



THERMINOL®

Heat transfer fluids by Eastman

Selection guide

*High-performance fluids
for precise temperature control*

EASTMAN

Eastman Therminol[®] heat transfer fluids

Eastman offers a family of Therminol heat-stable fluids developed specifically for indirect transfer of process heat. Therminol heat transfer fluids can meet the operating needs of virtually any single- or multiple-station heat-using system. In properly designed systems, our fluids will perform within their expected temperature ranges and provide excellent thermal stability.

Therminol heat transfer fluids, available in various formulations and operating ranges, all provide excellent benefits—economy, efficient operation, minimum maintenance, and precise temperature control. Contact Eastman for detailed performance information on specific Therminol heat transfer fluids.

Liquid phase heat transfer fluids

Therminol liquid phase heat transfer fluids operate over a broad temperature range of -175° to 750°F (-115° to 400°C) and most can be used in nonpressurized systems. A major advantage of liquid heat transfer is lower-cost installation and operation. Capital cost is reduced by elimination of large-diameter piping, safety valves, steam traps, and water treatment facilities. Operating cost is reduced by low maintenance requirements and reduced makeup. All Eastman Therminol heat transfer fluids can provide effective operations in liquid phase. When above their normal boiling points, Therminol D-12, LT, 59, 68, 72, 75, VP-1, and VP-3 fluids require system pressures to be greater than their vapor pressures for liquid phase operation to their recommended bulk temperature ratings.

Liquid/vapor phase heat transfer fluids

Therminol LT, VP-1, and VP-3 are Eastman's liquid/vapor phase heat transfer fluids. They offer a broad operating temperature range and uniform heat transfer. Other major benefits include precise temperature control and low mechanical maintenance costs. Also, a heat transfer system that utilizes a vapor phase medium requires less fluid than a comparable liquid phase system because the equipment fills with vapor instead of liquid.

Specialty and customized heat transfer fluids

In addition to our basic liquid phase and liquid/vapor phase heat transfer fluids, Eastman offers a number of specialty fluids. We also would be happy to work with you in developing a customized fluid for your application.



TLC Total Lifecycle Care® program

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.

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 and 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, 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.

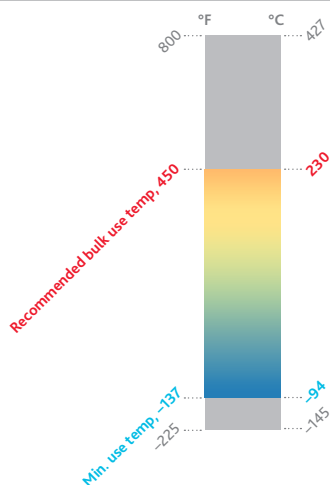
English units

Liquid phase heat transfer

THERMINOL

D-12

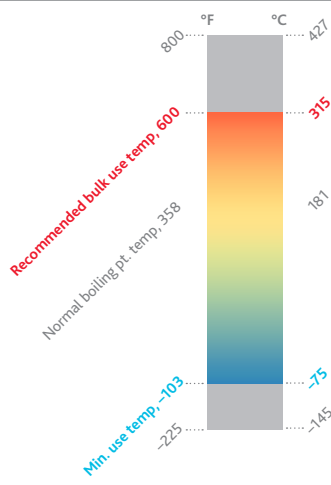
Low-temperature
coolant/heat transfer fluid^e



THERMINOL

LT

Wide-range liquid/
vapor heat transfer fluid



Typical properties^a

Appearance	Clear, water-white liquid			Clear, light yellow liquid		
Composition	Synthetic hydrocarbons			Alkyl substituted aromatic		
Recommended bulk temperature	450°F			600°F		
Maximum film temperature	475°F			650°F		
Normal boiling point	378°F			358°F		
Pumpability: at 300 cSt (mm ² /s) at 2000 cSt (mm ² /s)	-116°F ^d -137°F ^d			-103°F (crystallizing point)		
Pour point	-148°F			NA		
Flash point, COC	144°F (Pensky-Martens)			134°F (Pensky-Martens)		
Fire point, COC	175°F			150°F		
Autoignition temperature ^b	531°F (DIN 51794)			804°F (DIN 51794)		
Fully developed turbulent flow (Re = 10,000, 10 ft/s, 1-in. tube)	-35°F			193°F		
Kinematic viscosity, cSt (mm ² /s)	-50°F	11.5		-100°F	10.8	
	100°F	1.26		100°F	0.83	
	300°F	0.44		300°F	0.35	
	450°F	0.26		600°F	0.19	
Density at 75°F (lb/gal)	6.34			7.20		
Density, various temperatures	-50°F	6.75 lb/gal	50.5 lb/ft ³	-100°F	7.83 lb/gal	58.6 lb/ft ³
	100°F	6.26 lb/gal	46.8 lb/ft ³	100°F	7.11 lb/gal	53.2 lb/ft ³
	300°F	5.53 lb/gal	41.4 lb/ft ³	300°F	6.31 lb/gal	47.2 lb/ft ³
	450°F	4.86 lb/gal	36.3 lb/ft ³	600°F	4.66 lb/gal	34.8 lb/ft ³
Heat capacity, Btu/(lb•°F)	-50°F	0.440		-100°F	0.344	
	100°F	0.517		100°F	0.446	
	300°F	0.626		300°F	0.542	
	450°F	0.715		600°F	0.719	
Thermal conductivity, Btu/(h•ft•°F)	-50°F	0.0690		-100°F	0.0825	
	100°F	0.0620		100°F	0.0701	
	300°F	0.0505		300°F	0.0573	
	450°F	0.0404		600°F	0.0374	
Vapor pressure	200°F	32.7 mmHg	0.632 psia	200°F	41 mmHg	0.79 psia
	300°F	241 mmHg	4.66 psia	400°F	1,370 mmHg	26.5 psia
	450°F	1,800 mmHg	34.8 psia	600°F	11,800 mmHg	228 psia
Geographic availability ^c	Globally			Globally		

^a These data are based on samples tested in the laboratory and are not guaranteed for all samples. Contact us for complete sales specifications.

^b Visit www.therminol.com for additional typical properties and test values. ^c Check with your local sales office to determine exact availability by country.

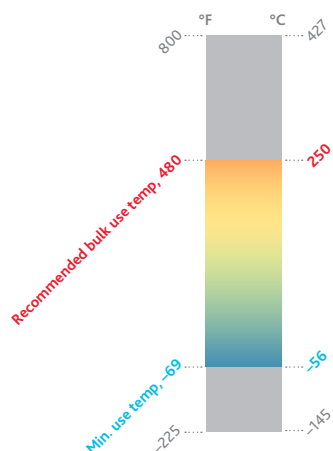
^d -50°F for efficient heat transfer

^e Therminol D-12 outperforms FDA specifications for use in food contact applications.

THERMINOL

ADX-10

Low-temperature pumpability, medium-temperature fluid



Clear, pale yellow liquid

Synthetic aromatic hydrocarbon mixture

480°F

535°F

559°F

-41°F

-69°F

-112°F

277°F

284°F

621°F (DIN 51794)

66°F

-50°F 508

200°F 1.49

400°F 0.531

480°F 0.403

7.13

-50°F 7.53 lb/gal 56.3 lb/ft³

200°F 6.72 lb/gal 50.3 lb/ft³

400°F 6.04 lb/gal 45.2 lb/ft³

480°F 5.73 lb/gal 42.9 lb/ft³

-50°F 0.395

200°F 0.523

400°F 0.615

480°F 0.649

-50°F 0.0764

200°F 0.0660

400°F 0.0565

480°F 0.0523

200°F 0.36 mmHg 0.007 psia

400°F 72.4 mmHg 1.40 psia

480°F 266 mmHg 5.15 psia

Europe/Middle East/Africa



English units

Liquid phase heat transfer

THERMINOL

XP

High-purity heat transfer fluid with NSF HT1 incidental food contact registration

THERMINOL

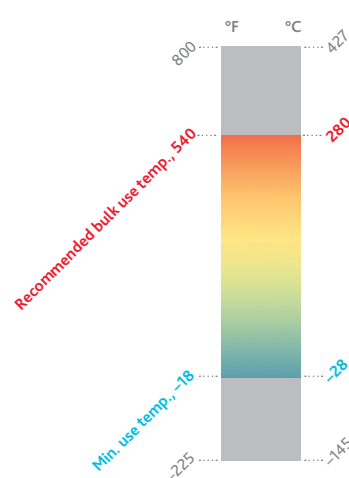
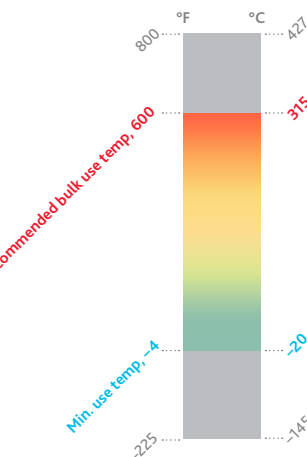
54

Economical, medium-temperature-range fluid

Typical properties^a

Appearance	Colorless, odorless liquid			Clear, yellow liquid		
Composition	White mineral oil			Synthetic hydrocarbon mixture		
Recommended bulk temperature	600°F			540°F		
Maximum film temperature	650°F			590°F		
Normal boiling point	676°F			664°F		
Pumpability: at 300 cSt (mm ² /s) at 2000 cSt (mm ² /s)	30°F −4°F			17°F −18°F		
Pour point	−20°F			<−50°F		
Flash point, COC	390°F			> 340°F		
Fire point, COC	450°F			> 410°F		
Autoignition temperature ^b	685°F (DIN 51794)			> 625°F		
Fully developed turbulent flow (Re = 10,000, 10 ft/s, 1-in. tube)	162°F			152°F		
Kinematic viscosity, cSt (mm ² /s)	0°F	1,560		0°F	683	
	200°F	4.7		200°F	4.03	
	400°F	1.06		400°F	0.96	
	600°F	0.50		540°F	0.56	
Density at 75°F (lb/gal)	7.31			7.25		
Density, various temperatures	0°F	7.53 lb/gal	56.3 lb/ft ³	0°F	7.49 lb/gal	56.0 lb/ft ³
	200°F	6.94 lb/gal	51.9 lb/ft ³	200°F	6.86 lb/gal	51.3 lb/ft ³
	400°F	6.33 lb/gal	47.3 lb/ft ³	400°F	6.22 lb/gal	46.5 lb/ft ³
	600°F	5.66 lb/gal	42.3 lb/ft ³	540°F	5.73 lb/gal	42.8 lb/ft ³
Heat capacity, Btu/(lb•°F)	0°F	0.389		0°F	0.42	
	200°F	0.515		200°F	0.52	
	400°F	0.625		400°F	0.61	
	600°F	0.718		540°F	0.68	
Thermal conductivity, Btu/(h•ft•°F)	0°F	0.0681		0°F	0.077	
	200°F	0.0635		200°F	0.069	
	400°F	0.0571		400°F	0.062	
	600°F	0.0490		540°F	0.057	
Vapor pressure	200°F	0.09 mmHg	0.002 psia	200°F	—	—
	300°F	15.0 mmHg	0.289 psia	400°F	18.6 mmHg	0.36 psia
	600°F	318 mmHg	6.16 psia	540°F	169 mmHg	3.27 psia

Geographic availability^c



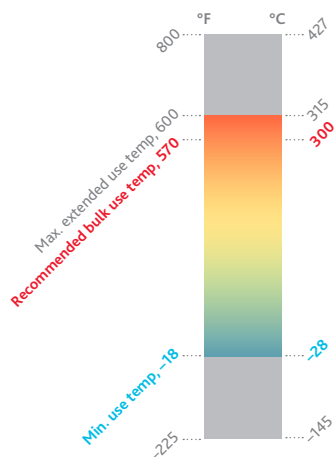
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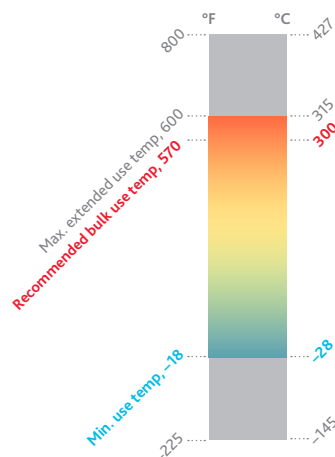
THERMINOL

55

Trusted, medium-temperature-
range fluid

THERMINOL

SP

Trusted, medium-temperature-
range fluid

Clear, yellow liquid

Synthetic hydrocarbon mixture

570°F

635°F

664°F

17°F

-18°F

-65°F

350°F

425°F

719°F (DIN 51794)

152°F

0°F	683
200°F	4.03
400°F	0.964
550°F	0.536

7.26

0°F	7.49 lb/gal	56.0 lb/ft³
200°F	6.86 lb/gal	51.3 lb/ft³
400°F	6.22 lb/gal	46.5 lb/ft³
550°F	5.69 lb/gal	42.6 lb/ft³

0°F	0.423
200°F	0.518
400°F	0.612
550°F	0.682

0°F	0.0768
200°F	0.0693
400°F	0.0618
550°F	0.0561

200°F	0.16 mmHg	0.003 psia
400°F	18.6 mmHg	0.360 psia
550°F	193 mmHg	3.74 psia

Americas/Asia Pacific

Clear, yellow liquid

Synthetic hydrocarbon mixture

570°F

635°F

664°F

17°F

-18°F

-65°F

350°F

425°F

719°F (DIN 51794)

152°F

0°F	683
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7.26

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0°F	0.423
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550°F	0.682

0°F	0.0768
200°F	0.0693
400°F	0.0618
550°F	0.0561

200°F	0.16 mmHg	0.003 psia
400°F	18.6 mmHg	0.360 psia
550°F	193 mmHg	3.74 psia

Europe/Middle East/Africa

English units

Liquid phase heat transfer

THERMINOL

59

Economical, wide-temperature-range fluid

THERMINOL

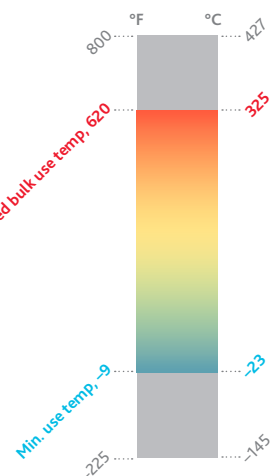
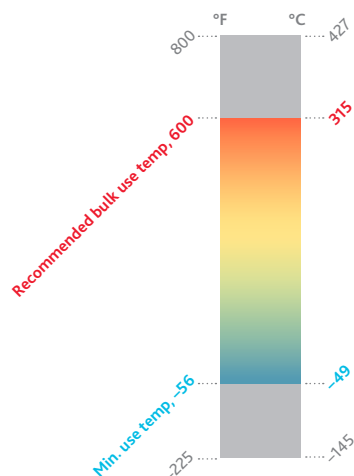
62

High-performance, low-pressure fluid

Typical properties^a

Appearance	Clear, yellow to dark amber liquid			Water-white liquid		
Composition	Alkyl substituted aromatic			Isopropyl biphenyl mixture		
Recommended bulk temperature	600°F			620°F		
Maximum film temperature	650°F			670°F		
Normal boiling point	553°F			631°F		
Pumpability: at 300 cSt (mm ² /s) at 2000 cSt (mm ² /s)	-35°F -56°F			12°F -9°F		
Pour point	-90°F (ISO 3016)			-44°F		
Flash point, COC	295°F			340°F		
Fire point, COC	310°F			385°F		
Autoignition temperature ^b	760°F (DIN 51794)			813°F (DIN 51794)		
Fully developed turbulent flow (Re = 10,000, 10 ft/s, 1-in. tube)	63°F			122°F		
Kinematic viscosity, cSt (mm ² /s)	0°F	45		0°F	843	
	200°F	1.57		200°F	2.83	
	400°F	0.55		400°F	0.69	
	600°F	0.31		620°F	0.28	
Density at 75°F (lb/gal)	8.11			7.96		
Density, various temperatures	0°F	8.36 lb/gal	62.5 lb/ft ³	0°F	8.19 lb/gal	61.3 lb/ft ³
	200°F	7.68 lb/gal	57.5 lb/ft ³	200°F	7.53 lb/gal	56.3 lb/ft ³
	400°F	6.98 lb/gal	52.2 lb/ft ³	400°F	6.81 lb/gal	50.9 lb/ft ³
	600°F	6.18 lb/gal	46.2 lb/ft ³	620°F	5.87 lb/gal	43.9 lb/ft ³
Heat capacity, Btu/(lb•°F)	0°F	0.373		0°F	0.440	
	200°F	0.459		200°F	0.509	
	400°F	0.547		400°F	0.565	
	600°F	0.640		620°F	0.617	
Thermal conductivity, Btu/(h•ft•°F)	0°F	0.0716		0°F	0.0729	
	200°F	0.0668		200°F	0.0673	
	400°F	0.0600		400°F	0.0610	
	600°F	0.0513		620°F	0.0518	
Vapor pressure	200°F	19.5 mmHg	0.036 psia	200°F	0.29 mmHg	0.006 psia
	400°F	111 mmHg	2.14 psia	400°F	30.2 mmHg	0.584 psia
	600°F	1,220 mmHg	23.6 psia	620°F	670 mmHg	13.0 psia

Geographic availability^c

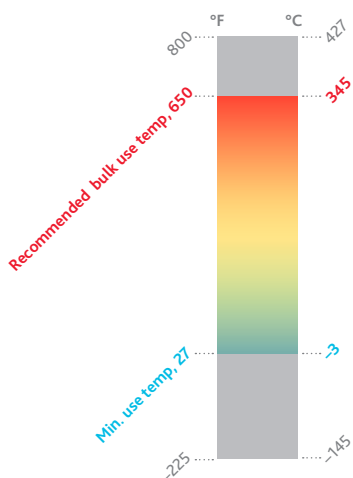


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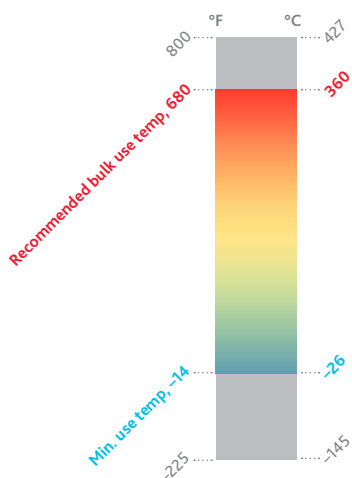
THERMINOL

66

High-temperature, high-stability,
low-pressure fluid

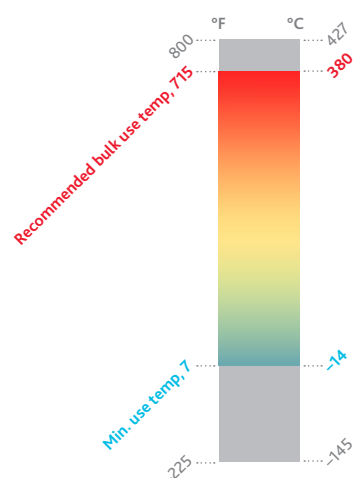
THERMINOL

68

High-temperature,
low-viscosity fluid

THERMINOL

72

High-temperature,
medium-pressure fluid

Clear, pale yellow liquid

Modified terphenyl

650°F

705°F

678°F

52°F

27°F

-25°F

363°F

414°F

750°F (DIN 51794)

162°F

50°F

339

300°F

1.68

500°F

0.63

650°F

0.43

8.39

50°F

8.47 lb/gal

63.4 lb/ft³

300°F

7.69 lb/gal

57.5 lb/ft³

500°F

7.01 lb/gal

52.5 lb/ft³

650°F

6.44 lb/gal

48.2 lb/ft³

50°F

0.365

300°F

0.480

500°F

0.578

650°F

0.655

50°F

0.0682

300°F

0.0636

500°F

0.0574

650°F

0.0514

300°F

2.9 mmHg

0.056 psia

500°F

90 mmHg

1.7 psia

650°F

570 mmHg

11 psia

Globally

Clear, pale yellow liquid

Mixture of synthetic aromatics

680°F

735°F

586°F

14°F

-14°F

-27°F

311°F

345°F

752°F (DIN 51794)

135°F

20°F

219

300°F

1.29

500°F

0.516

680°F

0.332

8.56

20°F

8.73 lb/gal

65.3 lb/ft³

300°F

7.79 lb/gal

58.3 lb/ft³

500°F

7.13 lb/gal

53.3 lb/ft³

680°F

6.52 lb/gal

48.8 lb/ft³

20°F

0.368

300°F

0.487

500°F

0.573

680°F

0.650

20°F

0.0727

300°F

0.0654

500°F

0.0602

680°F

0.0556

300°F

12.2 mmHg

0.236 psia

500°F

278 mmHg

5.38 psia

680°F

1,888 mmHg

36.5 psia

Europe/Middle East/Africa

Clear, amber liquid

Mixture of synthetic aromatics

715°F

750°F

520°F

16°F

7°F

0°F

270°F

290°F

1,117°F (ASTM E-659)

86°F

15°F

291

300°F

0.868

500°F

0.355

715°F

0.19

8.98

15°F

9.23 lb/gal

69.0 lb/ft³

300°F

8.03 lb/gal

60.1 lb/ft³

500°F

7.19 lb/gal

53.8 lb/ft³

715°F

6.29 lb/gal

47.0 lb/ft³

15°F

0.352

300°F

0.454

500°F

0.526

715°F

0.604

15°F

0.0828

300°F

0.0717

500°F

0.0639

715°F

0.0555

300°F

22.4 mmHg

0.43 psia

500°F

579 mmHg

11.2 psia

715°F

4,640 mmHg

89.8 psia

Globally

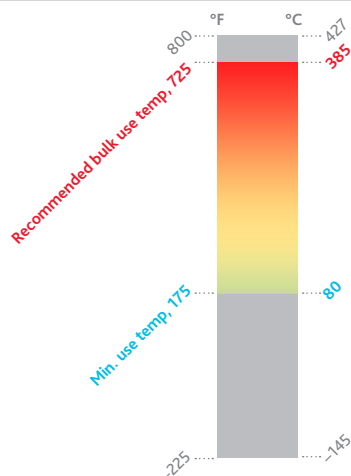
English units

Liquid phase heat transfer

THERMINOL

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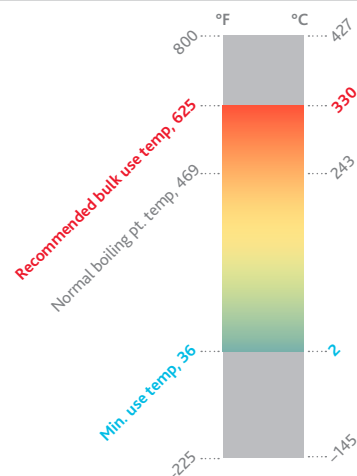
Ultrahigh-temperature,
low-pressure fluid



THERMINOL

VP-3

High-temperature,
liquid/vapor phase fluid



Typical properties^a

Appearance	Soft solid melting to yellow liquid			Above 2.4°C (36°F) clear, sediment-free liquid		
Composition	Terphenyl/quaterphenyl			Phenylcyclohexane + bicyclohexyl		
Recommended bulk temperature	725°F			625°F		
Maximum film temperature	770°F			675°F		
Normal boiling point	649°F			469°F		
Pumpability: at 300 cSt (mm ² /s) at 2000 cSt (mm ² /s)	175°F (slurry point)			36°F (crystallizing point)		
Pour point	NA			NA		
Flash point, COC	365°F			219°F		
Fire point, COC	440°F			235°F		
Autoignition temperature ^b	1,052°F (ASTM E-659)			680°F (ASTM E-659)		
Fully developed turbulent flow (Re = 10,000, 10 ft/s, 1-in. tube)	209°F			36°F		
Kinematic viscosity, cSt (mm ² /s)	175°F	4.16		100°F	2.12	
	400°F	0.85		300°F	0.64	
	600°F	0.39		500°F	0.35	
	725°F	0.28		625°F	0.25	
Density at 75°F (lb/gal)	8.69 (175°F)			7.77		
Density, various temperatures	175°F	8.69 lb/gal	65.0 lb/ft ³	100°F	7.71 lb/gal	57.7 lb/ft ³
	400°F	7.93 lb/gal	59.3 lb/ft ³	300°F	7.08 lb/gal	52.9 lb/ft ³
	600°F	7.17 lb/gal	53.6 lb/ft ³	500°F	6.16 lb/gal	46.1 lb/ft ³
	725°F	6.62 lb/gal	49.6 lb/ft ³	625°F	5.36 lb/gal	40.1 lb/ft ³
Heat capacity, Btu/(lb•°F)	175°F	0.408		100°F	0.403	
	400°F	0.492		300°F	0.514	
	600°F	0.552		500°F	0.611	
	725°F	0.584		625°F	0.715	
Thermal conductivity, Btu/(h•ft•°F)	175°F	0.0756		100°F	0.0666	
	400°F	0.0699		300°F	0.0582	
	600°F	0.0640		500°F	0.0494	
	725°F	0.0596		625°F	0.0437	
Vapor pressure	300°F	3.9 mmHg	0.075 psia	300°F	38 mmHg	0.73 psia
	500°F	125 mmHg	2.42 psia	500°F	1,170 mmHg	22.6 psia
	725°F	1,610 mmHg	31.1 psia	625°F	5,140 mmHg	99.4 psia

Geographic availability^c

Globally

Globally

^a These data are based on samples tested in the laboratory and are not guaranteed for all samples. Contact us for complete sales specifications.

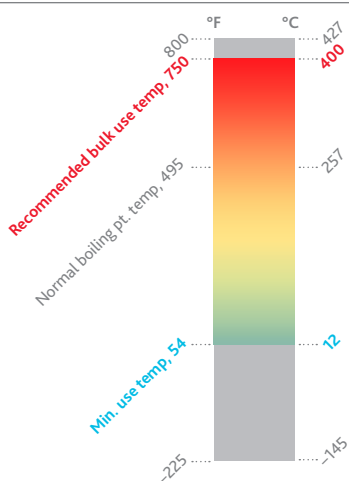
^b Visit www.therminol.com for additional typical properties and test values.

^c Check with your local sales office to determine exact availability by country.

THERMINOL

VP-1

Ultrahigh-temperature,
liquid/vapor phase fluid



Clear, water-white liquid

Biphenyl/diphenyl oxide (DPO) eutectic mixture

750°F

800°F

495°F

54°F (crystallizing point)

NA

255°F

260°F

1,150°F (DIN 51794)

54°F

100°F	2.60
300°F	0.62
500°F	0.32
750°F	0.21

8.85

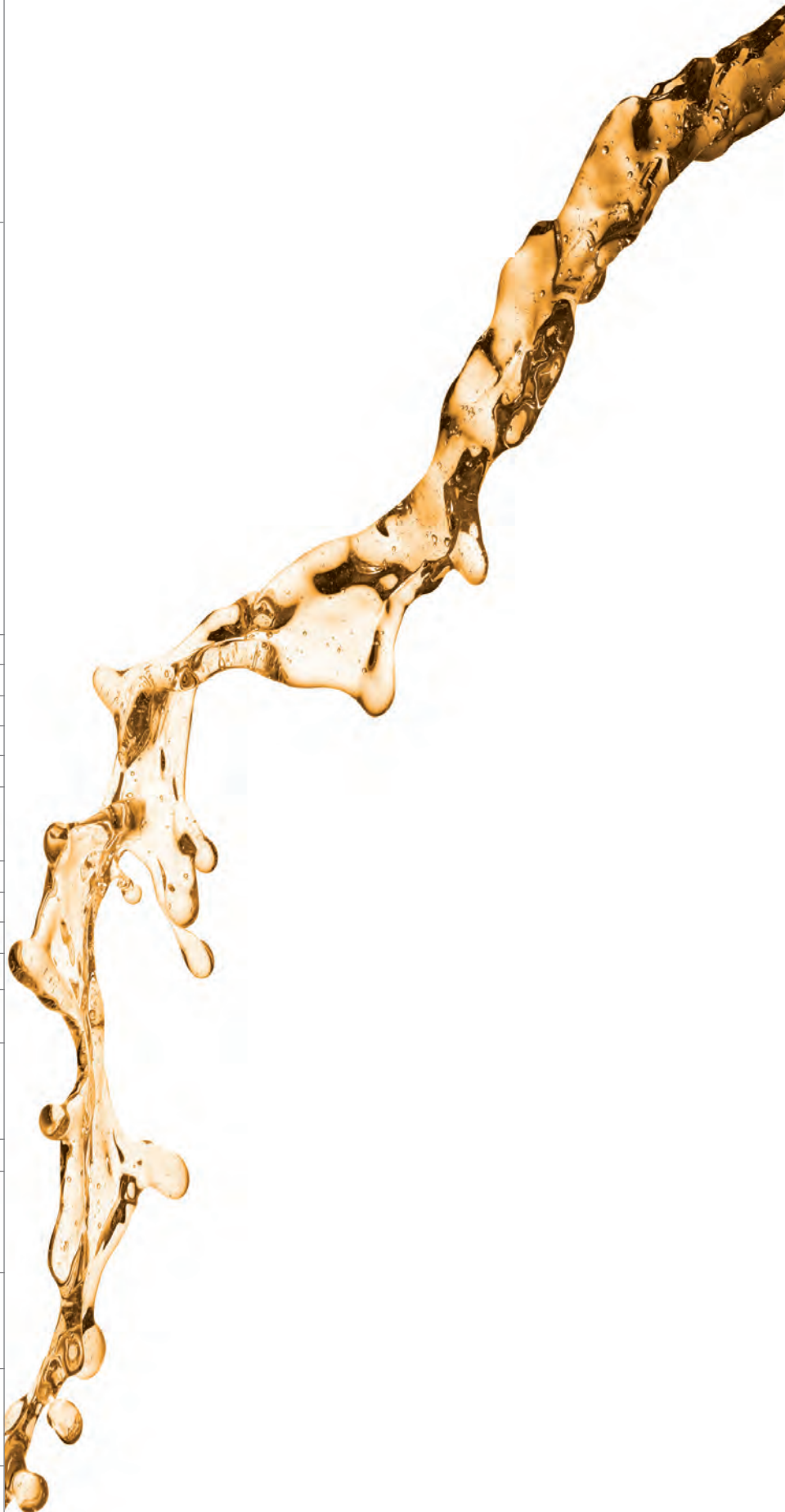
100°F	8.76 lb/gal	65.5 lb/ft ³
300°F	7.99 lb/gal	59.8 lb/ft ³
500°F	7.16 lb/gal	53.5 lb/ft ³
750°F	5.81 lb/gal	43.4 lb/ft ³

100°F	0.382
300°F	0.457
500°F	0.528
750°F	0.627

100°F	0.0778
300°F	0.0701
500°F	0.0600
750°F	0.0439

300°F	32 mmHg	0.62 psia
500°F	810 mmHg	15.7 psia
750°F	8,060 mmHg	156 psia

Globally



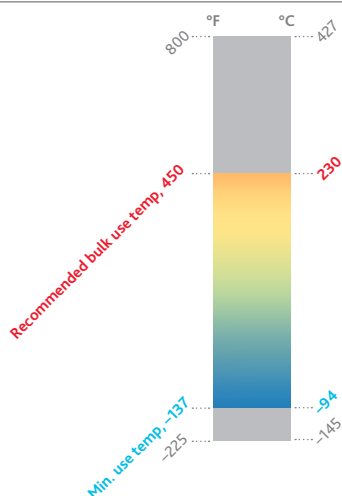
SI units

Liquid phase heat transfer

THERMINOL

D-12

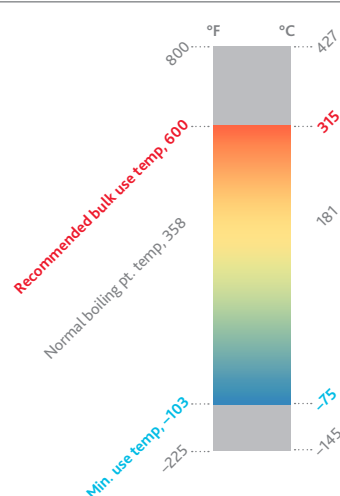
Low-temperature
coolant/heat transfer fluid^e



THERMINOL

LT

Wide-range liquid/
vapor heat transfer fluid



Typical properties^a

Appearance	Clear, water-white liquid		Clear, light yellow liquid	
Composition	Synthetic hydrocarbons		Alkyl substituted aromatic	
Recommended bulk temperature	230°C		315°C	
Maximum film temperature	245°C		345°C	
Normal boiling point	192°C		181°C	
Pumpability: at 300 cSt (mm ² /s) at 2000 cSt (mm ² /s)	-82°C ^d -94°C ^d		-75°C (crystallizing point)	
Pour point	-100°C		NA	
Flash point, COC	62°C (Pensky-Martens)		58°C (Pensky-Martens)	
Fire point, COC	71°C		66°C	
Autoignition temperature ^b	277°C (DIN 51794)		429°C (DIN 51794)	
Fully developed turbulent flow (Re = 10,000, 3.05 m/s, 2.54 cm tube)	-37°C		-66°C	
Viscosity, mPa·s (cP)	-50°C	12.0	-50°C	3.8
	100°C	0.46	100°C	0.38
	200°C	0.19	200°C	0.19
	230°C	0.16	315°C	0.11
Density at 25°C (kg/m ³)	759		862	
Density, kg/m ³	-50°C	811	-50°C	920
	100°C	703	100°C	800
	200°C	616	200°C	707
	230°C	584	315°C	559
Heat capacity, kJ/(kg·K)	-50°C	1.82	-50°C	1.53
	100°C	2.41	100°C	2.09
	200°C	2.84	200°C	2.45
	230°C	2.98	315°C	3.00
Thermal conductivity, W/(m·K)	-50°C	0.120	-50°C	0.138
	100°C	0.097	100°C	0.109
	200°C	0.077	200°C	0.089
	230°C	0.071	315°C	0.065
Vapor pressure, kPa	50°C	0.48	100°C	7.1
	150°C	33.2	200°C	164
	230°C	229	315°C	1,560
Geographic availability ^c	Globally		Globally	

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^b Visit www.therminol.com for additional typical properties and test values. ^c Check with your local sales office to determine exact availability by country.

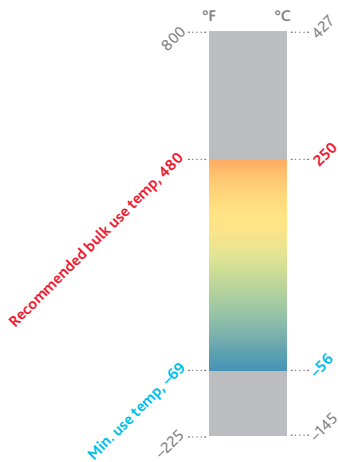
^d -50°F for efficient heat transfer

^e Therminol D-12 outperforms FDA specifications for use in food contact applications.

THERMINOL

ADX-10

Low-temperature pumpability,
medium-temperature fluid



Clear, pale yellow liquid

Synthetic aromatic hydrocarbon mixture

250°C

280°C

293°C

-41°C

-56°C

-80°C

136°C

140°C

327°C (DIN 51794)

19°C

-25°C	66.3
100°C	1.09
200°C	0.40
250°C	0.28

853

-25°C	887
100°C	801
200°C	727
250°C	686

-25°C	1.74
100°C	2.21
200°C	2.56
250°C	2.72

-25°C	0.130
100°C	0.113
200°C	0.099
250°C	0.090

100°C	0.07
200°C	8.31
250°C	36.6

Europe/Middle East/Africa



SI units

Liquid phase heat transfer

THERMINOL

XP

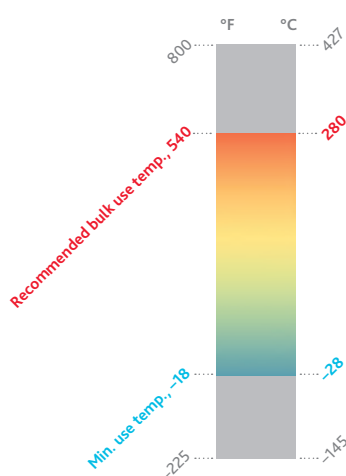
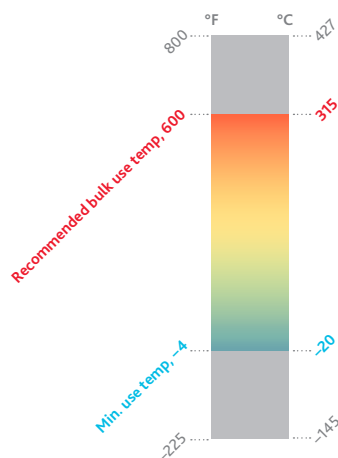
High-purity heat transfer fluid with NSF HT1 incidental food contact registration

THERMINOL

54

Economical, medium-temperature-range fluid

Typical properties^a



Appearance	Colorless, odorless liquid		Clear, yellow liquid	
Composition	White mineral oil		Synthetic hydrocarbon mixture	
Recommended bulk temperature	315°C		280°C	
Maximum film temperature	345°C		310°C	
Normal boiling point	358°C		351°C	
Pumpability: at 300 cSt (mm²/s) at 2000 cSt (mm²/s)	-1°C -20°C		-8°C -28°C	
Pour point	-29°C		< -45°C	
Flash point, COC	199°C		>170°C	
Fire point, COC	232°C		>210°C	
Autoignition temperature ^b	363°C (DIN 51794)		> 330°C	
Fully developed turbulent flow (Re = 10,000, 3.05 m/s, 2.54 cm tube)	72°C		67°C	
Viscosity, mPa·s (cP)	0°C	238	-25°C	1,250
	100°C	3.4	100°C	2.88
	200°C	0.84	200°C	0.75
	315°C	0.34	280°C	0.39
Density at 25°C (kg/m³)	875		868	
Density, kg/m³	0°C	891	-25°C	902
	100°C	827	100°C	818
	200°C	761	200°C	748
	315°C	678	280°C	688
Heat capacity, kJ/(kg·K)	0°C	1.72	-25°C	1.74
	100°C	2.18	100°C	2.19
	200°C	2.60	200°C	2.54
	315°C	3.00	280°C	2.83
Thermal conductivity, W/(m·K)	0°C	0.117	-25°C	0.134
	100°C	0.109	100°C	0.119
	200°C	0.099	200°C	0.107
	315°C	0.085	280°C	0.098
Vapor pressure, kPa	100°C	0.018	100°C	0.03
	200°C	1.7	200°C	2.15
	315°C	42	280°C	21.3

Geographic availability^c

Globally

Europe/Middle East/Africa

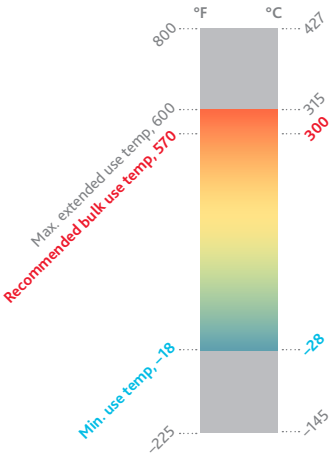
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^b Visit www.therminol.com for additional typical properties and test values. ^c Check with your local sales office to determine exact availability by country.

THERMINOL

55

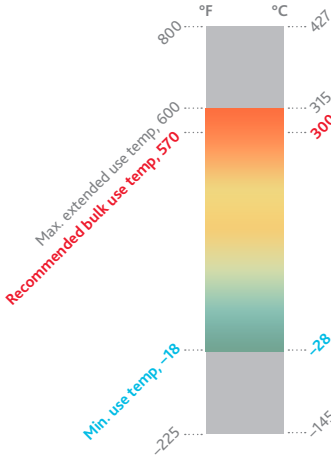
Trusted, medium-temperature-range fluid



THERMINOL

SP

Trusted, medium-temperature-range fluid



Clear, yellow liquid

Synthetic hydrocarbon mixture

300°C

335°C

351°C

-8°C

-28°C

-54°C

177°C

218°C

382°C (DIN 51794)

67°C

-25°C 1,250
100°C 2.88
200°C 0.75
290°C 0.36

868

-25°C 902
100°C 818
200°C 748
290°C 680

-25°C 1.74
100°C 2.19
200°C 2.54
290°C 2.86

-25°C 0.134
100°C 0.119
200°C 0.107
290°C 0.097

100°C 0.032
200°C 2.15
290°C 27.2

Americas/Asia Pacific

Clear, yellow liquid

Synthetic hydrocarbon mixture

300°C

335°C

351°C

-8°C

-28°C

-54°C

177°C

218°C

382°C (DIN 51794)

67°C

-25°C 1,250
100°C 2.88
200°C 0.75
290°C 0.36

868

-25°C 902
100°C 818
200°C 748
290°C 680

-25°C 1.74
100°C 2.19
200°C 2.54
290°C 2.86

-25°C 0.134
100°C 0.119
200°C 0.107
290°C 0.097

100°C 0.032
200°C 2.15
290°C 27.2

Europe/Middle East/Africa

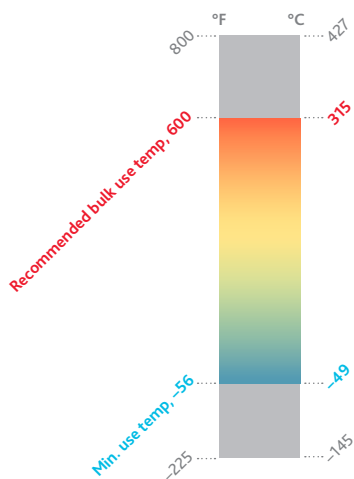
SI units

Liquid phase heat transfer

THERMINOL

59

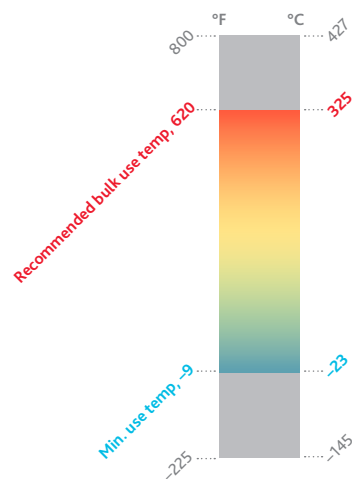
Economical, wide-temperature-range fluid



THERMINOL

62

High-performance, low-pressure fluid



Typical properties^a

Appearance	Clear, yellow to dark amber liquid		Water-white liquid	
Composition	Alkyl substituted aromatic		Isopropyl biphenyl mixture	
Recommended bulk temperature	315°C		325°C	
Maximum film temperature	345°C		355°C	
Normal boiling point	289°C		333°C	
Pumpability:				
at 300 cSt (mm ² /s)	-37°C		-11°C	
at 2000 cSt (mm ² /s)	-49°C		-23°C	
Pour point	-68°C (ISO 3016)		-42°C	
Flash point, COC	146°C		171°C	
Fire point, COC	154°C		196°C	
Autoignition temperature ^b	404°C (DIN 51794)		433°C (DIN 51794)	
Fully developed turbulent flow (Re = 10,000, 3.05 m/s, 2.54 cm tube)	17°C		50°C	
Viscosity, mPa·s (cP)	-25°C	81.4	0°C	99.4
	100°C	1.32	100°C	2.26
	200°C	0.48	200°C	0.59
	315°C	0.23	325°C	0.20
Density at 25°C (kg/m ³)	971		951	
Density, kg/m ³	-25°C	1,007	0°C	968
	100°C	916	100°C	897
	200°C	840	200°C	820
	315°C	741	325°C	705
Heat capacity, kJ/(kg·K)	-25°C	1.54	0°C	1.89
	100°C	1.94	100°C	2.14
	200°C	2.27	200°C	2.36
	315°C	2.67	325°C	2.58
Thermal conductivity, W/(m·K)	-25°C	0.124	0°C	0.125
	100°C	0.115	100°C	0.116
	200°C	0.104	200°C	0.106
	315°C	0.089	325°C	0.090
Vapor pressure, kPa	100°C	0.35	100°C	0.056
	200°C	13.1	200°C	3.5
	315°C	161	325°C	86
Geographic availability ^c	Globally		Contact your Eastman representative.	

^a These data are based on samples tested in the laboratory and are not guaranteed for all samples. Contact us for complete sales specifications.

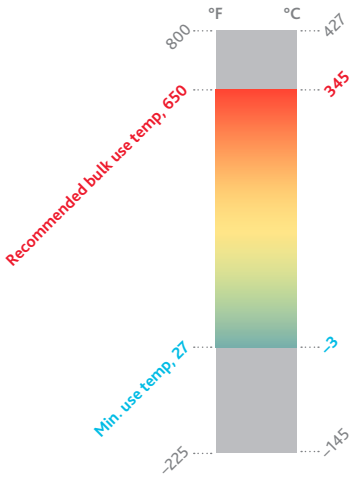
^b Visit www.therminol.com for additional typical properties and test values.

^c Check with your local sales office to determine exact availability by country.

THERMINOL

66

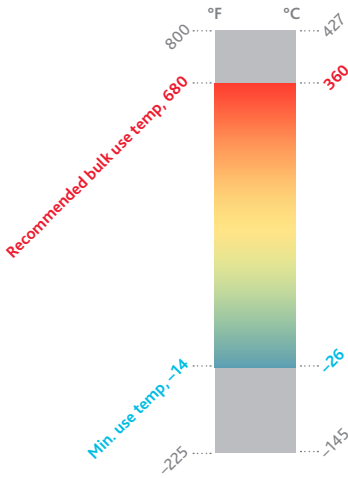
High-temperature, high-stability,
low-pressure fluid



THERMINOL

68

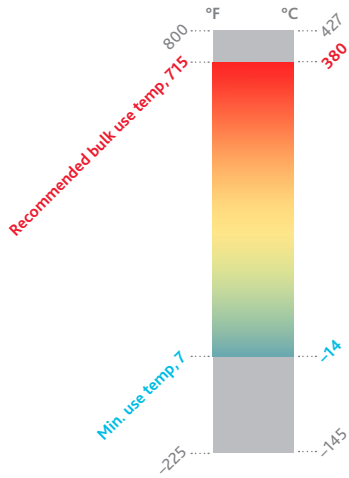
High-temperature,
low-viscosity fluid



THERMINOL

72

High-temperature,
medium-pressure fluid



Clear, pale yellow liquid

Modified terphenyl

345°C

375°C

359°C

11°C

-3°C

-32°C

184°C

212°C

399°C (DIN 51794)

72°C

0°C 1,320
100°C 3.6
200°C 0.86
345°C 0.33

1,005

0°C 1,021
100°C 955
200°C 885
345°C 770

0°C 1.49
100°C 1.84
200°C 2.19
345°C 2.75

0°C 0.118
100°C 0.114
200°C 0.106
345°C 0.089

100°C 0.048
200°C 2.2
345°C 78

Globally

Clear, pale yellow liquid

Mixture of synthetic aromatics

360°C

390°C

308°C

-10°C

-26°C

-33°C

155°C

174°C

400°C (DIN 51794)

57°C

0°C 130
100°C 2.60
200°C 0.70
360°C 0.26

1,020

0°C 1,040
100°C 969
200°C 898
360°C 782

0°C 1.56
100°C 1.88
200°C 2.20
360°C 2.72

0°C 0.125
100°C 0.117
200°C 0.109
360°C 0.096

100°C 0.237
200°C 8.15
360°C 251

Europe/Middle East/Africa

Clear, amber liquid

Mixture of synthetic aromatics

380°C

400°C

271°C

-10°C

-14°C

-18°C

132°C

143°C

603°C (ASTM E-659)

0°C 59.2
100°C 1.61
250°C 0.329
380°C 0.143

1,075

0°C 1,100
100°C 1,007
250°C 871
380°C 753

0°C 1.50
100°C 1.77
250°C 2.18
380°C 2.53

0°C 0.142
100°C 0.130
250°C 0.112
380°C 0.096

100°C 0.33
250°C 61.6
380°C 623

Globally

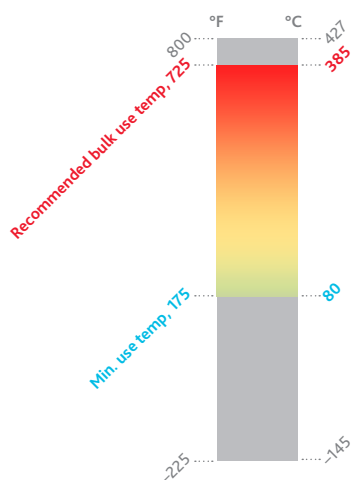
SI units

Liquid phase heat transfer

THERMINOL

75

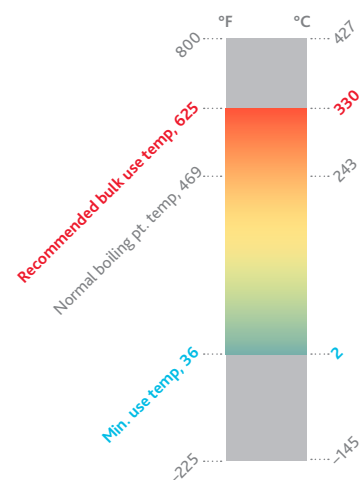
Ultrahigh-temperature,
low-pressure fluid



THERMINOL

VP-3

High-temperature,
liquid/vapor phase fluid



Typical properties^a

Appearance	Soft solid melting to yellow liquid		Above 2.4°C (36°F) clear, sediment-free liquid	
Composition	Terphenyl/quaterphenyl		Phenylcyclohexane + bicyclohexyl	
Recommended bulk temperature	385°C		330°C	
Maximum film temperature	410°C		360°C	
Normal boiling point	343°C		243°C	
Pumpability: at 300 cSt (mm ² /s) at 2000 cSt (mm ² /s)	80°C (slurry point)		2.4°C (crystallizing point)	
Pour point	NA		NA	
Flash point, COC	185°C		104°C	
Fire point, COC	227°C		113°C	
Autoignition temperature ^b	567°C (ASTM E-659)		360°C (ASTM E-659)	
Fully developed turbulent flow (Re = 10,000, 3.05 m/s, 2.54 cm tube)	98°C		2.4°C	
Viscosity, mPa·s (cP)	80°C	4.3	25°C	2.6
	200°C	0.85	150°C	0.54
	300°C	0.37	250°C	0.28
	385°C	0.22	330°C	0.16
Density at 25°C (kg/m ³)	1,041 (80°C)		930	
Density, kg/m ³	80°C	1,040	25°C	930
	200°C	953	150°C	847
	300°C	873	250°C	750
	385°C	794	330°C	641
Heat capacity, kJ/(kg·K)	80°C	1.71	25°C	1.63
	200°C	2.05	150°C	2.16
	300°C	2.28	250°C	2.52
	385°C	2.44	330°C	3.00
Thermal conductivity, W/(m·K)	80°C	0.131	25°C	0.117
	200°C	0.121	150°C	0.101
	300°C	0.112	250°C	0.087
	385°C	0.103	330°C	0.076
Vapor pressure, kPa	150°C	0.55	150°C	5.3
	250°C	12.9	250°C	121
	385°C	215	330°C	693
Geographic availability ^c	Globally		Globally	

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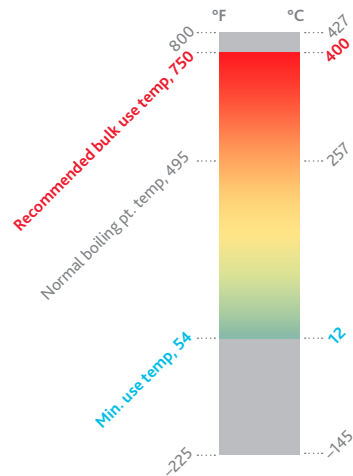
^b Visit www.therminol.com for additional typical properties and test values.

^c Check with your local sales office to determine exact availability by country.

THERMINOL

VP-1

Ultrahigh-temperature,
liquid/vapor phase fluid



Clear, water-white liquid

Biphenyl/diphenyl oxide (DPO) eutectic mixture

400°C

430°C

257°C

12°C (crystallizing point)

NA

124°C

127°C

621°C (DIN 51794)

12°C

25°C	3.7
150°C	0.59
250°C	0.29
400°C	0.15

1,060

25°C	1,060
150°C	957
250°C	867
400°C	694

25°C	1.56
150°C	1.91
250°C	2.18
400°C	2.63

25°C	0.136
150°C	0.121
250°C	0.106
400°C	0.076

150°C	4.5
250°C	86
400°C	1,090

Globally



For more information, visit **Therminol.com**



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