

THERMINOL® 66

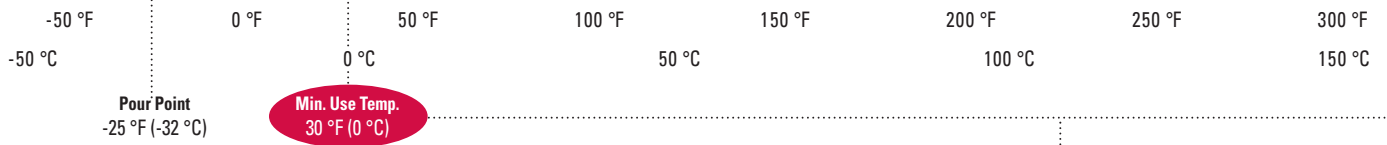
Heat Transfer Fluid by Solutia

Unique
High-temperature,
Low-pressure
Heat Transfer Fluid

30 °F to

650 °F





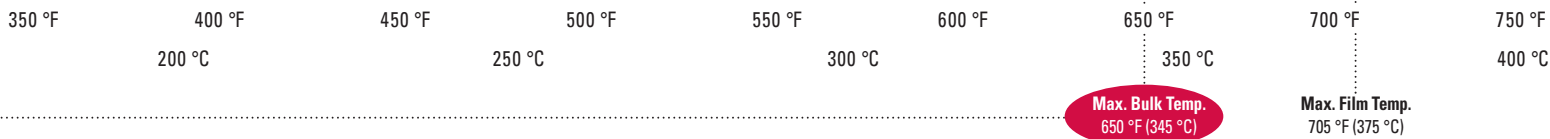
**O P T I M U M
U S E R A N G E*** 30 °F TO 650 °F (0 °C TO 345 °C)

Therminol® 66 synthetic heat transfer fluid offers outstanding high-temperature performance to 650 °F (345 °C), including excellent thermal stability and low vapor pressure. These properties result in reliable, consistent performance of heat transfer systems over long periods of time. Therminol 66 performance is proven through many years of industrial experience under a wide range of operating conditions. No heat transfer fluid material in the world has a higher degree of customer satisfaction than Therminol 66.

THERMINOL® 66

Heat Transfer Fluid by **Solutia**





TYPICAL PROPERTIES* †

Appearance	Clear, pale yellow liquid
Composition	Modified terphenyl
Moisture Content, Maximum	150 ppm
Flash Point (ASTM D-92)	184 °C (363 °F)
Fire Point (ASTM D-92)	212 °C (414 °F)
Autoignition Temperature (ASTM E-659)	374 °C (705 °F)
Kinematic Viscosity, at 40 °C	29.6 mm ² /s (cSt)
Kinematic Viscosity, at 100 °C	3.8 mm ² /s (cSt)
Density at 25 °C	1005 kg/m ³ (8.39 lb/gal)
Specific Gravity (60 °F/60 °F)	1.012
Coefficient of Thermal Expansion at 200 °C	0.000819/°C (0.000455/°F)
Average Molecular Weight	252
Pour Point	-32 °C (-25 °F)
Pumpability, at 2000 mm²/s (cSt)	-3 °C (27 °F)
Pumpability, at 300 mm²/s (cSt)	11 °C (52 °F)
Minimum Temperatures for Fully Developed Turbulent Flow (Re = 10000)	
10 ft/sec, 1-in tube	72 °C (162 °F)
20 ft/sec, 1-in tube	53 °C (128 °F)
Transition Region Flow (Re = 2000)	
10 ft/sec, 1-in tube	35 °C (96 °F)
20 ft/sec, 1-in tube	26 °C (78 °F)
Boiling Range, 10%	348 °C (658 °F)
Boiling Range, 90%	392 °C (738 °F)
Normal Boiling Point	359 °C (678 °F)
Heat of Vaporization at Maximum Use Temperature 345 °C	272 kJ/kg (117 Btu/lb)
Optimum Use Range	0-345 °C (30-650 °F)
Maximum Film Temperature	375 °C (705 °F)
Pseudocritical Temperature	569 °C (1056 °F)
Pseudocritical Pressure	24.3 bar (353 psia)
Pseudocritical Density	317 kg/m ³ (19.8 lb/ft ³)

* These data are based upon samples tested in the laboratory and are not guaranteed for all samples.

Write us for complete sales specifications for Therminol 66 fluid.

† Does not constitute an express warranty. See NOTICE on the back page of this bulletin.

P R O P E R T I E S O F T H E R M I N O L[®] 6 6

Temperature		Liquid Density			Liquid Heat Capacity		Liquid Enthalpy**		Heat of Vaporization	
°F	°C	lb/gal	lb/ft ³	kg/m ³	Btu/lb-°F [cal/g-°C]	kJ/kg·K	Btu/lb	kJ/kg	Btu/lb	kJ/kg
20	-7	8.56	64.0	1026	0.352	1.47	7.0	16.2	179.6	417.5
30	-1	8.53	63.8	1022	0.356	1.49	10.5	24.4	178.5	414.8
40	4	8.50	63.6	1019	0.361	1.51	14.1	32.7	177.3	412.2
60	16	8.44	63.1	1011	0.370	1.55	21.4	49.7	175.1	407.1
80	27	8.38	62.7	1003	0.379	1.58	28.9	67.1	173.0	402.0
100	38	8.32	62.2	997	0.388	1.62	36.5	84.9	170.8	397.1
120	49	8.26	61.8	989	0.397	1.66	44.4	103.2	168.7	392.2
140	60	8.19	61.3	982	0.406	1.70	52.4	121.8	166.7	387.5
160	71	8.13	60.8	974	0.415	1.74	60.6	140.9	164.7	382.8
180	82	8.07	60.4	967	0.424	1.78	69.0	160.5	162.7	378.3
200	93	8.01	59.9	960	0.434	1.81	77.6	180.4	160.8	373.8
220	104	7.94	59.4	952	0.443	1.85	86.4	200.8	158.9	369.3
240	116	7.88	59.0	944	0.452	1.89	95.3	221.6	157.0	365.0
260	127	7.82	58.5	937	0.462	1.93	104.5	242.8	155.2	360.6
280	138	7.75	58.0	929	0.471	1.97	113.8	264.5	153.3	356.4
300	149	7.69	57.5	921	0.480	2.01	123.3	286.6	151.5	352.1
320	160	7.62	57.0	914	0.490	2.05	133.0	309.2	149.7	347.9
340	171	7.56	56.5	906	0.500	2.09	142.9	332.2	147.9	343.8
360	182	7.49	56.1	898	0.509	2.13	153.0	355.6	146.1	339.6
380	193	7.43	55.6	890	0.519	2.17	163.3	379.5	144.3	335.4
400	204	7.36	55.1	882	0.528	2.21	173.7	403.8	142.5	331.2
420	216	7.29	54.5	874	0.538	2.25	184.4	428.6	140.7	327.0
440	227	7.22	54.0	866	0.548	2.29	195.2	453.8	138.9	322.8
460	238	7.15	53.5	857	0.558	2.33	206.3	479.6	137.0	318.5
480	249	7.08	53.0	849	0.568	2.38	217.6	505.7	135.2	314.2
500	260	7.01	52.5	840	0.578	2.42	229.0	532.3	133.3	309.8
520	271	6.94	51.9	832	0.588	2.46	240.7	559.4	131.3	305.3
540	282	6.87	51.4	823	0.598	2.50	252.5	587.0	129.4	300.7
560	293	6.79	50.8	814	0.608	2.54	264.6	615.0	127.4	296.0
580	304	6.72	50.2	805	0.618	2.59	276.8	643.5	125.3	291.2
600	316	6.64	49.7	796	0.628	2.63	289.3	672.5	123.2	286.3
620	327	6.56	49.1	786	0.639	2.67	302.0	701.9	121.0	281.2
640	338	6.48	48.5	777	0.649	2.72	314.9	731.9	118.7	276.0
650	345	6.44	48.2	772	0.655	2.74	321.4	747.0	117.6	273.3
660	349	6.40	47.9	767	0.660	2.76	328.0	762.3	116.4	270.5
680	360	6.32	47.3	757	0.671	2.81	341.3	793.2	113.9	264.9
700	371	6.23	46.6	747	0.682	2.85	354.8	824.7	111.4	259.0

* Maximum recommended bulk temperature 650 °F (345 °C).

† These data are based upon samples tested in the laboratory and are not guaranteed for all samples. Write us for complete sales specifications for Therminol 66 fluid.

** The liquid enthalpy basis is zero at 0 °F.

H E A T T R A N S F E R F L U I D * †

Liquid Thermal Conductivity			Liquid Viscosity			Vapor Pressure				Temperature	
Btu/ ft-hr-°F	kcal/ m-hr-°C	W/m•K	lb/ft-hr	cSt [mm ² /s]	cP [mPa•s]	psia	mm Hg	kgf/cm ²	kPa	°F	°C
0.0685	0.1020	0.1185	10070	4060	4160					20	-7
0.0684	0.1018	0.1183	3820	1544	1579					30	-1
0.0683	0.1016	0.1181	1679	681	694					40	4
0.0681	0.1013	0.1177	456	186.3	188.4					60	16
0.0678	0.1009	0.1173	171.9	70.8	71.0					80	27
0.0675	0.1005	0.1168	81.2	33.7	33.6					100	38
0.0672	0.1001	0.1163	45.0	18.78	18.58					120	49
0.0669	0.0996	0.1158	27.9	11.74	11.53					140	60
0.0666	0.0991	0.1152	18.79	7.97	7.77	0.0016	0.085	0.00012	0.011	160	71
0.0662	0.0986	0.1145	13.48	5.76	5.57	0.0029	0.15	0.00021	0.020	180	82
0.0658	0.0980	0.1139	10.14	4.37	4.19	0.0051	0.26	0.00036	0.035	200	93
0.0654	0.0974	0.1132	7.91	3.44	3.27	0.0086	0.45	0.00061	0.060	220	104
0.0650	0.0967	0.1124	6.36	2.78	2.63	0.014	0.74	0.0010	0.098	240	116
0.0646	0.0961	0.1117	5.23	2.31	2.16	0.023	1.2	0.0016	0.16	260	127
0.0641	0.0954	0.1108	4.39	1.951	1.813	0.036	1.9	0.0025	0.25	280	138
0.0636	0.0946	0.1100	3.74	1.677	1.545	0.056	2.9	0.0039	0.38	300	149
0.0631	0.0939	0.1091	3.23	1.461	1.335	0.084	4.3	0.0059	0.58	320	160
0.0625	0.0931	0.1082	2.82	1.289	1.167	0.125	6.4	0.0088	0.86	340	171
0.0620	0.0922	0.1072	2.49	1.148	1.031	0.182	9.4	0.0128	1.26	360	182
0.0614	0.0914	0.1062	2.22	1.032	0.918	0.262	13.5	0.0184	1.80	380	193
0.0608	0.0905	0.1051	1.995	0.935	0.825	0.370	19.1	0.0260	2.55	400	204
0.0602	0.0895	0.1040	1.805	0.854	0.746	0.517	26.7	0.0363	3.56	420	216
0.0595	0.0886	0.1029	1.643	0.785	0.679	0.712	36.8	0.0501	4.91	440	227
0.0588	0.0876	0.1018	1.504	0.725	0.622	0.969	50.1	0.0681	6.68	460	238
0.0581	0.0865	0.1006	1.384	0.674	0.572	1.30	67.4	0.0916	8.98	480	249
0.0574	0.0855	0.0993	1.280	0.629	0.529	1.73	89.6	0.122	12.0	500	260
0.0567	0.0843	0.0980	1.188	0.591	0.491	2.28	118	0.160	15.7	520	271
0.0559	0.0832	0.0967	1.108	0.557	0.458	2.97	154	0.209	20.5	540	282
0.0552	0.0821	0.0954	1.037	0.527	0.429	3.84	199	0.270	26.5	560	293
0.0543	0.0809	0.0940	0.974	0.500	0.403	4.91	254	0.346	33.9	580	304
0.0535	0.0796	0.0926	0.918	0.477	0.379	6.24	323	0.439	43.0	600	316
0.0527	0.0784	0.0911	0.868	0.456	0.359	7.85	406	0.552	54.2	620	327
0.0518	0.0771	0.0896	0.822	0.438	0.340	9.81	508	0.690	67.7	640	338
0.0514	0.0764	0.0888	0.801	0.429	0.331	10.9	566	0.769	75.4	650	345
0.0509	0.0757	0.0880	0.781	0.421	0.323	12.2	630	0.856	83.9	660	349
0.0500	0.0744	0.0865	0.744	0.407	0.308	15.0	776	1.05	103	680	360
0.0491	0.0730	0.0848	0.711	0.393	0.294	18.4	949	1.29	127	700	371

TECHNICAL SERVICE HOTLINE (800) 433-6997



PHYSICAL AND CHEMICAL CHARACTERISTICS

Therminol 66 fluid is designed for use in non-pressurized/low-pressure, indirect heating systems. It delivers efficient, dependable, uniform process heat with no need for high pressures. The high boiling point of Therminol 66 helps reduce the volatility and fluid leakage problems associated with other fluids.

While Therminol 66 has a relatively high flash point, it is not classified as a fire-resistant heat transfer fluid. Consequently, the use of protective devices may be required to minimize fire risk. The insurer of your property should be consulted relative to this matter.

The recommended maximum bulk (650 °F/345 °C) and film (705 °F/375 °C) temperatures are based on detailed thermal studies. Operation at or below these temperature maximums provides long service life under most operating conditions.

THERMINOL® 66 Heat Transfer Fluid by **Solutia**

Solutia recommends that systems utilizing Therminol 66 fluid should be blanketed with an inert atmosphere. Inert gas blanketing minimizes fluid oxidation and helps maximize fluid life. A system pressure relief device also should be provided.

Therminol 66 is non-corrosive to metals commonly used in the design of heat transfer systems.

Actual fluid life is quite dependent on system design and operation. As fluid ages, the formation of volatile (low-boiling) products and high-boiling compounds may result. Volatile products should be vented from the system to a non-hazardous area away from personnel and sources of ignition. The high-boiling compounds are generally soluble in the fluid. Significant overheating or fluid contamination will accelerate this decomposition and may result in separation of the high-boiling compounds as solids (tar, coke, etc.). These solids could be detrimental to the operation of the system and, when detected, should be removed.

SAFETY AND HANDLING

Material Safety Data Sheets may be obtained through www.therminol.com or from Environmental Operations, Solutia Inc. Heat transfer fluids are intended only for indirect heating purposes. Under no circumstances should this product contact or in any way contaminate food, animal feed, food products, food packaging materials, food chemicals, pharmaceuticals or any items which may directly or indirectly be ultimately ingested by humans. Any contact may contaminate these items to the extent that their destruction may be required. Precautions against ignitions and fires should be taken with this product.

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Please call our Technical Service Hotline, toll free at (800) 433-6997.

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