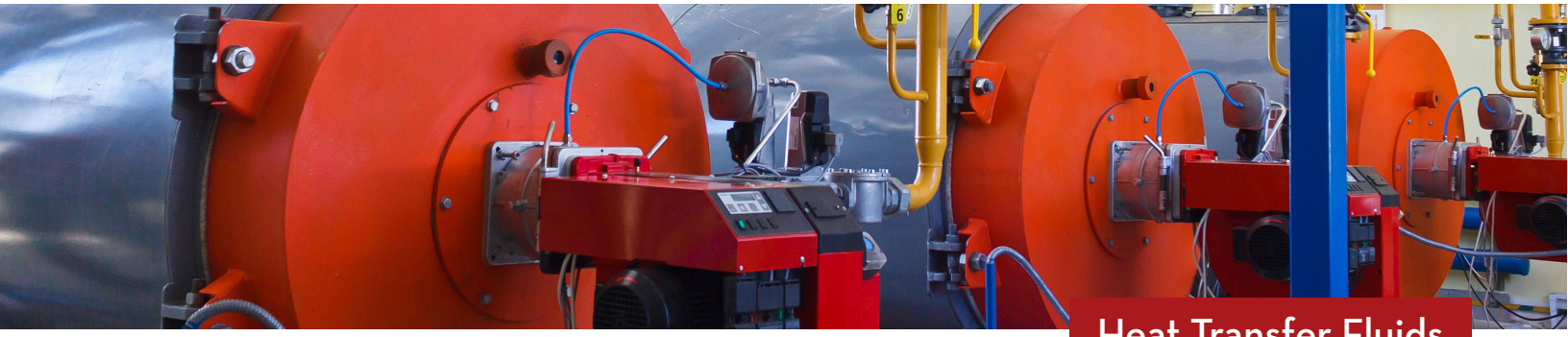
OPTI-THERM® EPM HEAT TRANSFER FLUID

NON-FOULING, NON-TOXIC FOR CLOSED-LOOP SYSTEMS



Heat Transfer Fluids

OPTI-THERM EPM Heat Transfer Oil is designed for closed loop systems with inert gas blanketing. It is an economical, non-toxic, non-hazardous and environmentally friendly fluid that offers precise temperature control up to 599°F (315°C).

Applications

- Closed loop systems with inert gas blanketing
- Industrial plants including commercial laundromats, asphalt plants, pulp and paper mills, textiles etc
- Not to be used in open systems or other heat transfer systems prone to rapid oxidative degradation

Performance Advantages

- Meets requirements for fluids with incidental food contact and Ideal for food-processing applications
- Excellent varnish control keeps system clean for more efficient heat transfer
- High flash point for added safety
- Antioxidants mitigates oxidation and enhances fluid life
- High quality base stocks offer thermal stability over an extended temperature range
- Can be disposed using standard oil recycling services
- Low volatility improves safety and decreases possibility of pump cavitation
- Minimal odor

Temperature Range



Typical Properties	Caldera 13
Minimum Temperature, °F (°C)	32 (0)
Maximum Film Temperature, °F (°C)	630 (332)
Maximum Bulk Temperature, °F (°C)	599 (315)
Pour Point, °F (°C)	-4 (-20)
Flash Point, °F (°C)	406 (208)
Fire Point, °F (°C)	435 (224)
Autoignition Point, °F (°C)	680 (360)
Thermal Expansion Coefficient, %/°F	0.0562
Thermal Conductivity @ 100°F, BTU/h-ft-F	0.0786
Thermal Conductivity @ 500°F, BTU/h-ft-F	0.0717
Heat Capacity @ 100°F, BTU/lb-F	0.452
Heat Capacity @ 500°F, BTU/lb-F	0.618
Distillation Range (ASTM D2887), 10% °F	702
Distillation Range (ASTM D2887), 90% °F	851
Average Molecular Weight	394

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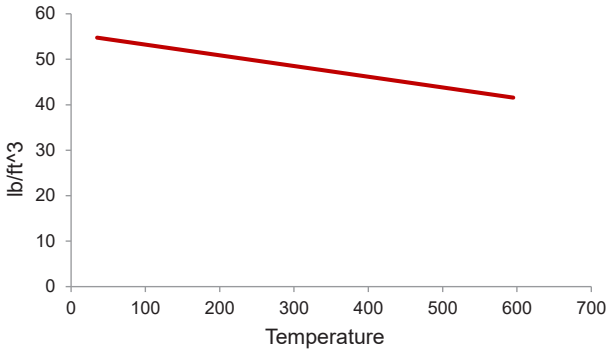
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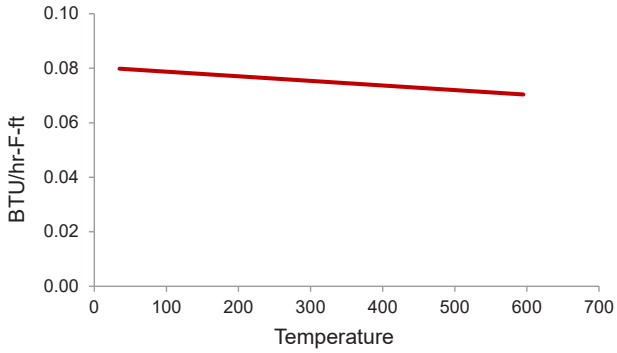
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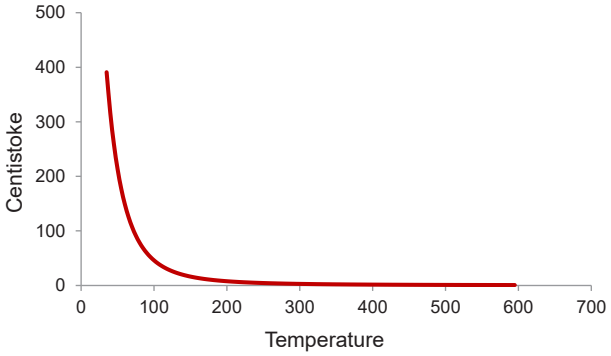
Density



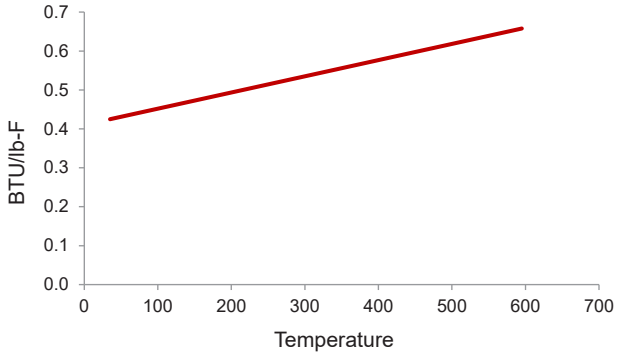
Thermal Conductivity



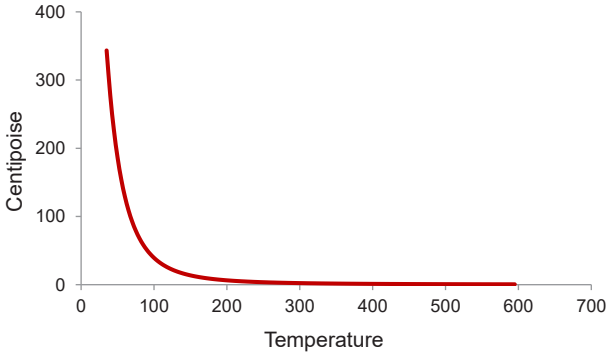
Kinematic Viscosity



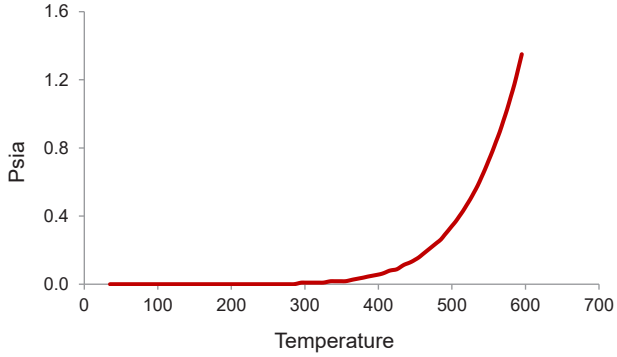
Heat Capacity



Dynamic Viscosity



Vapor Pressure



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Temperature (°F)	Density (lb/ft^3)	Kinematic Viscosity (Centistoke)	Dynamic Viscosity (Centipoise)	Thermal Conductivity (BTU/hr-F-ft)	Heat Capacity (BTU/lb-F)	Vapor Pressure (Psia)
15	55.23	1006.68	892.14	0.080	0.416	0.00
20	55.11	781.35	690.97	0.080	0.419	0.00
25	54.99	613.60	541.46	0.080	0.421	0.00
30	54.88	487.20	429.00	0.080	0.423	0.00
35	54.76	390.89	343.46	0.080	0.425	0.00
40	54.64	316.71	277.68	0.080	0.427	0.00
45	54.52	259.01	226.60	0.080	0.429	0.00
50	54.41	213.68	186.54	0.080	0.431	0.00
55	54.29	177.76	154.84	0.080	0.433	0.00
60	54.17	149.03	129.54	0.079	0.435	0.00
65	54.05	125.88	109.18	0.079	0.437	0.00
70	53.93	107.08	92.67	0.079	0.439	0.00
75	53.82	91.69	79.18	0.079	0.441	0.00
80	53.70	79.01	68.08	0.079	0.444	0.00
85	53.58	68.49	58.89	0.079	0.446	0.00
90	53.46	59.71	51.22	0.079	0.448	0.00
95	53.35	52.33	44.80	0.079	0.450	0.00
100	53.23	46.10	39.38	0.079	0.452	0.00
105	53.11	40.81	34.78	0.079	0.454	0.00
110	52.99	36.29	30.86	0.079	0.456	0.00
115	52.87	32.41	27.50	0.078	0.458	0.00
120	52.76	29.07	24.61	0.078	0.460	0.00
125	52.64	26.18	22.11	0.078	0.462	0.00
130	52.52	23.66	19.94	0.078	0.464	0.00
135	52.40	21.46	18.04	0.078	0.466	0.00
140	52.29	19.53	16.38	0.078	0.468	0.00
145	52.17	17.83	14.92	0.078	0.471	0.00
150	52.05	16.33	13.64	0.078	0.473	0.00
155	51.93	15.00	12.50	0.078	0.475	0.00
160	51.81	13.81	11.48	0.078	0.477	0.00
165	51.70	12.76	10.58	0.078	0.479	0.00
170	51.58	11.81	9.77	0.078	0.481	0.00
175	51.46	10.96	9.05	0.077	0.483	0.00
180	51.34	10.20	8.40	0.077	0.485	0.00
185	51.23	9.51	7.81	0.077	0.487	0.00
190	51.11	8.88	7.28	0.077	0.489	0.00
195	50.99	8.31	6.80	0.077	0.491	0.00
200	50.87	7.80	6.37	0.077	0.493	0.00

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Temperature (°F)	Density (lb/ft^3)	Kinematic Viscosity (Centistoke)	Dynamic Viscosity (Centipoise)	Thermal Conductivity (BTU/hr-F-ft)	Heat Capacity (BTU/lb-F)	Vapor Pressure (Psia)
205	50.75	7.33	5.97	0.077	0.496	0.00
210	50.64	6.90	5.61	0.077	0.498	0.00
215	50.52	6.51	5.27	0.077	0.500	0.00
220	50.40	6.15	4.97	0.077	0.502	0.00
225	50.28	5.81	4.69	0.077	0.504	0.00
230	50.17	5.51	4.43	0.077	0.506	0.00
235	50.05	5.23	4.20	0.076	0.508	0.00
240	49.93	4.97	3.98	0.076	0.510	0.00
245	49.81	4.72	3.78	0.076	0.512	0.00
250	49.69	4.50	3.59	0.076	0.514	0.00
255	49.58	4.29	3.41	0.076	0.516	0.00
260	49.46	4.10	3.25	0.076	0.518	0.00
265	49.34	3.92	3.10	0.076	0.520	0.00
270	49.22	3.75	2.96	0.076	0.523	0.00
275	49.11	3.59	2.83	0.076	0.525	0.00
280	48.99	3.45	2.71	0.076	0.527	0.00
285	48.87	3.31	2.59	0.076	0.529	0.00
290	48.75	3.18	2.49	0.076	0.531	0.00
295	48.63	3.06	2.39	0.075	0.533	0.01
300	48.52	2.94	2.29	0.075	0.535	0.01
305	48.40	2.84	2.20	0.075	0.537	0.01
310	48.28	2.73	2.12	0.075	0.539	0.01
315	48.16	2.64	2.04	0.075	0.541	0.01
320	48.05	2.55	1.96	0.075	0.543	0.01
325	47.93	2.46	1.89	0.075	0.545	0.01
330	47.81	2.38	1.83	0.075	0.547	0.01
335	47.69	2.31	1.76	0.075	0.550	0.02
340	47.57	2.23	1.71	0.075	0.552	0.02
345	47.46	2.17	1.65	0.075	0.554	0.02
350	47.34	2.10	1.60	0.075	0.556	0.02
355	47.22	2.04	1.54	0.074	0.558	0.02
360	47.10	1.98	1.50	0.074	0.560	0.02
365	46.99	1.92	1.45	0.074	0.562	0.03
370	46.87	1.87	1.41	0.074	0.564	0.03
375	46.75	1.82	1.36	0.074	0.566	0.04
380	46.63	1.77	1.32	0.074	0.568	0.04
385	46.51	1.72	1.29	0.074	0.570	0.04
390	46.40	1.68	1.25	0.074	0.572	0.05

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395	46.28	1.64	1.22	0.074	0.575	0.05
400	46.16	1.60	1.18	0.074	0.577	0.06
405	46.04	1.56	1.15	0.074	0.579	0.06
410	45.93	1.52	1.12	0.074	0.581	0.07
415	45.81	1.48	1.09	0.073	0.583	0.08
420	45.69	1.45	1.06	0.073	0.585	0.08
425	45.57	1.42	1.04	0.073	0.587	0.09
430	45.45	1.39	1.01	0.073	0.589	0.10
435	45.34	1.36	0.99	0.073	0.591	0.11
440	45.22	1.33	0.96	0.073	0.593	0.12
445	45.10	1.30	0.94	0.073	0.595	0.13
450	44.98	1.27	0.92	0.073	0.597	0.14
455	44.87	1.25	0.90	0.073	0.599	0.16
460	44.75	1.22	0.88	0.073	0.602	0.18
465	44.63	1.20	0.86	0.073	0.604	0.19
470	44.51	1.17	0.84	0.072	0.606	0.21
475	44.39	1.15	0.82	0.072	0.608	0.23
480	44.28	1.13	0.80	0.072	0.610	0.25
485	44.16	1.11	0.79	0.072	0.612	0.26
490	44.04	1.09	0.77	0.072	0.614	0.29
495	43.92	1.07	0.75	0.072	0.616	0.32
500	43.81	1.05	0.74	0.072	0.618	0.34
505	43.69	1.03	0.72	0.072	0.620	0.37
510	43.57	1.02	0.71	0.072	0.622	0.40
515	43.45	1.00	0.70	0.072	0.624	0.43
520	43.33	0.98	0.68	0.072	0.627	0.46
525	43.22	0.97	0.67	0.072	0.629	0.50
530	43.10	0.95	0.66	0.071	0.631	0.54
535	42.98	0.94	0.65	0.071	0.633	0.58
540	42.86	0.92	0.63	0.071	0.635	0.63
545	42.75	0.91	0.62	0.071	0.637	0.67
550	42.63	0.90	0.61	0.071	0.639	0.73
555	42.51	0.88	0.60	0.071	0.641	0.78
560	42.39	0.87	0.59	0.071	0.643	0.84
565	42.27	0.86	0.58	0.071	0.645	0.89
570	42.16	0.85	0.57	0.071	0.647	0.96
575	42.04	0.83	0.56	0.071	0.649	1.03
580	41.92	0.82	0.55	0.071	0.651	1.10

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585	41.80	0.81	0.54	0.071	0.654	1.17
590	41.69	0.80	0.54	0.070	0.656	1.26
595	41.57	0.79	0.53	0.070	0.658	1.35

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