

THERMINOL® 66

heat transfer fluid



Proven performance
for high-temperature,
low-pressure applications

-3° to 345°C
(27° to 650°F)

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THERMINOL
Heat transfer fluids by Eastman

Typical properties^a

Appearance	Clear, pale yellow liquid
Composition	Modified terphenyl
Maximum bulk temperature	345°C (650°F)
Maximum film temperature	375°C (705°F)
Normal boiling point	359°C (678°F)
Pumpability, at 300 mm ² /s (cSt)	11°C (52°F)
Pumpability, at 2000 mm ² /s (cSt)	-3°C (27°F)
Flash point, COC (ASTM D-92)	184°C (363°F)
Flash point, PMCC (ASTM D-93)	170°C (338°F)
Autoignition temperature (ASTM E-659)	374°C (705°F)
Autoignition temperature (DIN 51794)	399°C (750°F)
Pour point (ASTM D-97)	-32°C (-25°F)
Minimum liquid temperatures for fully developed turbulent flow ($N_{Re} > 10,000$)	
10 ft/sec, 1-in. tube (3.048 m/s, 2.54-cm tube)	72°C (162°F)
20 ft/sec, 1-in. tube (6.096 m/s, 2.54-cm tube)	53°C (128°F)
Minimum liquid temperatures for transitional region flow ($N_{Re} > 2000$)	
10 ft/sec, 1-in. tube (3.048 m/s, 2.54-cm tube)	35°C (96°F)
20 ft/sec, 1-in. tube (6.096 m/s, 2.54-cm tube)	26°C (78°F)
Coefficient of thermal expansion at 200°C	0.000819/°C (0.000455/°F)
Total acidity (ASTM D-664)	<0.2 mg KOH/g
Average molecular weight	252
Pseudocritical temperature	569°C (1056°F)
Pseudocritical pressure	24.3 bar (353 psia)
Pseudocritical density	317 kg/m ³ (19.8 lb/ft ³)
Chlorine content, ppm (DIN 51577)	<10 ppm
Copper corrosion (ASTM D-130)	<< 1a
Moisture content, maximum (ASTM E-203)	150 ppm
Dielectric constant @ 23°C (ASTM D-924)	2.61

^aThese data are based on samples tested in the laboratory and are not guaranteed for all samples. Contact us for complete sales specifications for Therminol 66 fluid. Does not constitute an express warranty. See disclaimer on the back page of this bulletin.



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Heat transfer fluid calculators Therminol.com

- Product comparison calculator**
Make side by side comparisons of up to six fluids for physical and performance properties, and heat transfer coefficients.
- Property by temperature table**
Create tables of physical properties in various units of measure, and in user-selected temperature increments (user fluid).
- Property by temperature plot**
Create plots of key physical properties of Therminol fluids in user-selected units of measure. Plot up to 6 fluids.
- View fluid chart**

www.therminol.com

To create your own customized table

with preferred properties, units of measure,
and temperature intervals, visit

Therminol.com/resources

and download the Therminol heat transfer fluid calculator.

For technical service, visit the contact page of our website, Therminol.com.

Liquid properties of Therminol® 66 heat transfer fluid by temperature^a (SI units)

Temperature		Liquid density kg/m ³	Liquid heat capacity kJ/(kg·K)	Heat of vaporization kJ/kg	Liquid enthalpy ^b kJ/kg	Liquid thermal conductivity W/(m·K)	Liquid viscosity ^c		Vapor pressure ^d kPa
°C	°F						cP (mPa·s)	cSt (mm ² /s)	
-3	27	1023	1.49	415.6	22.0	0.1180	2050	2000	—
0	32	1021	1.49	414.3	26.0	0.1183	1320	1300	—
10	50	1015	1.53	409.6	41.2	0.1179	344	339	—
20	68	1008	1.56	405.0	56.6	0.1176	123	122	—
30	86	1002	1.60	400.5	72.4	0.1172	55.6	55.5	—
40	104	995	1.63	396.1	88.5	0.1167	29.5	29.6	—
50	122	989	1.66	391.8	105.0	0.1163	17.6	17.8	—
60	140	982	1.70	387.5	121.8	0.1158	11.5	11.7	—
70	158	975	1.73	383.3	139.0	0.1152	8.06	8.26	0.011
80	176	969	1.77	379.2	156.5	0.1147	5.93	6.12	0.011
90	194	962	1.80	375.1	174.4	0.1141	4.55	4.73	0.011
100	212	955	1.84	371.1	192.6	0.1135	3.60	3.77	0.011
110	230	948	1.87	367.1	211.1	0.1128	2.92	3.08	0.011
120	248	941	1.91	363.2	230.0	0.1121	2.42	2.57	0.119
130	266	934	1.94	359.4	249.3	0.1114	2.05	2.19	0.181
140	284	928	1.98	355.5	268.9	0.1107	1.75	1.89	0.271
150	302	921	2.01	351.7	288.8	0.1099	1.52	1.65	0.400
160	320	914	2.05	347.9	309.1	0.1091	1.33	1.46	0.579
170	338	907	2.09	344.2	329.8	0.1083	1.18	1.30	0.827
180	356	899	2.12	340.4	350.9	0.1074	1.06	1.17	1.17
190	374	892	2.16	336.7	372.3	0.1065	0.950	1.06	1.62
200	392	885	2.19	332.9	394.0	0.1056	0.860	0.972	2.23
210	410	878	2.23	329.1	416.1	0.1046	0.784	0.893	3.02
220	428	870	2.27	325.3	438.6	0.1036	0.718	0.825	4.06
230	446	863	2.30	321.5	461.5	0.1026	0.661	0.766	5.39
240	464	856	2.34	317.7	484.7	0.1015	0.611	0.714	7.10
250	482	848	2.38	313.7	508.3	0.1004	0.567	0.669	9.25
260	500	840	2.42	309.8	532.3	0.0993	0.529	0.629	12.0
270	518	832	2.45	305.8	556.7	0.0982	0.495	0.594	15.3
280	536	825	2.49	301.7	581.4	0.0970	0.464	0.563	19.5
290	554	817	2.53	297.5	606.5	0.0958	0.437	0.535	24.5
300	572	809	2.57	293.2	632.0	0.0946	0.413	0.510	30.7
310	590	800	2.61	288.8	657.9	0.0933	0.391	0.488	38.2
320	608	792	2.65	284.3	684.2	0.0920	0.371	0.468	47.2
330	626	783	2.69	279.7	710.8	0.0906	0.353	0.450	57.9
340	644	775	2.73	274.9	737.9	0.0893	0.336	0.434	70.7
350	662	766	2.77	270.0	765.4	0.0879	0.321	0.420	85.7
360	680	757	2.81	264.9	793.2	0.0865	0.308	0.406	103
370	698	748	2.85	259.6	821.5	0.0850	0.295	0.395	124



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^aMaximum recommended bulk temperature 345°C (650°F). These data are based on samples tested in the laboratory and are not guaranteed for all samples. Contact us for complete sales specifications for Therminol 66 fluid. ^bLiquid enthalpy basis is -17.8°C (0°F). ^c1 cSt = 1 mm²/s and 1 mPa·s = 1 cP. ^d100 kPa = 1 bar

Liquid properties of Therminol® 66 heat transfer fluid by temperature^a (English units)

Temperature		Liquid density		Liquid heat capacity	Heat of vaporization	Liquid enthalpy ^b	Liquid thermal conductivity	Liquid viscosity ^c		Vapor pressure ^d
°F	°C	lb/gal	lb/ft ³	Btu/(lb·°F)	Btu/lb	Btu/lb	Btu/(ft·h·°F)	lb/(ft·h)	cSt (mm ² /s)	psia
27	-3	8.54	63.9	0.355	178.8	9.4	0.0684	5020	2000	—
40	4	8.50	63.6	0.361	177.3	14.1	0.0683	1680	681	—
60	16	8.44	63.1	0.370	175.1	21.4	0.0681	456	186	—
80	27	8.38	62.7	0.379	173.0	28.9	0.0678	172	70.8	—
100	38	8.32	62.2	0.388	170.8	36.5	0.0675	81.2	33.7	—
120	49	8.26	61.8	0.397	168.7	44.4	0.0672	44.9	18.8	—
140	60	8.19	61.3	0.406	166.7	52.4	0.0669	27.9	11.7	—
160	71	8.13	60.8	0.415	164.7	60.6	0.0666	18.8	7.97	0.0016
180	82	8.07	60.4	0.424	162.7	69.0	0.0662	13.5	5.76	0.0029
200	93	8.01	59.9	0.434	160.8	77.6	0.0658	10.1	4.37	0.0049
220	104	7.94	59.4	0.443	158.9	86.4	0.0654	7.91	3.44	0.0070
240	116	7.88	59.0	0.452	157.0	95.3	0.0650	6.36	2.78	0.0094
260	127	7.82	58.5	0.462	155.2	104.5	0.0646	5.23	2.31	0.0121
280	138	7.75	58.0	0.471	153.3	113.8	0.0641	4.39	1.95	0.0152
300	149	7.69	57.5	0.480	151.5	123.3	0.0636	3.74	1.68	0.0188
320	160	7.62	57.0	0.490	149.7	133.0	0.0631	3.23	1.46	0.0230
340	171	7.56	56.5	0.499	147.9	142.9	0.0625	2.82	1.29	0.0278
360	182	7.49	56.1	0.509	146.1	153.0	0.0620	2.49	1.15	0.0331
380	193	7.43	55.6	0.519	144.3	163.3	0.0614	2.22	1.03	0.0389
400	204	7.36	55.1	0.528	142.5	173.7	0.0608	2.00	0.935	0.0452
420	216	7.29	54.5	0.538	140.7	184.4	0.0602	1.80	0.854	0.0520
440	227	7.22	54.0	0.548	138.9	195.2	0.0595	1.64	0.784	0.0593
460	238	7.15	53.5	0.558	137.0	206.3	0.0588	1.50	0.725	0.0671
480	249	7.08	53.0	0.568	135.2	217.6	0.0581	1.38	0.674	0.0754
500	260	7.01	52.5	0.578	133.3	229.0	0.0574	1.28	0.629	0.0842
520	271	6.94	51.9	0.588	131.3	240.7	0.0567	1.19	0.591	0.0935
540	282	6.87	51.4	0.598	129.4	252.5	0.0559	1.11	0.557	0.1033
560	293	6.79	50.8	0.608	127.4	264.6	0.0551	1.04	0.527	0.1136
580	304	6.72	50.2	0.618	125.3	276.8	0.0543	0.974	0.500	0.1243
600	316	6.64	49.7	0.628	123.2	289.3	0.0535	0.918	0.477	0.1355
620	327	6.56	49.1	0.639	121.0	302.0	0.0527	0.867	0.456	0.1471
640	338	6.48	48.5	0.649	118.7	314.9	0.0518	0.822	0.438	0.1591
660	349	6.40	47.9	0.660	116.4	327.9	0.0509	0.781	0.421	0.1715
680	360	6.32	47.3	0.671	113.9	341.3	0.0500	0.744	0.406	0.1843
700	371	6.23	46.6	0.682	111.4	354.8	0.0491	0.711	0.393	0.1975



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TLC Total Lifecycle Care®

Eastman's TLC Total Lifecycle Care® program is designed to support Therminol customers throughout their systems' life cycle. This comprehensive program includes system design support, start-up assistance, training, sample analysis, flush and refill fluids, and our fluid trade-in program. In North America, call our hotline at 1-800-433-6997 or contact your local sales or technical representative.



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In-service heat transfer fluid sample analysis

When Therminol heat transfer fluids are used within suggested temperature limits, they may provide years of trouble-free service. To help users get maximum life, Eastman offers testing of in-service heat transfer fluids to detect contamination, moisture, thermal degradation, and other conditions that may impact system performance. This comprehensive analysis includes acid number, kinematic viscosity, insoluble solids, low boilers, high boilers, and moisture content. Additional special analyses are available on request. Sample analysis includes sample collection kits that are easy to use. Most systems should be sampled annually. Users should also sample anytime a fluid-related problem is suspected.

FLUID GENIUS

Results of the test are presented in a detailed report that provides suggestions for corrective action. Test results are stored in a database for future reference. Customers can also access their specific test information via our new, advanced heat transfer fluid management platform, Fluid Genius™. It's a revolutionary patent-pending digital service that gives engineers and operations managers predictive insights to optimize heat transfer fluid performance—providing the ultimate edge. From sampling kits to expert guidance, our comprehensive service keeps you on track. Contact your account manager to get started on Fluid Genius—and keep your system up and running. To conduct your sample analysis, you will be provided with an all-inclusive, easy-to-use sample kit. Kit design may vary depending on fluid shipping and lab requirements within the region. To learn more and request access to Fluid Genius, visit fluidgenius.net.

Technical service hotline

Experienced technical service specialists can help answer your questions regarding heat transfer fluid selection, system start-ups, system design, and operational issues.

System design support

Eastman regularly assists some of the world's largest engineering, chemical, and equipment manufacturing companies on the design and operation of heat transfer systems. Our liquid phase and vapor phase design guide information and system design data

have been field tested in numerous installations. Eastman also conducts engineering seminars for customers, engineering firms, and equipment manufacturers to cover a wide range of heat transfer fluid system design and operation issues. Customers can request a technical service visit to audit heat transfer systems for fluid loss and leak prevention opportunities.

Operational training

Eastman believes that by sharing our experience with customers, we can help improve system design, promote safety, and reduce overall cost. Customers can take advantage of Eastman's heat transfer system operation and product training programs. These programs are customized to suit the varied needs of frontline technicians, operations supervisors, and maintenance technicians to design engineers. Customers can also receive training assistance for dealing with important topics like fluid safety and handling.

Safety awareness training

At Eastman, we're "All in for Safety." We provide our customer safety awareness training that focuses on the design, start-up, operation, and maintenance of heat transfer fluid systems.



Start-up assistance

Eastman provides start-up assistance by reviewing procedures and offering suggestions to reduce typical problems. Customers can also receive help by calling their local Eastman technical specialist or through on-site assistance.

Flush fluid and fluid refill

Liquid phase heat transfer systems can be cleaned with Therminol® FF flushing fluid. After the system is flushed, the appropriate liquid phase Therminol heat transfer fluid can be added.

Fluid trade-in program*

As part of our commitment to sustainability and the environment, Eastman offers a trade-in program for used Therminol and competitive heat transfer fluids. Depending on the fluid and its condition, it may be turned in for potential credit towards the purchase of new Therminol heat transfer fluid.

*Available in North America. Contact your local sales representative for more information.



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EASTMAN

The results of insight™

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