Relatherm
Heat Transfer Fluids

RELATHERM S-1

Silicone Heat Transfer Fluid

1-800-387-0406
hello@relatherm.com
www.relatherm.com

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No oxidation! No gunk!! This engineered thermal fluid is formulated for absolute resistance to fluid degradation. In a class of its own, it boasts of premium performance, extended life, and extreme stability in a variety of demanding applications.

PRODUCT SUMMARY

- Oxidation-proof thermal fluid great for open baths and other aerated systems
- Maximum use temperature: 315ºC / 600°F in closed systems and 204ºC / 400°F in open systems*
- Great chiller/cooling fluid down to -51°C (-60°F)
- Non-toxic and non-hazardous thermal fluid

NO OXIDATION! NO GUNK!!

Relatherm S-1 is fully resistant to oxidation in open and non-airtight systems. By virtue of its uniquely stable chemistry, it is non-susceptible to oxidative reaction mechanisms. This translates into the absence of sludge and carbon deposits. When used within the specified operating range, Relatherm S-1 provides lower maintenance costs, longer uptime and less frequent fluid changeouts.

WHY RELATHERM S-1?

Relatherm S-1 is the result of extensive thermofluid research into effective non-fouling options for open systems. It is manufactured from a blend of high purity Silicone fluids and proprietary additives that ensure that sludge formation and coke deposition do not occur. Relatherm S-1 is thermally stable, even at elevated temperatures. In comparison with other industry fluids, it provides for an oxidation-free, less odorous, safer, cleaner, and trouble-free operation.

HEALTH, SAFETY & THE ENVIRONMENT

Relatherm S-1 is non-toxic, non-hazardous and less odorous when compared to popular brands. It is also environmentally friendly and poses no adverse effect to personnel safety.

EXTENDED FLUID LIFE

Relatherm S-1 is often selected for its durability and oxidative-stability in typically problematic systems such as open baths. Its base chemistry is non-susceptible to oxidation. As such, Relatherm S-1 has a service life much longer than most thermal fluids in exposed

COMPREHENSIVE PRODUCT PORTFOLIO

If Relatherm S-1 does not meet your application requirements, there is a very good chance that we will be able to offer a better suited solution from our comprehensive portfolio of thermal fluids and system cleaners. Contact us to discuss your application with a Thermal Fluids Expert.

*In open systems operating above 204ºC / 400°F, gel formation is known to occur due to a polymerization reaction. As such, for open systems, operating temperature should not exceed the recommended temperature.

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TEMPERATURE RATINGS

Maximum Bulk Temp. (Closed System)	315°C	600°F
Maximum Bulk Temp. (Open System)	204°C	400°F
Maximum Film Temp.	365°C	690°F
Pour Point ASTM D97	-66°C	-87°F

THERMAL PROPERTIES

Thermal Expansion Coefficient	0.105 %/°C	0.055 %/°F
Thermal Conductivity	W/m K	BTU/hr F ft
-17°C / 0°F	0.142	0.082
38°C / 100°F	0.134	0.077
148°C / 300°F	0.118	0.068
260°C / 500°F	0.101	0.058
316°C / 600°F	0.093	0.054
Heat Capacity	kJ/kg K	BTU/lb F
-17°C / 0°F	1.611	0.385
38°C / 100°F	1.714	0.410
148°C / 300°F	1.921	0.461
260°C / 500°F	2.137	0.512
316°C / 600°F	2.246	0.537

SAFETY DATA

Flash Point ASTM D92	323°C	615°F
Fire Point ASTM D92	335°C	636°F
Autoignition ASTM E-659-78	436°C	818°F

PHYSICAL PROPERTIES

Viscosity ASTM D445		
cSt at -51°C / -60°F	299.88	
cSt at -18°C / 0°F	113.08	
cSt at 40°C / 104°F	36.13	
cSt at 149°C / 300°F	10.57	
cSt at 260°C / 500°F	5.19	
cSt at 316°C / 600°F	4.03	
Density ASTM D1298	kg/m3	lb/ft3
38°C / 100°F	0.9486	59.23
260°C / 500°F	0.7668	47.88
316°C / 600°F	0.7209	45.01
Vapor Pressure ASTM D2879	kPa	psi
38°C / 100°F	0.00	0.00
260°C / 500°F	1.83	0.26
316°C / 600°F	7.21	0.99
Distillation Range ASTM D2887	10%	494°C (922°F)
	90%	679°C (1255°F)

Our ThermoFluid Care Program offers Free Heat Transfer Fluid Testing & Analysis

Contact us today

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Physical Properties - Metric Units

TEMPERATURE (Celsius)	DENSITY (kg/m^3)	KINEMATIC VISCOSITY (Centistoke)	DYNAMIC VISCOSITY (Centipoise)	THERMAL CONDUCTIVITY (W/m-K)	HEAT CAPACITY (kJ/kg-K)	VAPOR PRESSURE (kPa)
-50	1. 0290	288.71	283. 33	0 .1 47	1.551	0 .00
-40	1. 0200	209 . 03	204 .58	0 .145	1.569	0 .00
-30	1. 0110	156 . 02	152. 30	0 .144	1.587	0 .00
-20	1. 0020	119 .58	116 . 41	0 .142	1. 606	0 .00
-10	0 . 9920	93.79	91. 06	0 .1 41	1. 624	0 .00
0	0 . 9820	75 . 07	72. 68	0 .139	1. 643	0 .00
10	0 . 9730	61.17	59.06	0 .138	1. 662	0 .00
20	0 . 9640	50 . 63	48.75	0 .136	1. 680	0 .00
30	0 . 9556	42.5	40 .81	0 .135	1. 699	0 .00
40	0 . 9468	36 .13	34 . 60	0 .133	1. 718	0 .00
50	0 . 9380	31. 06	29.66	0 .132	1. 736	0 .00
60	0 . 9298	26 . 97	25 . 68	0 .130	1. 755	0 .00
70	0 . 9216	23. 63	22. 45	0 .129	1. 774	0 .00
80	0 . 9134	20 .88	19 . 78	0 .127	1. 793	0 .00
90	0 . 9052	18.59	17.55	0 .126	1.811	0 .00
100	0 .8970	16 . 66	15 . 69	0 .1 24	1.83	0 .00
110	0 .8890	15 . 02	14 .11	0 .123	1.849	0 .00
120	0 .8810	13. 63	12. 76	0 .121	1.868	0 .00
130	0 .8730	12. 42	11. 60	0 .120	1.887	0 .01
140	0 .8650	11. 38	10 . 60	0 .119	1. 906	0 .01
150	0 .8570	1 0.47	9 .7 2	0 .117	1. 925	0 .01
160	0 .8488	9.67	8. 96	0 .116	1. 944	0 .02
170	0 .8406	8. 97	8.28	0 .114	1. 963	0 .03
180	0 .8324	8. 35	7. 68	0 .113	1. 982	0 .05
190	0 .8242	7. 7 9	7.1 5	0 .111	2. 002	0 .07
200	0 .8160	7. 30	6 .68	0 .110	2. 021	0 .1 2
210	0 .8078	6 .85	6 .25	0 .108	2. 040	0 .1 9
220	0 . 7996	6 .45	5 .87	0 .107	2. 059	0. 30
230	0 . 7914	6 .09	5 .53	0 .105	2. 079	0.48
240	0 . 7832	5 .7 6	5 .21	0 .104	2. 098	0 .7 7
250	0 . 7750	5 .46	4. 93	0 .102	2.117	1.22
260	0 . 7668	5 .1 9	4 .67	0 .101	2.137	1.82
270	0 . 7586	4. 94	4 .43	0 . 099	2.156	2. 40
280	0 . 7504	4 .7 1	4 .21	0 . 098	2.175	2. 98
290	0 . 7422	4 .50	4 .01	0 . 097	2.195	3. 72
300	0 . 7340	4. 30	3.82	0 . 095	2.214	4 .62
310	0 . 7258	4 .1 2	3. 65	0 . 094	2.234	5 .94
315	0 . 7217	4 .04	3.57	0 . 093	2.244	6 .85

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Physical Properties - Standard Units

TEMPERATURE	DENSITY	KINEMATIC VISCOSITY	DYNAMIC VISCOSITY	THERMAL CONDUCTIVITY	HEAT CAPACITY (BTU/lb-F)	VAPOR PRESSURE
(Fahrenheit)	(lb/ft^3)	(Centistoke)	(Centipoise)	(BTU/hr-F-ft)		(Psia)
-60	64 . 34	299 .88	294 .57	0 . 085	0 . 370	0 .00
-40	63. 69	209 . 03	204 . 71	0 . 084	0 . 375	0 .00
-20	63. 04	151.29	147. 72	0 . 083	0 . 380	0 .00
0	62. 38	113. 08	110 . 08	0 . 082	0 . 385	0 .00
20	61. 73	86 . 90	84 . 34	0 . 081	0 . 390	0 .00
40	61. 08	68. 40	66 .18	0 . 080	0 . 395	0 .00
60	60.45	54 . 97	53. 02	0 . 079	0.4	0 .00
80	59 .84	44 . 99	43.27	0 . 078	0.405	0 .00
100	59 .23	37. 42	35 .88	0 . 077	0.41 0	0 .00
120	58. 65	31.57	30 .17	0 . 076	0.41 5	0 .00
140	58. 06	26 . 97	25 . 70	0 . 075	0.421	0 .00
160	57. 49	23. 30	22.14	0 . 074	0.426	0 .00
180	56 . 93	20 . 34	19 .26	0 . 073	0.431	0 .00
200	56 . 36	17. 91	16 . 91	0 . 072	0.436	0 .00
220	55 . 79	15 . 90	14 . 96	0 . 072	0.441	0 .00
240	55 .23	14 .22	13. 34	0 . 071	0.446	0 .00
260	54 . 67	12.8	11. 98	0 . 070	0.451	0 .00
280	54 .12	11. 60	10 .81	0 . 069	0.456	0 .00
300	53.56	10 .57	9 .82	0 . 068	0.461	0 .00
320	53. 00	9.67	8. 96	0 . 067	0.466	0 .00
340	52. 44	8. 90	8.22	0 . 066	0.47 1	0 .00
360	51.87	8.22	7.57	0 . 065	0.47 6	0 .01
380	51. 31	7. 62	6 .99	0 . 064	0.481	0 .01
400	50 . 74	7. 09	6 .49	0 . 063	0.486	0 .02
420	50 .16	6 .63	6 .04	0 . 062	0.491	0 .04
440	49 .59	6 .21	5 .64	0 . 061	0.496	0 .06
460	49.02	5 .83	5 .28	0 . 060	0 .501	0 .1 0
480	48. 45	5 .49	4. 96	0 . 059	0 .506	0 .1 7
500	47.88	5 .1 9	4 .67	0 . 058	0 .512	0 .26
520	47. 30	4. 91	4 . 41	0 . 057	0 .517	0. 35
540	46 . 73	4 .66	4 .1 7	0 . 056	0 .522	0.46
560	46 .16	4 .43	3. 95	0 . 056	0 .527	0 .58
580	45 . 60	4 .22	3. 75	0 . 055	0 .532	0 . 74
600	45 . 01	4 .03	3.57	0 . 054	0 .537	0. 99

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