



THERMINOL[®] 72

heat transfer fluid

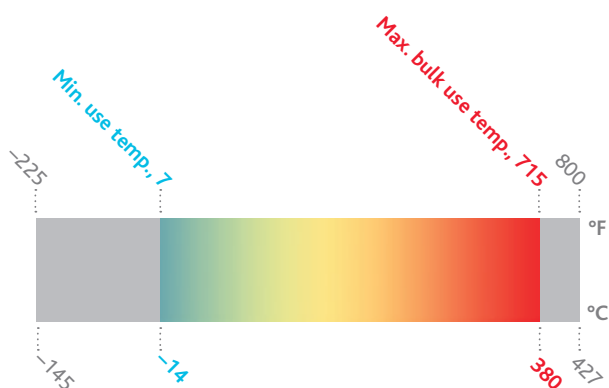
High temperature,
excellent stability
at medium pressure

-14° to 380°C
(7° to 715°F)

THERMINOL.
Heat Transfer Fluids by Eastman

THERMINOL[®] 72

heat transfer fluid



Eastman Therminol[®] 72 heat transfer fluid offers outstanding high-temperature performance up to 380°C (715°F) with excellent thermal stability in systems at medium pressures. Static pressure of about 6 bar should maintain the liquid phase at high temperatures. When operating in a well-maintained and operated heat transfer system, Therminol 72 can provide reliable, consistent performance over long periods of time.

Therminol 72 is available globally. Contact your local Eastman Therminol sales representative for more information.

Physical and chemical characteristics

Therminol 72 is ideally suited for high-temperature heat recovery applications that also require low-temperature fluidity. The use of Therminol 72 in high-temperature heat transfer systems can result in a significant reduction in capital investment due to reduced freeze protection requirements and lower pumping energy costs at low temperatures compared to other very high-temperature alternatives.

The recommended maximum bulk and film temperatures for Therminol 72 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 72 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 72 is noncorrosive to metals commonly used in the construction of heat transfer systems.

While Therminol 72 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 72 should check with their safety and risk management experts for specific instructions.

Typical properties^a

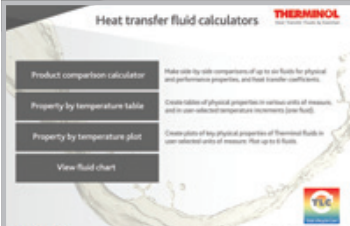
Appearance	Clear, amber liquid
Composition	Mixture of synthetic aromatics
Maximum bulk temperature	380°C (715°F)
Maximum film temperature	400°C (750°F)
Normal boiling point	271°C (520°F)
Pumpability, at 300 mm ² /s (cSt)	-10°C (16°F)
Pumpability, at 2000 mm ² /s (cSt)	-14°C (7°F)
Flash point, COC (ASTM D-92)	132°C (270°F)
Autoignition temperature (ASTM E-659)	603°C (1117°F)
Pour point (ISO 3016)	-18°C (0°F)
Minimum liquid temperatures for fully developed turbulent flow ($N_{Re} > 10,000$)	
10 ft/s, 1-in. tube (3.048 m/s, 2.54-cm tube)	32°C (89°F)
20 ft/s, 1-in. tube (6.096 m/s, 2.54-cm tube)	17°C (63°F)
Minimum liquid temperatures for transitional region flow ($N_{Re} > 2000$)	
10 ft/s, 1-in. tube (3.048 m/s, 2.54-cm tube)	3°C (38°F)
20 ft/s, 1-in. tube (6.096 m/s, 2.54-cm tube)	-3°C (27°F)
Coefficient of thermal expansion at 200°C	0.00113/°C (0.00628/°F)
Total acidity (ASTM D-664)	<0.2 mg KOH/g
Average molecular weight	190
Pseudocritical temperature	527°C (980°F)
Pseudocritical pressure	32.4 bar (470 psia)
Pseudocritical density	335 kg/m ³ (20.9 lb/ft ³)
Chlorine content (DIN 51577)	<10 ppm
Copper corrosion (ASTM D-130)	<<1a
Moisture content, maximum (ASTM E-203)	200 ppm
Dielectric constant @ 23°C (ASTM D-924)	3.12

^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 72 fluid. Does not constitute an express warranty. See disclaimer on the back page of this bulletin.

Heat transfer fluid calculators

- Product comparison calculator
- Property by temperature table
- Property by temperature plot
- View fluid chart

To create your own customized table
with preferred properties, units of measure,
and temperature intervals, visit
www.therminol.com/resources
and download the Therminol heat transfer fluid calculator.



For the technical service contact in your region,
visit the **CONTACT US** page on our website, www.therminol.com.

Liquid properties of Therminol® 72 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
-14	7	1110	1.460	0.144	3971	3580	—
-10	14	1106	1.471	0.143	383	346	—
0	32	1097	1.498	0.142	59.2	54.0	—
10	50	1088	1.525	0.141	24.4	22.4	—
20	68	1079	1.552	0.140	13.5	12.5	0.001
30	86	1070	1.579	0.138	8.68	8.11	0.002
40	104	1061	1.606	0.137	6.09	5.74	0.006
50	122	1052	1.634	0.136	4.52	4.30	0.013
60	140	1043	1.661	0.135	3.50	3.35	0.028
70	158	1034	1.688	0.134	2.79	2.70	0.056
80	176	1025	1.715	0.132	2.28	2.23	0.105
90	194	1016	1.742	0.131	1.90	1.87	0.189
100	212	1007	1.769	0.130	1.61	1.60	0.326
110	230	997	1.796	0.129	1.38	1.39	0.545
120	248	988	1.823	0.127	1.20	1.21	0.879
130	266	979	1.850	0.126	1.05	1.07	1.38
140	284	970	1.877	0.125	0.93	0.96	2.10
150	302	961	1.905	0.124	0.83	0.86	3.12
160	320	952	1.932	0.123	0.74	0.78	4.54
170	338	943	1.959	0.121	0.66	0.70	6.47
180	356	934	1.986	0.120	0.60	0.64	9.04
190	374	925	2.013	0.119	0.55	0.59	12.4
200	392	916	2.040	0.118	0.50	0.54	16.8
210	410	906	2.067	0.117	0.46	0.50	22.3
220	428	898	2.094	0.115	0.42	0.47	29.3
230	446	889	2.121	0.114	0.39	0.43	38.0
240	464	880	2.148	0.113	0.36	0.40	48.6
250	482	871	2.176	0.112	0.33	0.38	61.6
260	500	862	2.203	0.111	0.31	0.36	77.1
270	518	853	2.230	0.109	0.28	0.33	95.7
280	536	844	2.257	0.108	0.27	0.31	118
290	554	834	2.284	0.107	0.25	0.30	143
300	572	825	2.311	0.106	0.23	0.28	173
310	590	816	2.338	0.104	0.22	0.27	208
320	608	807	2.365	0.103	0.20	0.25	248
330	626	798	2.392	0.102	0.19	0.24	293
340	644	789	2.419	0.101	0.18	0.23	345
350	662	780	2.447	0.100	0.17	0.22	403
360	680	771	2.474	0.098	0.16	0.21	469
370	698	762	2.501	0.097	0.15	0.20	542
380	716	753	2.528	0.096	0.14	0.19	623

^aMaximum recommended bulk temperature 380°C (715°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 72 fluid. ^b1 cSt = 1 mm²/s and 1 mPa·s = 1 cP. ^c100 kPa = 1 bar

Liquid properties of Therminol® 72 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
7	-14	9.26	69.3	0.349	0.0831	8480	3160	—
20	-7	9.21	68.9	0.354	0.0826	393	147	—
40	4	9.13	68.3	0.361	0.0818	91.3	34.5	—
60	16	9.04	67.6	0.368	0.0810	41.5	15.8	—
80	27	8.96	67.0	0.375	0.0802	24.1	9.26	0.0003
100	38	8.88	66.4	0.382	0.0795	15.8	6.16	0.0007
120	49	8.78	65.7	0.390	0.0787	11.3	4.43	0.0018
140	60	8.70	65.1	0.397	0.0779	8.46	3.35	0.0041
160	71	8.62	64.5	0.404	0.0771	6.60	2.64	0.0087
180	82	8.54	63.9	0.411	0.0763	5.30	2.14	0.0174
200	93	8.45	63.2	0.418	0.0756	4.35	1.78	0.0330
220	104	8.37	62.6	0.426	0.0748	3.64	1.50	0.0597
240	116	8.29	62.0	0.433	0.0740	3.09	1.29	0.103
260	127	8.19	61.3	0.440	0.0732	2.65	1.12	0.173
280	138	8.11	60.7	0.447	0.0724	2.31	0.98	0.278
300	149	8.03	60.1	0.454	0.0717	2.02	0.87	0.434
320	160	7.94	59.4	0.462	0.0709	1.78	0.78	0.659
340	171	7.86	58.8	0.469	0.0701	1.59	0.70	0.975
360	182	7.78	58.2	0.476	0.0693	1.42	0.63	1.41
380	193	7.70	57.6	0.483	0.0685	1.28	0.57	1.99
400	204	7.61	56.9	0.490	0.0678	1.16	0.52	2.77
420	216	7.53	56.3	0.498	0.0670	1.05	0.48	3.77
440	227	7.45	55.7	0.505	0.0662	0.96	0.44	5.06
460	238	7.35	55.0	0.512	0.0654	0.88	0.41	6.68
480	249	7.27	54.4	0.519	0.0646	0.80	0.38	8.70
500	260	7.19	53.8	0.526	0.0639	0.74	0.36	11.2
520	271	7.11	53.2	0.534	0.0631	0.68	0.33	14.2
540	282	7.02	52.5	0.541	0.0623	0.63	0.31	17.8
560	293	6.94	51.9	0.548	0.0615	0.59	0.29	22.2
580	304	6.86	51.3	0.555	0.0607	0.54	0.27	27.3
600	316	6.76	50.6	0.562	0.0600	0.51	0.26	33.3
620	327	6.68	50.0	0.570	0.0592	0.47	0.24	40.3
640	338	6.60	49.4	0.577	0.0584	0.44	0.23	48.3
660	349	6.52	48.8	0.584	0.0576	0.41	0.22	57.5
680	360	6.43	48.1	0.591	0.0568	0.39	0.21	68.0
700	371	6.35	47.5	0.598	0.0561	0.36	0.20	79.9
715	379	6.28	47.0	0.604	0.0555	0.35	0.19	89.7