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Technical Data Sheet

Product Type Food Grade Inhibited Propylene Glycol

Applications

- Secondary heating and cooling
- Freeze and burst protection of pipes
- Various deicing, defrosting, and dehumidifying

Recommended Use Temperature Range -45°C (-50°F) to 120°C (250°F)

Description ChemWorld Food Grade IPG contains specially formulated packages of industrial inhibitors that help prevent corrosion. Because propylene glycol fluids have low acute oral toxicity, ChemWorld food grade inhibited propylene glycol-based fluids are often used in applications where contact with food or beverage products could occur.

Typical Properties¹

Composition (% by weight)	
Propylene Glycol	96
Performance Additives	4
Color	Colorless
Specific Gravity 15/15°C (60/60°F)	1.050–1.060
pH of Solution (50% Glycol)	9.0–10.0
Reserve Alkalinity (min.)	10.0 ml

1. Typical properties, not to be construed as specifications. Complete sales specifications are available on request.

Typical Concentrations of ChemWorld Food Grade IPG Required to Provide Freeze and Burst Protection at Various Temperatures

Temperature		Percent ChemWorld Food Grade IPG Concentration Required	
°C	(°F)	For Freeze Protection Volume %	For Burst Protection Volume %
-7	(20)	18.8	12.6
-12	(10)	30.4	20.9
-18	(0)	37.7	25.1
-23	(-10)	44.0	29.3
-29	(-20)	48.2	31.4
-34	(-30)	52.4	34.6
-40	(-40)	56.5	36.6
-46	(-50)	59.7	36.6
-51	(-60)	62.8	36.6

Note: These figures are examples only and may not be appropriate to your situation. Generally, for an extended margin of protection, you should select a temperature in this table that is at least 3°C (5°F) lower than the expected lowest ambient temperature. Inhibitor levels should be adjusted for solutions of less than 30% glycol. Contact Chemworld for information on specific cases or further assistance.

Attention: These are typical numbers only and are not to be regarded as specifications. As use conditions are not within its control, Chemworld does not guarantee results from use of the information or products herein; and gives no warranty, express or implied.

Typical Freezing and Boiling Points of ChemWorld Food Grade IPG¹

Wt. % Propylene Glycol	Vol. % Propylene Glycol	Wt. % ChemWorld Food Grade IPG	Vol. % ChemWorld Food Grade IPG	Freezing Point		Boiling Point		Degree Brix ²	Refractive Index 22°C (72°F)
				°C	(°F)	°C @ 101 kPa (°F @ 760 mmHG)			
0.0	0.0	0.0	0.0	0	(32.0)	100.0	(212)	0.0	1.3328
5.0	4.8	5.2	5.2	-1.6	(29.1)	100.0	(212)	4.8	1.3383
10.0	9.6	10.5	10.0	-3.3	(26.1)	100.0	(212)	8.4	1.3438
15.0	14.5	15.7	15.1	-5.1	(22.9)	100.0	(212)	12.9	1.3495
20.0	19.4	20.9	20.3	-7.1	(19.2)	100.6	(213)	15.4	1.3555
25.0	24.4	26.1	25.5	-9.6	(14.7)	101.1	(214)	19.0	1.3615
30.0	29.4	31.4	30.7	-12.7	(9.2)	102.2	(216)	22.0	1.3675
35.0	34.4	36.6	36.0	-16.4	(2.4)	102.8	(217)	26.1	1.3733

1. Typical properties, not to be construed as specifications.
2. Degree Brix is a measure of the sugar concentration in a fluid and is important in fermentation and syrups applications. Although there is no sugar present in ChemWorld Food Grade IPG, the glycol affects the refractive index of the fluid in a similar fashion.

NOTE: Generally for an extended margin of protection, you should select a temperature in this table that is at least 3°C (5°F) lower than the expected lowest ambient temperature. Inhibitor levels should be adjusted for solutions of less than 30% glycol. Contact Chemworld for information on specific cases or further assistance.

Typical Freezing and Boiling Points of ChemWorld Food Grade IPG (Cont.)

Wt. % Propylene Glycol	Vol. % Propylene Glycol	Wt. % ChemWorld Food Grade IPG	Vol. % ChemWorld Food Grade IPG	Freezing Point		Boiling Point		Degree Brix	Refractive Index 22°C (72°F)
				°C	(°F)	°C @ 101 kPa (°F @ 760 mmHG)			
40.0	39.6	41.8	41.4	-21.1	(-6.0)	103.9	(219)	29.1	1.3790
45.0	44.7	47.0	46.7	-26.7	(-16.1)	104.4	(220)	31.8	1.3847
50.0	49.9	52.3	52.2	-33.5	(-28.3)	105.6	(222)	34.7	1.3903
55.0	55.0	57.5	57.5	-41.6	(-42.8)	106.1	(223)	38.0	1.3956
60.0	60.0	62.7	62.7	-51.1	(-59.9)	107.2	(225)	40.6	1.4008
65.0	65.0	68.0	68.0	a	a	108.3	(227)	42.1	1.4058
70.0	70.0	73.2	73.2	a	a	110.0	(230)	44.1	1.4104
75.0	75.0	78.4	78.4	a	a	113.9	(237)	46.1	1.4150
80.0	80.0	83.6	83.6	a	a	118.3	(245)	48.0	1.4193
85.0	85.0	88.9	88.9	a	a	125.0	(257)	50.0	1.4235
90.0	90.0	94.1	94.1	a	a	132.2	(270)	51.4	1.4275
95.0	95.0	99.3	99.3	a	a	154.4	(310)	52.8	1.4315

^aFreezing points are below -50°C (-60°F).

Saturation Properties of ChemWorld Food Grade IPG at 30% Propylene Glycol Concentration by Volume

Temperature		Specific Heat		Density		Therm. Cond.		Viscosity	
°C	(°F)	kJ/(kg)(K) (Btu/lb. °F)		kg/m ³ (lb./ft. ³)		W/mK [Btu/hr. ft. ² (°F/ft.)]		mPa*s (cps)	
-10	(50)	3.821	(0.913)	1033.71	(65.75)	0.4344	(0.2510)	4.5068	(4.51)
40	(104)	3.903	(0.933)	1019.56	(63.65)	0.4622	(0.2670)	1.6295	(1.63)
65	(149)	3.972	(0.949)	1004.26	(62.69)	0.4771	(0.2757)	0.9144	(0.91)
90	(194)	4.041	(0.966)	985.77	(61.54)	0.4846	(0.2800)	0.6040	(0.60)
120	(248)	4.123	(0.985)	959.35	(59.89)	0.4838	(0.2795)	0.4246	(0.42)

Saturation Properties of ChemWorld Food Grade IPG at 40% Propylene Glycol Concentration by Volume

Temperature		Specific Heat		Density		Therm. Cond.		Viscosity	
°C	(°F)	kJ/(kg)(K) (Btu/lb. °F)		kg/m ³ (lb./ft. ³)		W/mK [Btu/hr. ft. ² (°F/ft.)]		mPa•s (cps)	
-20	(-4)	3.569	(0.853)	1053.16	(65.75)	0.3635	(0.2100)	48.9043	(48.90)
10	(50)	3.668	(0.877)	1042.14	(65.06)	0.3936	(0.2274)	7.2173	(7.22)
40	(104)	3.768	(0.900)	1026.49	(64.08)	0.4150	(0.2398)	2.2389	(2.24)
65	(149)	3.850	(0.920)	1009.90	(63.05)	0.4262	(0.2463)	1.1762	(1.18)
90	(194)	3.933	(0.940)	990.10	(61.81)	0.4313	(0.2492)	0.7462	(0.75)
120	(248)	4.032	(0.964)	962.08	(60.06)	0.4294	(0.2481)	0.5084	(0.51)

Saturation Properties of ChemWorld Food Grade IPG at 50% Propylene Glycol Concentration by Volume

Temperature		Specific Heat		Density		Therm. Cond.		Viscosity	
°C	(°F)	kJ/(kg)(K) (Btu/lb. °F)		kg/m ³ (lb./ft. ³)		W/mK [Btu/hr. ft. ² (°F/ft.)]		mPa•s (cps)	
-30	(-22)	3.339	(0.768)	1064.83	(66.48)	0.3246	(0.1875)	172.8273	(172.83)
-20	(-4)	3.378	(0.807)	1061.71	(66.28)	0.3336	(0.1927)	73.0193	(73.02)
10	(50)	3.493	(0.835)	1049.25	(65.50)	0.3560	(0.2057)	10.6481	(10.65)
40	(104)	3.609	(0.863)	1032.17	(64.44)	0.3716	(0.2147)	3.1103	(3.11)
65	(149)	3.706	(0.886)	1014.40	(63.33)	0.3792	(0.2191)	1.5483	(1.55)
90	(194)	3.802	(0.909)	993.42	(62.02)	0.3821	(0.2208)	0.9339	(0.93)
120	(248)	3.918	(0.936)	964.00	(60.18)	0.3792	(0.2191)	0.6029	(0.60)

Product Stewardship

The Chemworld has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our Product Stewardship philosophy by which we assess the safety, health, and environmental information on our products and then take appropriate steps to protect employee and public health and our environment. The success of our Product Stewardship program rests with each and every individual involved with Chemworld products—from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

Safety Considerations

Material Safety Data (MSD) sheets are available from Chemworld. MSD sheets are provided to help customers satisfy their own handling, safety and disposal needs and those that may be required by locally applicable health and safety regulations. MSD sheets are updated regularly, therefore, please request and review the most current MSD sheet before handling or using any product. These are available from the nearest Chemworld sales office.

Customer Notice

Chemworld encourages its customers to review their application of Chemworld products from the standpoint of human health and environmental quality. To help ensure that Chemworld products are not used in ways for which they were not intended or tested, Chemworld personnel will assist customers in dealing with ecological and products safety. Your Chemworld sales representative can arrange the proper contacts.