propylene glycol-based Direct-To-Chip (DTC) coolants

Process Applications

- Data center cooling
- Direct to chip cooling
- Electronics cooling
- Crypto Mining
- Racks and Coolant Distribution Units (CDU)
- High performance computing (HPC)
- Cold plate cooling

Dynalene PG-D Series Overview

The Dynalene PG-D coolant series consists of Dynalene PG-D15, PG-D25 and PG-D55, designed to provide direct liquid cooling solutions for data centers, AI and high-performance computing. These DTC coolants are prediluted solutions made of USP propylene glycol blended with a proprietary inhibitor package. If on-site dilution is needed, the concentrate PG-D MAX is available for purchase.

With the high-performance computing requirements of modern data centers, air cooling cannot provide the required thermal management, which can affect the longevity and performance of the electronic components. Dynalene PG-D coolants provide exceptional liquid cooling along with superior multi-metal corrosion protection, including stainless steel and the copper cold plates used in most coolant distribution units (CDU). Our coolants also provide protection against algae and bacteria growth.

Dynalene PG-D coolants are compatible with commonly used materials of construction in data centers, thereby increasing the electronic component lifetime. These coolants provide freeze protection, increase Power Usage Efficiency (PUE), increase cooling efficiency in direct to chip cooling, and reduce carbon footprint when compared to air cooling.

Benefits of Choosing Dynalene PG-D

- Enhances data center performance
- Non-toxic
- Non-flammable
- Available worldwide
- Concentrate available
- Cost-effective
- Fluid and equipment longevity
- Exceptional corrosion protection
- Prevents microbial growth

Quantity & Availability

Dynalene PG-D products are offered in 1, 2.5, 5, 30, 55, and 265-gallon containers as well as 5,000-gallon tankers.

Recommended Temperature Range:
Closed System:
Up to 80°C (176°F)

Properties of Dynalene PG-D Series

A comprehensive list of all thermo-physical properties of Dynalene PG-D fluids can be found on page 3. For health and safety information or to request a Safety Data Sheet, contact a Dynalene sales representative.

Composition:		USP Propylene Glycol, Water, Additives, Biocide (for PG-D15)
Appearance:		Transparent, fluorescent green
Odor:		None
Freezing Point:	PG-D15:	-5°C (23°F)
	PG-D25:	-10°C (14°F)
Burst Point:	PG-D25:	-18.4°C (-1°F)
pH		8.0 to 10.5
Boiling Point:		>100°C (>212°F)
Flash Point:		None
Autoignition Temp:		None
Reserve Alkalinity:		≥ 6 mL
Sulfate:		< 10 ppm
Chloride:		< 5 ppm
Total Hardness:		< 15 ppm (as $CaCO_3$)
Electrical Conductivity:	PG-D25:	> 2000 µS/cm
Volumetric Expansion from -10 to 90°C:		5.2%

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.

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Dynalene, Inc. is an ISO 9001 certified company

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ASTM Standard Testing

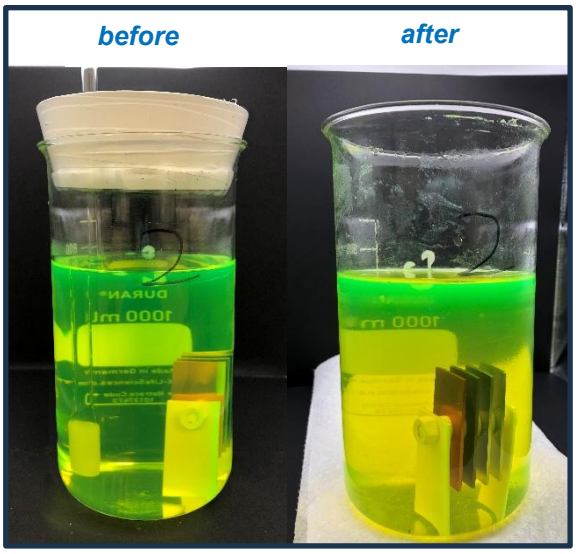
Dynalene PG-D coolants pass ASTM tests for heat transfer coolants (D8040), thermal stability (D7437) and coolant foaming (D1881). The table below shows a comparison of corrosion weight losses from the ASTM D8040 test.

Fluid	Copper (mg)	Brass (mg)
Raw PG-25	5.0	5.3
Dynalene PG-D25	1.3	2.1
Raw PG-55	24.7	57.9
Dynalene PG-D55	1.6	1.1

The next table shows results for the ASTM D1881 foam test.

	Passing Value	PG-D25 result
Foam Volume	< 150 mL	45 mL
Foam Break Time	< 5 seconds	< 1s

ASTM D8040 is an accelerated corrosion test, exposing the fluid to harsh conditions including added salts (chloride, sulfate and bicarbonate), high temperature (88°C), and air bubbling.



Beakers of PG-D25 coolant with corrosion coupon bundle, before and after ASTM D8040 testing.

Wetted Materials Compatibility

Ensuring acceptable materials compatibility is essential in data center liquid-cooling systems as incompatible elastomers and polymers can cause corrosion and degradation leading to increased maintenance cost and downtime. Careful selection of wetted materials based on the recommendation from the Open Compute Project (OCP) helps promote interoperable designs and extends equipment lifespan across diverse environments and vendors. The materials listed in the table below are deemed compatible with Dynalene PG-D Series fluids.

Polymers	Recommended Maximum Temperature
Teflon™ (PTFE)	90°C
Buna Nitrile (NBR)	50°C (fluid discoloration)
Viton™ (FKM)	80°C (Fair)
Silicone	80°C (material leaching)
Ethylene propylene diene monomer (EPDM)	80°C
Neoprene/Chloroprene	20°C (softening)
High Density Polyethylene (HDPE)	80°C
Low Density Polyethylene (LDPE)	50°C
Polypropylene	80°C
Nylon/Polyamide (PA-11 and PA-12)	65°C
Polyphenylene sulfide (PPS)	80°C
Polyoxymethylene (Acetal/Delrin)	80°C
Acrylic/ Methyl methacrylate	50°C
Acrylonitrile butadiene styrene (ABS)	80°C
Chlorinated polyvinyl chloride (CPVC)	50°C
Polyether ether ketone (PEEK)	80°C
Fluorinated ethylene propylene (FEP)	90°C
Polysulfone	80°C
Isobutylene-Isoprene Rubber (IIR)	50°C (hardening)
Styrene-Butadiene Rubber (SBR)	50°C (fluid discoloration)
Chemraz/Kalrez (FFKM)	90°C

General Properties

Dynalene PG-D15

Temp °C	Viscosity mPa·s	Thermal Cond. W/m·K	Specific Heat kJ/kg·K	Density kg/m^3	Vapor Pressure kPa
0	3.30	0.492	3.989	1022	
10	2.30	0.503	4.008	1017	
20	1.68	0.514	4.026	1015	
30	1.28	0.525	4.045	1010	5.99
40	1.01	0.534	4.064	1006	8.89
50	0.82	0.543	4.082	1001	13.21
60	0.69	0.552	4.101	995	19.64
70	0.58	0.560	4.120	989	29.18
80	0.50	0.567	4.138	983	43.35
90	0.44	0.574	4.157	977	64.41
100	0.39	0.580	4.176	970	95.71

Dynalene PG-D25

Temp °C	Viscosity mPa·s	Thermal Cond. W/m·K	Specific Heat kJ/kg·K	Density kg/m^3	Vapor Pressure kPa
-5	6.89	0.441	3.855	1035	
0	5.44	0.447	3.867	1033	
10	3.56	0.457	3.892	1029	
20	2.48	0.466	3.916	1025	
30	1.81	0.475	3.941	1020	5.80
40	1.38	0.483	3.965	1015	8.64
50	1.09	0.490	3.989	1009	12.86
60	0.88	0.498	4.014	1003	19.14
70	0.73	0.504	4.038	997	28.49
80	0.62	0.510	4.062	990	42.41
90	0.54	0.515	4.087	983	63.13
100	0.47	0.520	4.111	976	93.97

Dynalene PG-D55

Temp °C	Viscosity mPa·s	Thermal Cond. W/m·K	Specific Heat kJ/kg·K	Density kg/m^3	Vapor Pressure kPa
-30	243	0.312	3.232	1071	-
-20	101	0.319	3.273	1067	
-10	46.9	0.325	3.315	1062	
0	24.1	0.331	3.356	1057	
10	13.5	0.337	3.398	1052	
20	8.20	0.342	3.439	1046	
30	5.31	0.346	3.481	1040	5.03
40	3.64	0.350	3.522	1034	7.47
50	2.63	0.353	3.563	1027	11.11
60	1.97	0.355	3.605	1019	16.50
70	1.54	0.357	3.646	1012	24.52
80	1.24	0.358	3.687	1004	36.43
90	1.02	0.359	3.728	995	54.14
100	0.86	0.359	3.770	987	80.44

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