



THERMINOL[®] ADX-10

heat transfer fluid

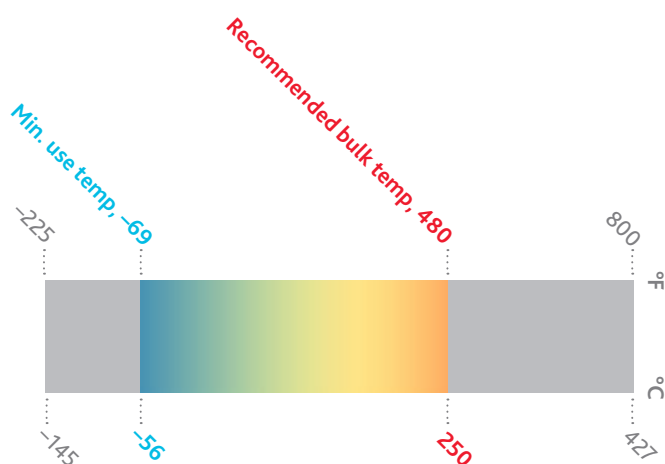
Excellent pumpability
at low temperatures

-56° to 250°C
(-69° to 480°F)

THERMINOL.
Heat transfer fluids by Eastman

THERMINOL® ADX-10

heat transfer fluid



Eastman Therminol® ADX-10 heat transfer fluid is a low-viscosity, synthetic organic fluid that is particularly recommended for indirect liquid phase process heating at medium temperatures up to 250°C (480°F).

Therminol ADX-10 offers a number of benefits when it is used as a single fluid in combined heating and cooling systems:

- Excellent heat transfer coefficient
- Easy start-up and shutdown at low temperatures
- Low-temperature pumpability down to temperatures of -56°C (-69°F)
- Eliminates the need for steam or other forms of heat tracing due to its low pour point (-80°C/-112°F) and excellent low-temperature viscosity
- Low fire risk at ambient temperatures

Therminol ADX-10 is available in Europe, the Middle East, and Africa. Contact your local Eastman Therminol sales representative for more information.

Physical and chemical characteristics

Therminol ADX-10 fluid is designed for use in nonpressurized/low-pressure, indirect heating systems. It delivers efficient, dependable, uniform process heat with no need for high pressures. The high boiling point of Therminol ADX-10 helps reduce the volatility and fluid leakage problems associated with other fluids.

The recommended maximum bulk and film temperatures for Therminol ADX-10 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 using Therminol ADX-10 fluid 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 ADX-10 is noncorrosive to metals commonly used in the construction of heat transfer systems.

While Therminol ADX-10 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 ADX-10 should check with their safety and risk management experts for specific instructions.

Typical properties^a

Appearance	Clear, pale yellow liquid
Composition	Synthetic aromatic hydrocarbon mixture
Recommended bulk temperature	250°C (480°F)
Maximum film temperature	280°C (535°F)
Normal boiling point	293°C (559°F)
Pumpability, at 300 mm ² /s (cSt)	-41°C (-41°F)
Pumpability, at 2000 mm ² /s (cSt)	-56°C (-69°F)
Autoignition temperature (DIN 51794)	327°C (621°F)
Pour point (ISO 3016)	-80°C (-112°F)
Total acidity (ASTM D664)	<0.2 mg KOH/g
Average molecular weight	236
Moisture content, maximum (ASTM E203)	150 ppm
Dielectric constant @ 23°C (ASTM D924)	2.26

^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 ADX-10 fluid. Does not constitute an express warranty. See disclaimer on the back page of this bulletin.



Heat transfer fluid calculators **THERMINOL**
www.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-specified temperature increments (user fluid).

Property by temperature plot Create plots of key physical properties of Therminol fluids in user-specified units of measure. Plot up to 6 fluids.

View fluid chart

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

Liquid properties of Therminol® ADX-10 heat transfer fluid by temperature^a (SI UNITS)

Temperature		Liquid density	Liquid heat capacity	Heat of vaporization	Liquid enthalpy ^b	Liquid thermal conductivity	Liquid viscosity ^c		Vapor pressure ^d
°C	°F	kg/m ³	kJ/(kg·K)	kJ/kg	kJ/kg	W/(m·K)	cP (mPa·s)	cSt (mm ² /s)	kPa
-56	-69	909	1.61	441.5	-64.9	0.1334	1810	2000	—
-50	-58	904	1.64	436.9	-54.8	0.1326	783	866	—
-40	-40	898	1.68	429.5	-38.2	0.1314	250	279	—
-30	-22	891	1.72	422.1	-21.3	0.1302	98.9	111	—
-20	-4	884	1.76	414.8	-3.9	0.1289	46.1	52.1	—
-10	14	877	1.80	407.5	13.9	0.1277	24.5	27.9	—
0	32	870	1.84	400.2	32.0	0.1264	14.4	16.5	—
10	50	864	1.88	393.1	50.6	0.1252	9.19	10.6	—
20	68	857	1.91	385.9	69.5	0.1239	6.28	7.32	—
30	86	850	1.95	378.9	88.9	0.1226	4.52	5.32	—
40	104	843	1.99	371.9	108.6	0.1213	3.40	4.04	—
50	122	836	2.03	364.9	128.7	0.1200	2.65	3.17	0.001
60	140	829	2.07	358.0	149.2	0.1187	2.13	2.57	0.003
70	158	822	2.10	351.2	170.0	0.1173	1.75	2.13	0.008
80	176	815	2.14	344.4	191.3	0.1160	1.47	1.81	0.018
90	194	808	2.18	337.7	212.9	0.1146	1.26	1.56	0.037
100	212	801	2.21	331.1	234.8	0.1132	1.09	1.36	0.074
110	230	794	2.25	324.5	257.1	0.1118	0.956	1.20	0.139
120	248	787	2.29	317.9	279.8	0.1104	0.846	1.08	0.251
130	266	780	2.32	311.5	302.9	0.1090	0.756	0.969	0.433
140	284	772	2.36	305.0	326.2	0.1076	0.680	0.880	0.720
150	302	765	2.39	298.7	350.0	0.1061	0.615	0.804	1.16
160	320	758	2.42	292.3	374.0	0.1046	0.559	0.738	1.81
170	338	750	2.46	286.0	398.5	0.1031	0.511	0.681	2.74
180	356	742	2.49	279.8	423.2	0.1016	0.469	0.631	4.06
190	374	735	2.53	273.6	448.3	0.1000	0.431	0.587	5.87
200	392	727	2.56	267.4	473.7	0.0985	0.398	0.547	8.31
210	410	719	2.59	261.2	499.5	0.0969	0.368	0.512	11.6
220	428	711	2.62	255.0	525.5	0.0953	0.341	0.480	15.8
230	446	703	2.66	248.9	551.9	0.0936	0.317	0.451	21.2
240	464	694	2.69	242.7	578.7	0.0919	0.295	0.424	28.0
250	482	686	2.72	236.5	605.7	0.0902	0.275	0.400	36.6
260	500	677	2.75	230.3	633.1	0.0885	0.256	0.378	47.1
270	518	668	2.78	224.1	660.7	0.0867	0.239	0.358	60.0
280	536	659	2.81	217.8	688.7	0.0848	0.224	0.339	75.5
290	554	650	2.85	211.5	717.0	0.0829	0.209	0.322	94.0

^aRecommended bulk temperature 250°C (480°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 ADX-10 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® ADX-10 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
-69	-56	7.58	56.7	0.385	190.0	-27.9	0.0771	4390	2000	—
-60	-51	7.55	56.5	0.390	188.3	-24.4	0.0768	2180	1000	—
-40	-40	7.49	56.0	0.401	184.8	-16.5	0.0760	606	279	—
-20	-29	7.43	55.6	0.411	181.2	-8.3	0.0752	218	101	—
0	-18	7.37	55.1	0.422	177.7	0.0	0.0744	95.9	44.9	—
20	-7	7.30	54.6	0.433	174.3	8.5	0.0736	49.1	23.2	—
40	4	7.24	54.2	0.443	170.8	17.3	0.0728	28.3	13.5	—
60	16	7.18	53.7	0.454	167.4	26.3	0.0720	17.9	8.59	—
80	27	7.11	53.2	0.464	164.0	35.4	0.0711	12.1	5.89	—
100	38	7.05	52.7	0.474	160.7	44.8	0.0703	8.74	4.28	—
120	49	6.98	52.2	0.484	157.3	54.4	0.0695	6.59	3.25	—
140	60	6.92	51.8	0.494	154.0	64.2	0.0686	5.16	2.57	—
160	71	6.86	51.3	0.504	150.8	74.2	0.0678	4.16	2.09	0.001
180	82	6.79	50.8	0.514	147.5	84.3	0.0669	3.44	1.75	0.003
200	93	6.73	50.3	0.523	144.3	94.7	0.0660	2.90	1.49	0.007
220	104	6.66	49.8	0.533	141.2	105.3	0.0651	2.48	1.29	0.014
240	116	6.59	49.3	0.542	138.0	116.0	0.0642	2.16	1.13	0.028
260	127	6.53	48.8	0.552	134.9	127.0	0.0633	1.90	1.00	0.053
280	138	6.46	48.3	0.561	131.8	138.1	0.0624	1.68	0.898	0.094
300	149	6.39	47.8	0.570	128.8	149.4	0.0614	1.50	0.812	0.160
320	160	6.32	47.3	0.579	125.8	160.9	0.0605	1.35	0.738	0.262
340	171	6.25	46.8	0.588	122.8	172.6	0.0595	1.22	0.675	0.416
360	182	6.18	46.2	0.597	119.8	184.5	0.0585	1.11	0.621	0.640
380	193	6.11	45.7	0.606	116.8	196.5	0.0575	1.01	0.573	0.958
400	204	6.04	45.2	0.615	113.8	208.7	0.0565	0.929	0.531	1.40
420	216	5.96	44.6	0.624	110.9	221.1	0.0555	0.853	0.494	2.00
440	227	5.89	44.0	0.632	108.0	233.6	0.0544	0.785	0.460	2.79
460	238	5.81	43.5	0.641	105.0	246.4	0.0534	0.725	0.430	3.82
480	249	5.73	42.9	0.649	102.1	259.3	0.0523	0.670	0.403	5.15
500	260	5.65	42.3	0.658	99.1	272.4	0.0511	0.620	0.378	6.83
520	271	5.57	41.7	0.666	96.1	285.6	0.0500	0.575	0.356	8.93
540	282	5.48	41.0	0.674	93.1	299.0	0.0488	0.533	0.336	11.5

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.



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.

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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 access their specific test information via my.therminol.com.

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, maintenance technicians, and 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 customers 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.

For more information, visit our website, Therminol.com.



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