

THERMINOL®
from Eastman

THERMINOL® 68

heat transfer fluid

High-performance, low-viscosity fluid

-26° to 360°C
(-14° to 680°F)



THERMINOL[®] 68

heat transfer fluid

Physical and chemical characteristics

Therminol 68 heat transfer fluid is designed for use in nonpressurized/low- pressure, indirect heating systems. While Therminol 68 has a relatively high normal boiling point (308°C/586°F), the recommended maximum bulk (360°C/680°F) and film (390°C/ 735°F) temperatures are greater. Therefore, proper care should be taken in the design of the system to minimize leakage, especially when operating above a bulk fluid temperature of 360°C (680°F).

The recommended maximum bulk and film temperatures for Therminol 68 are based on industry-standard thermal studies. Operation at or below these temperature maximums can provide long service life under most operating conditions.

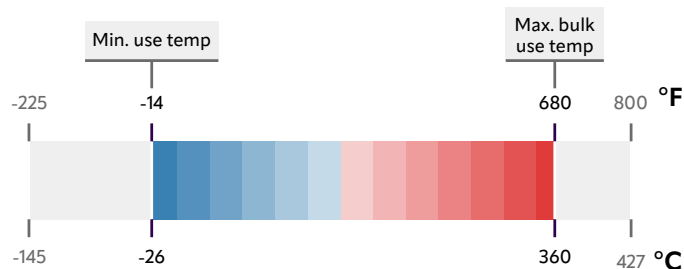
Actual fluid life is dependent on the total system design and operation and can vary by heat transfer fluid chemistry. As fluid ages, the formation of low- and high-boiling compounds may result. Low-boiling compounds should be vented from the system as necessary to a safe location away from personnel and sources of ignition and in compliance with applicable regulations and laws. The high-boiling compounds can be very soluble in the fluid. Significant overheating or fluid contamination will accelerate decomposition and may result in increased high-boiler and solids concentrations. Excess solids can typically be filtered for removal.

Eastman recommends that systems utilizing Therminol 68 fluid should be blanketed with an atmosphere of inert gas to protect against the effects of fluid oxidation on its performance and life expectancy. Pressure relief device(s) should be installed where required.

Therminol 68 is noncorrosive to metals commonly used in the construction of heat transfer systems.

While Therminol 68 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, and users of Therminol 68 should check with their safety and risk management experts for specific instructions.

Eastman Therminol 68 heat transfer fluid is a high-temperature fluid with excellent thermal stability. Therminol 68 was developed for use at temperatures up to 360°C (680°F) in liquid phase heat transfer systems. Static pressure of about 2 bar should maintain the liquid phase at high temperatures.



Typical properties^a

Appearance	Clear, pale yellow liquid
Composition	Mixture of synthetic aromatics
Maximum bulk temperature	360°C (680°F)
Maximum film temperature	390°C (735°F)
Normal boiling point	308°C (586°F)
Pumpability, at 300 mm ² /s (cSt)	-10°C (14°F)
Pumpability, at 2000 mm ² /s (cSt)	-26°C (-14°F)
Flash point, COC (ASTM D92)	155°C (311°F)
Autoignition temperature (DIN 51794)	400°C (752°F)
Pour point (ISO 3016)	-33°C (-27°F)
Total acidity (ASTM D664)	<0.2 mg KOH/g
Average molecular weight	226
Copper corrosion (ASTM D130)	<<1a
Moisture content, maximum (ASTM E203)	200 ppm
Dielectric constant @ 23°C (ASTM D924)	2.8

^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 68 fluid. Does not constitute an express warranty. See disclaimer on the back page of this bulletin.



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 on therminol.com.

Liquid properties of Therminol 68 heat transfer fluid by temperature^a (SI units)

Temperature		Liquid density	Liquid heat capacity	Liquid thermal conductivity	Liquid viscosity ^b		Vapor pressure ^c
°C	°F	kg/m ³	kJ/(kg·K)	W/(m·K)	cP (mPa·s)	cSt (mm ² /s)	kPa
-20	-4	1,056	1.495	0.127	959	908	—
-10	14	1,049	1.527	0.126	314	299	—
0	32	1,042	1.559	0.125	130	125	—
10	50	1034	1.592	0.124	63.3	61.2	—
20	68	1,027	1.624	0.124	34.9	34.0	—
30	86	1020	1.656	0.123	21.1	20.7	—
40	104	1,013	1.688	0.122	13.8	13.6	—
50	122	1,006	1.721	0.121	9.51	9.45	—
60	140	998	1.753	0.120	6.88	6.89	0.033
70	158	991	1.785	0.120	5.17	5.22	0.057
80	176	983	1.817	0.119	4.01	4.08	0.094
90	194	976	1.849	0.118	3.20	3.27	0.151
100	212	969	1.882	0.117	2.60	2.69	0.237
110	230	962	1.914	0.116	2.16	2.25	0.365
120	248	955	1.946	0.116	1.83	1.91	0.551
130	266	947	1.978	0.115	1.56	1.65	0.814
140	284	940	2.011	0.114	1.36	1.44	1.18
150	302	933	2.043	0.113	1.19	1.27	1.69
160	320	926	2.075	0.112	1.05	1.14	2.38
170	338	919	2.107	0.112	0.94	1.02	3.30
180	356	911	2.140	0.111	0.85	0.927	4.52
190	374	904	2.172	0.110	0.77	0.846	6.10
200	392	898	2.204	0.109	0.70	0.777	8.15
210	410	890	2.236	0.108	0.64	0.718	10.8
220	428	883	2.269	0.107	0.59	0.666	14.0
230	446	876	2.301	0.107	0.55	0.622	18.1
240	464	869	2.333	0.106	0.51	0.582	23.2
250	482	862	2.365	0.105	0.47	0.547	29.5
260	500	854	2.398	0.104	0.44	0.516	37.1
270	518	847	2.430	0.103	0.41	0.489	46.3
280	536	840	2.462	0.103	0.39	0.464	57.3
290	554	833	2.494	0.102	0.37	0.441	70.5
300	572	826	2.527	0.101	0.35	0.421	86.1
310	590	818	2.559	0.100	0.33	0.403	104
320	608	811	2.591	0.099	0.31	0.386	126
330	626	804	2.623	0.099	0.30	0.371	151
340	644	797	2.655	0.098	0.28	0.357	180
350	662	790	2.688	0.097	0.27	0.344	213
360	680	782	2.720	0.096	0.26	0.332	251

^aMaximum recommended bulk temperature 360°C (680°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 68 fluid. ^b1 cSt = 1 mm²/s and 1 mPa·s = 1 cP. ^c100 kPa = 1 bar

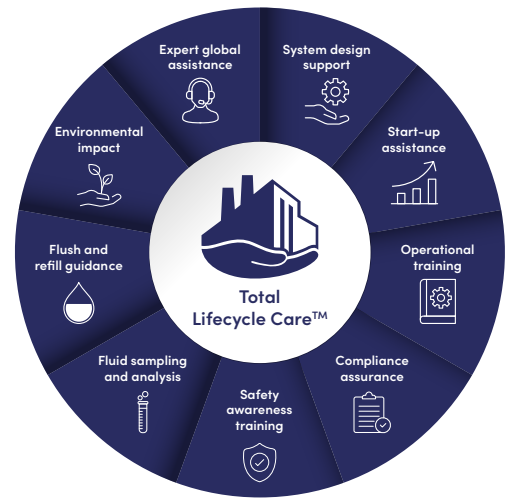
Liquid properties of Therminol 68 heat transfer fluid by temperature^a (English units)

Temperature		Liquid density		Liquid heat capacity	Liquid thermal conductivity	Liquid viscosity ^b		Vapor pressure ^c
°F	°C	lb/gal	lb/ft ³	Btu/(lb·°F)	Btu/(ft·h·°F)	lb/(ft·h)	cSt (mm ² /s)	psia
-14	-26	8.85	66.2	0.353	0.0736	4,950	1,930	—
0	-18	8.80	65.8	0.359	0.0732	1,770	692	—
20	-7	8.73	65.3	0.368	0.0727	553	219	—
40	4	8.66	64.8	0.376	0.0722	224	89.2	—
60	16	8.60	64.3	0.385	0.0716	109	43.5	0.0003
80	27	8.53	63.8	0.393	0.0711	59.9	24.2	0.0006
100	38	8.46	63.3	0.402	0.0706	36.5	14.9	0.0013
120	49	8.40	62.8	0.410	0.0701	23.9	9.82	0.0026
140	60	8.33	62.3	0.419	0.0696	16.6	6.89	0.0048
160	71	8.26	61.8	0.427	0.0691	12.1	5.07	0.0087
180	82	8.19	61.3	0.436	0.0685	9.20	3.87	0.0151
200	93	8.13	60.8	0.445	0.0680	7.20	3.06	0.0255
220	104	8.06	60.3	0.453	0.0675	5.79	2.48	0.0418
240	116	7.99	59.8	0.462	0.0670	4.75	2.05	0.0667
260	127	7.93	59.3	0.470	0.0665	3.98	1.73	0.104
280	138	7.86	58.8	0.479	0.0659	3.38	1.48	0.158
300	149	7.79	58.3	0.487	0.0654	2.92	1.29	0.236
320	160	7.73	57.8	0.496	0.0649	2.55	1.14	0.345
340	171	7.66	57.3	0.505	0.0644	2.25	1.01	0.496
360	182	7.59	56.8	0.513	0.0639	2.00	0.91	0.701
380	193	7.53	56.3	0.522	0.0634	1.79	0.82	0.976
400	204	7.46	55.8	0.530	0.0628	1.62	0.75	1.34
420	216	7.39	55.3	0.539	0.0623	1.48	0.69	1.81
440	227	7.33	54.8	0.547	0.0618	1.35	0.64	2.42
460	238	7.26	54.3	0.556	0.0613	1.24	0.59	3.19
480	249	7.19	53.8	0.564	0.0608	1.15	0.55	4.17
500	260	7.13	53.3	0.573	0.0602	1.07	0.52	5.38
520	271	7.06	52.8	0.582	0.0597	0.99	0.49	6.88
540	282	6.99	52.3	0.590	0.0592	0.93	0.46	8.71
560	293	6.92	51.8	0.599	0.0587	0.87	0.43	10.9
580	304	6.86	51.3	0.607	0.0582	0.82	0.41	13.6
600	316	6.79	50.8	0.616	0.0577	0.78	0.39	16.8
620	327	6.72	50.3	0.624	0.0571	0.73	0.38	20.6
640	338	6.66	49.8	0.633	0.0566	0.69	0.36	25.1
660	349	6.59	49.3	0.642	0.0561	0.66	0.35	30.4
680	360	6.52	48.8	0.650	0.0556	0.63	0.33	36.5

Total Lifecycle Care™

Total Lifecycle Care is a comprehensive service that uses analytics, sampling and training to prevent heat transfer system failures, ensuring safe, efficient and uninterrupted operations.

- Offers industry-leading technical support
- Provides data through Fluid Genius™ for informed decision-making
- Helps minimize unexpected downtime and maintenance costs
- Assists in maximizing fluid life
- Enables safe working environments through tailored safety training
- Helps keep systems running smoothly



Comprehensive support services

- **In-service heat transfer fluid sample analysis**

Eastman provides comprehensive testing services to extend heat transfer fluid life and ensure system performance by detecting contamination, moisture and degradation through key tests like acid number, viscosity, insoluble solids and moisture content.



- **Fluid Genius™**

Fluid Genius is a web-based portal and sampling service that simplifies fluid sample management by providing expert analysis, fluid condition monitoring, lifespan prediction, early maintenance alerts, technical support and access to a comprehensive knowledge base. Learn more at fluidgenius.net.



Operational efficiency

- **System design support**

Eastman collaborates with leading manufacturers to provide expert support in heat transfer system design, performance, fluid selection, and compliance, offering seminars, technical visits, and on-site audits to improve system reliability and efficiency.



- **Start-up assistance**

Eastman offers start-up assistance by reviewing procedures and recommending improvements to streamline systems and reduce common issues, with support available from local technical specialists or on-site visits.



- **Flush and refill guidance**

Therminol FF is specially formulated to clean liquid-phase heat transfer systems. After flushing with Therminol FF, refill the system with the appropriate Eastman heat transfer fluid to ensure optimal performance. Contact your local Eastman technical specialist to learn more and get expert guidance.



- **Compliance support**

Our team provides guidance to help you achieve and maintain regulatory compliance related to safety, health and environmental standards, ensuring your operations meet the necessary requirements.



- **Environmental impact**

Eastman supports your sustainability goals by advising on waste heat recovery and water-lean utility deployments using Therminol products to reduce CO₂ emissions and water consumption.



Operational and safety awareness training

- **Operational training**

Eastman's customized training programs improve expertise in fluid selection and heat transfer system operation for technicians, supervisors, maintenance staff and engineers through core and specialized sessions to enhance design, improve safety and reduce costs.



- **Safety awareness training**

At Eastman, we approach safety with a zero-incident mindset. We offer our customers safety awareness training that focuses on the design start-up, operation and maintenance of heat transfer fluid systems to help ensure safe, efficient operations.



- **Expert global assistance**

Get direct access to experienced technical service specialists who can help answer questions regarding heat transfer fluid selection, system start-ups, system design and operational issues.



For more information, visit therminol.com.

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