Technical Data Sheet

INTERCOOL® DC-300 25%

Direct-to-Chip Liquid Cooling Fluid

Product Type	Inhibited propylene glycol-based heat transfer fluid.
Application	Heat transfer fluid and system corrosion protection in datacenter direct-to -chip liquid cooling applications.
Description	INTERCOOL ® DC-300 25% has been introduced to address the advancements of micro processor technology leading to increasingly higher heat loads.

INTERCOOL® DC-300 25% is chemically engineered using organic and inorganic inhibitors for corrosion protection in datacenter direct-to-chip liquid cooling applications. The chemistry employed will effectively protect your liquid-cooled direct-to-chip equipment with high surface areas of copper and efficient heat removal within the system. The corrosion control inhibitors included have been specially formulated to extend the service life of the coolant. Therefore, you will receive a higher level of reserve alkalinity, superior performance, and less maintenance requirements through re-inhibiting. These attributes improve your bottom line cost.

INTERCOOL® DC-300 25% is a pre-blended inhibited 25% propylene glycol-based fluid formulated with high quality deionized water that meets ASTM D-1193 type II specifications. Fluorescent yellow/green dye is added to the fluid to assist with leak detection. It is highly recommended to maintain a minimum 25% glycol concentration to reduce the potential for microbial growth. Properly used and maintained, ***INTERCOOL® DC-300 25%*** will provide excellent thermo-physical properties while protecting your system from corrosion and degradation.

INTERCOOL® R-4891 & R-1431 corrosion inhibitors are added initially and for remediation purposes when required. This customized inhibitor package will provide superior corrosion protection in direct-to-chip cooling applications. ***INTERCOOL®*** inhibitors, when added to ***propylene glycol*** in the prescribed amount will protect such metals as brass, copper, copper alloys, steel and cast iron. A certificate of assurance is available upon request.

Inhibited glycol heat transfer fluids should be analyzed on a regular basis to ensure fluid properties remain in optimal condition. Interstate Chemical Co. provides an annual glycol analysis for our valued customers at no charge.

INTERSTATE CHEMICAL CO., INC.
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Typical Product Specifications[1] of INTERCOOL® DC-300 25% Heat Transfer Fluid

Fluid Parameter	Units	INTERCOOL DC-300 25% Heat Transfer Fluid (PG25)
Propylene Glycol Concentration	Volume %	25
Freezing Point	°F	14
	°C	-10
pH		8.0–10.5
Reserve Alkalinity (ASTM D1121)	mL 0.1N HCl	> 6.0
Thermal Conductivity	W/mK at 50°C	0.485
Specific Heat	kJ/kg-K at 50°C	3.94
Viscosity	mPa sec at 20°C	2.8
	mPa sec at 50°C	1.3
Volume Expansion	% from -40 to 90°C	5.2
Boiling Point	°C at 760 mmHg	101.4
Electrical Conductivity	micromho/cm	> 2,000

1. Typical properties, not the be construed as specifications.

Freezing Point[1] of INTERCOOL® Heat Transfer Fluid based on Glycol Concentration and Refractive Index[1]

Freezing Point		Propylene Glycol		Refractive Index	
°F	°C	Weight %	Volume %	20°C	25°C
15.6	-9.1	24.0	23.5	1.3622	1.3613
14.7	-9.6	25.0	24.5	1.3634	1.3625
13.7	-10.2	26.0	25.5	1.3646	1.3637
12.6	-10.8	27.0	26.5	1.3658	1.3649
11.5	-11.4	28.0	27.5	1.3670	1.3661
Freezing Point		**Propylene Glycol**		**Refractive Index**	
°F	°C	Weight %	Volume %	20°C	25°C
-36.7	-38.2	53.0	52.8	1.3949	1.3936
-39.7	-39.8	54.0	53.8	1.3960	1.3947
-42.8	-41.6	55.0	54.8	1.3971	1.3957
-46	-43.3	56.0	55.9	1.3982	1.3968
-49.3	-45.2	57.0	56.9	1.3993	1.3979

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Physical Properties[1] of INTERCOOL® DC-300 25% Heat Transfer Fluid

Temperature °C	Density kg/m^3	Specific Heat kJ/kg K	Thermal Conductivity W/mK	Viscosity mPa sec	Vapor Pressure kPa
-5	1041.9	3.81	0.425	7.80	0.004
0	1040.5	3.82	0.432	6.32	0.006
5	1038.8	3.83	0.438	5.13	0.009
10	1036.9	3.84	0.444	4.17	0.012
15	1034.9	3.85	0.450	3.42	0.017
20	1032.7	3.87	0.456	2.84	0.023
25	1030.3	3.88	0.462	2.39	0.031
30	1027.8	3.89	0.467	2.05	0.042
35	1025.2	3.90	0.472	1.78	0.055
40	1022.5	3.92	0.476	1.58	0.072
45	1019.7	3.93	0.481	1.41	0.093
50	1016.8	3.94	0.485	1.27	0.119
55	1013.7	3.95	0.488	1.15	0.152
60	1010.6	3.97	0.492	1.04	0.191
65	1007.3	3.98	0.495	0.93	0.239
70	1003.9	3.99	0.497	0.83	0.297
75	1000.4	4.00	0.500	0.75	0.367
80	996.7	4.01	0.502	0.69	0.450

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