DURATHERM
Heat Transfer Fluids

DURATHERM S

An extremely oxidative and thermally stable heat transfer fluid offering precise temperature control in applications requiring the highest level of oxidative resistance across a wide temperature range.

APPLICATION

Duratherm S is ideal for applications such as negative pressure mold heaters, annealing tanks, open bath forming, or any processing equipment where oxidation is prevalent and problematic. **Duratherm S** resists the affects of oxidation seen with most other heat transfer fluids.

High temperature stability is maintained to 315°C (600°F), this combined with a low end working temperature of -51°C (-60°F) also makes **Duratherm S** ideally suited for low temperature applications, batch processing application requiring a single fluid for both heating and cooling.

THE DIFFERENCE

- Superior oxidation resistance (virtually unaffected)
- Non-fouling - extremely long life
- Low odor
- Non corrosive
- Non hazardous
- Non Toxic
- Extremely high working temperature 315°C (600°F)
- Extremely low working temperature -51°C (-60°F)

LASTS LONGER

Duratherm S is a high performance, extremely stable, long lasting silicone based heat transfer fluid.

Virtually unaffected by oxidation under 204°C (400°F), **Duratherm S** is perfect for use in a variety of applications requiring a safe, non-reportable, non-toxic and non-corrosive heat transfer fluid.

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- Maximum temperature: 315°C / 600°F
- Flash point 323°C / 615°F
- Highest Duratherm flash point
- Silicone-based fluid
- Great oxidation stability for open baths
- Non-toxic/non-hazardous
- Includes free fluid analysis and tech support

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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

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

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

PHYSICAL PROPERTIES

Appearance: clear liquid, slight yellow tint		
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	958.13	59.82
260°C / 500°F	899.46	56.15
316°C / 600°F	884.66	55.23
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)

The values quoted are typical of normal production. They do not constitute a specification.

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PROPERTY VS. TEMPERATURE CHART
METRIC

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	981.39	288.71	283.33	0.147	1.551	0.00
-40	978.75	209.03	204.58	0.145	1.569	0.00
-30	976.10	156.02	152.30	0.144	1.587	0.00
-20	973.46	119.58	116.41	0.142	1.606	0.00
-10	970.82	93.79	91.06	0.141	1.624	0.00
0	968.17	75.07	72.68	0.139	1.643	0.00
10	965.53	61.17	59.06	0.138	1.662	0.00
20	962.89	50.63	48.75	0.136	1.680	0.00
30	960.24	42.50	40.81	0.135	1.699	0.00
40	957.60	36.13	34.60	0.133	1.718	0.00
50	954.96	31.06	29.66	0.132	1.736	0.00
60	952.32	26.97	25.68	0.130	1.755	0.00
70	949.67	23.63	22.45	0.129	1.774	0.00
80	947.03	20.88	19.78	0.127	1.793	0.00
90	944.39	18.59	17.55	0.126	1.811	0.00
100	941.74	16.66	15.69	0.124	1.830	0.00
110	939.10	15.02	14.11	0.123	1.849	0.00
120	936.46	13.63	12.76	0.121	1.868	0.00
130	933.81	12.42	11.60	0.120	1.887	0.01
140	931.17	11.38	10.60	0.119	1.906	0.01
150	928.53	10.47	9.72	0.117	1.925	0.01
160	925.89	9.67	8.96	0.116	1.944	0.02
170	923.24	8.97	8.28	0.114	1.963	0.03
180	920.60	8.35	7.68	0.113	1.982	0.05
190	917.96	7.79	7.15	0.111	2.002	0.07
200	915.31	7.30	6.68	0.110	2.021	0.12
210	912.67	6.85	6.25	0.108	2.040	0.19
220	910.03	6.45	5.87	0.107	2.059	0.30
230	907.38	6.09	5.53	0.105	2.079	0.48
240	904.74	5.76	5.21	0.104	2.098	0.77
250	902.10	5.46	4.93	0.102	2.117	1.22
260	899.46	5.19	4.67	0.101	2.137	1.82
270	896.81	4.94	4.43	0.099	2.156	2.40
280	894.17	4.71	4.21	0.098	2.175	2.98
290	891.53	4.50	4.01	0.097	2.195	3.72
300	888.88	4.30	3.82	0.095	2.214	4.62
310	886.24	4.12	3.65	0.094	2.234	5.94
315	884.92	4.04	3.57	0.093	2.244	6.85

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PROPERTY VS. TEMPERATURE CHART
STANDARD

TEMPERATURE (Fahrenheit)	DENSITY (lb/ft^3)	KINEMATIC VISCOSITY (Centistoke)	DYNAMIC VISCOSITY (Centipoise)	THERMAL CONDUCTIVITY (BTU/hr-F-ft)	HEAT CAPACITY (BTU/lb-F)	VAPOR PRESSURE (Psia)
-60	61.28	299.88	294.57	0.085	0.370	0.00
-40	61.10	209.03	204.71	0.084	0.375	0.00
-20	60.92	151.29	147.72	0.083	0.380	0.00
0	60.73	113.08	110.08	0.082	0.385	0.00
20	60.55	86.90	84.34	0.081	0.390	0.00
40	60.37	68.40	66.18	0.080	0.395	0.00
60	60.18	54.97	53.02	0.079	0.400	0.00
80	60.00	44.99	43.27	0.078	0.405	0.00
100	59.82	37.42	35.88	0.077	0.410	0.00
120	59.63	31.57	30.17	0.076	0.415	0.00
140	59.45	26.97	25.70	0.075	0.421	0.00
160	59.27	23.30	22.14	0.074	0.426	0.00
180	59.08	20.34	19.26	0.073	0.431	0.00
200	58.90	17.91	16.91	0.072	0.436	0.00
220	58.72	15.90	14.96	0.072	0.441	0.00
240	58.53	14.22	13.34	0.071	0.446	0.00
260	58.35	12.80	11.98	0.070	0.451	0.00
280	58.17	11.60	10.81	0.069	0.456	0.00
300	57.98	10.57	9.82	0.068	0.461	0.00
320	57.80	9.67	8.96	0.067	0.466	0.00
340	57.62	8.90	8.22	0.066	0.471	0.00
360	57.43	8.22	7.57	0.065	0.476	0.01
380	57.25	7.62	6.99	0.064	0.481	0.01
400	57.07	7.09	6.49	0.063	0.486	0.02
420	56.88	6.63	6.04	0.062	0.491	0.04
440	56.70	6.21	5.64	0.061	0.496	0.06
460	56.52	5.83	5.28	0.060	0.501	0.10
480	56.33	5.49	4.96	0.059	0.506	0.17
500	56.15	5.19	4.67	0.058	0.512	0.26
520	55.97	4.91	4.41	0.057	0.517	0.35
540	55.78	4.66	4.17	0.056	0.522	0.46
560	55.60	4.43	3.95	0.056	0.527	0.58
580	55.42	4.22	3.75	0.055	0.532	0.74
600	55.23	4.03	3.57	0.054	0.537	0.99

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