



PRODUCERS CHEMICAL CO.

ProCool HTFP & HTFE

Pro Cool Product Line – An Introduction

Pro Cool HTFE and HTFP are carefully formulated heat transfer fluids. These industrially inhibited fluids possess an operating range of -60°F to 250°F. Pro Cool HTFP and HTFE are specifically formulated to protect such metals as brass, copper, alloys, steel, cast iron and aluminum. The inhibitor package has excellent buffering characteristics and will neutralize any corrosive acids while providing fluid stability.

Typical Properties of ProCool HTFE in Aqueous Solutions

Vol %	Wt %	Freeze Point ° F	Boiling Point of 760 mmHg	Specific Gravity 60/60° F	Refractive Index 77° F
25	27.4	10	217	1.043	1.359
26	28.5	9	218	1.044	1.360
27	29.5	8	218	1.045	1.361
28	30.6	6	219	1.046	1.361
29	31.6	4	219	1.047	1.362
30	32.7	3	220	1.049	1.363
31	33.8	2	220	1.051	1.364
32	34.8	1	220	1.052	1.365
33	35.9	0	220	1.054	1.367
34	36.8	-3	220	1.056	1.368
35	37.9	-5	221	1.058	1.369
36	38.9	-6	221	1.061	1.370
37	39.9	-8	221	1.062	1.371
38	40.9	-9	221	1.063	1.372
39	42.0	-10	221	1.064	1.373
40	43.1	-13	222	1.066	1.374
41	44.0	-14	222	1.067	1.375
42	45.1	-16	222	1.068	1.376
43	46.1	-18	223	1.070	1.377
44	47.1	-20	223	1.072	1.379
45	48.1	-22	223	1.074	1.380
46	49.1	-25	224	1.076	1.381
47	50.1	-28	224	1.077	1.382
48	51.1	-30	224	1.079	1.383
49	52.1	-31	224	1.080	1.384
50	53.1	-34	225	1.081	1.385
51	54.1	-38	225	1.083	1.386
52	55.1	-40	226	1.084	1.387
53	56.1	-44	226	1.086	1.388
54	57.1	-46	227	1.087	1.389
55	58.1	-48	227	1.088	1.390
56	59.1	-50	227	1.089	1.391
57	60.0	-55	228	1.090	1.392
58	61.0	-59	228	1.091	1.393
59	62.1	-60	229	1.092	1.394
60	63.1	-61	230	1.094	1.395

Note: An extended margin of at least 5° F lower than the expected lowest ambient temperature is recommended.

Note: The chart represents Typical Properties and is not to be construed as specifications.

Pro Cool HTFE

- Ethylene glycol based
- Standard for most industrial applications
- Less viscous than propylene glycol
- Provides better heat transfer efficiency
- Provides better low-temperature performance

Pro Cool HTFP

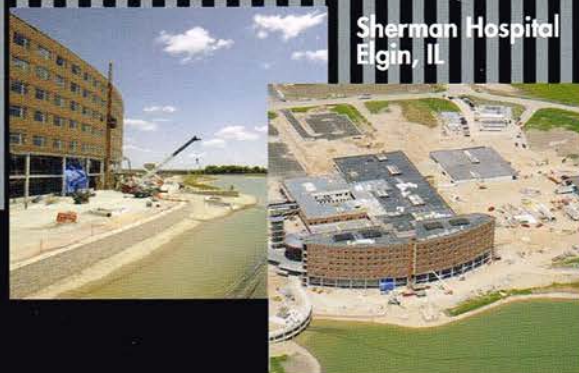
- Propylene glycol based
- Standard for most industrial applications where toxicity is a concern
- Very low chronic toxicity
- Use is mandated by law in some areas
- Possible uses include applications where contact with food, beverages, or potable water is possible

Specific Applications for ProCool Include;

- | | |
|-------------------------|-----------------------------|
| HVAC systems | Snow Melting Systems |
| Process Heating | Solar Heating |
| Ice Skating Rinks | Waste Heat Recovery |
| Cold Room Dehumidifying | Refrigeration Floor Heating |
| | Vapor Recovery Systems |

Producers Chemical Company can provide heat transfer fluids in various concentrations, ranging from a 20% solution to straight concentrate and can deliver in Pails, Drums, Totes or Tankers.

Now Providing Fluids for the Geothermal Industry!



Sherman Hospital
Elgin, IL

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ProCool

HTFP & HTFE DATA

Recommendations for Analysis

The corrosion inhibitors in heat transfer fluids can become depleted over time. Producers Chemical offers free analysis to determine what inhibitor needs to be re-introduced to maximize the life of the fluid as well as monitoring the concentration level of the fluid.

Burst Protection

As temperatures go below the solution's freezing point, ice crystals start to form. However, due to the remaining glycol the fluid becomes concentrated. This combination of ice crystals and glycols becomes slush. The increased fluid volume causes movement into available expansion areas in the system. Providing the glycol concentration is sufficient, system damage should not occur as long as the system is not in use. If the system is operating, the circulating ice crystals are abrasive and can be harmful to metal surfaces.

Freeze Protection

Freeze protection depends on the operating condition of the system and is important in cases where no ice crystals are permitted to form, or where insufficient expansion areas can allow for the slush formation. Freeze protection is also important for closed-loop systems in the event of pump or power failure. A glycol solution should be capable of maintaining a freeze point of at least 5°F below the lowest expected ambient temperature. Heating, ventilation and air conditioning systems that have expected winter shutdowns and must start-up again while the weather is still cold may require freeze point protection.

Physical Properties of ProCool HTFP in Aqueous Solutions

Vol %	Wt %	Freeze Point°F	Specific Gravity 68°F	Viscosity cP 100°F	Specific Heat 100°F Btu/Lb°F
25	26.1	15	1.025	1.5	.9635
30	31.1	9	1.03	1.8	.9440
35	36.3	2	1.035	2.2	.9250
40	41.3	-6	1.004	2.6	.9080
45	46.3	-15	1.044	3.1	.8810
50	51.2	-27	1.048	3.6	.8580
55	56.2	-39	1.051	4.3	.8320
60	61.4	-58	1.054	5.1	.8100

Percent (Volume) Glycol Concentration

		ProCool HTFE		ProCool HTFP	
°F	°C	Freeze Vol	Burst Vol	Freeze Vol	Burst Vol
20	-7	16%	11%	19%	16%
10	-12	25%	16%	29%	16%
0	-18	32%	21%	36%	22%
-10	-23	39%	21%	42%	29%
-20	-29	44%	31%	46%	35%
-30	-34	48%	36%	51%	39%
-40	-40	52%	37%	55%	41%
-50	-46	55%	38%	58%	42%
-60	-51	58%	40%	N/A	44%

Gallons of ProCool Thermal Fluid Per 100 Feet of Pipe

(Note - this chart can be used to determine how much Heat Transfer Fluid to use per 100 feet of pipe)

Nominal Pipe Size	Outside Diameter	Identification					Volume Gallons per 100 feet of Pipe
		Steel		Stainless Steel	Wall Thickness	Inside Diameter	
Inches	Inches	Iron Pipe Size	Schedule Number	Schedule Number	Inches	Inches	
1/8	0.405	STD	40	40S	0.068	0.269	0.295
1/4	0.540	STD	40	40S	0.088	0.364	0.541
3/8	0.675	STD	40	40S	0.091	0.493	0.992
1/2	0.840	STD	40	40S	0.109	0.622	1.578
3/4	1.050	STD	40	40S	0.113	0.824	2.770
1	1.315	STD	40	40S	0.133	1.049	4.489
1-1/4	1.660	STD	40	40S	0.140	1.380	7.769
1-1/2	1.900	STD	40	40S	0.145	1.610	10.58
2	2.375	STD	40	40S	0.154	2.067	17.43
2-1/2	2.875	STD	40	40S	0.203	2.469	24.87
3	3.500	STD	40	40S	0.216	3.068	38.40
3-1/2	4.000	STD	40	40S	0.226	3.548	51.36
4	4.500	STD	40	40S	0.237	4.026	66.13
5	5.563	STD	40	40S	0.258	5.047	103.90
6	6.625	STD	40	40S	0.280	6.065	150.10
8	8.625	STD	40	40S	0.322	7.981	259.90
10	10.750	STD	40	40S	0.365	10.020	409.60