



Selection guide

*High-performance fluids
for precise temperature control*

Heat transfer fluids by Eastman

THERMINOL
Heat transfer fluids by Eastman

MARLOTHERM
Heat transfer fluids by Eastman

Heat transfer fluids by Eastman

Eastman offers a family of heat-stable fluids developed specifically for indirect transfer of process heat. Eastman's 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 to provide excellent thermal stability.

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

Liquid phase heat transfer fluids

Eastman's 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. Eastman's heat transfer fluids can provide effective operations in liquid phase. When above their normal boiling points, Eastman Therminol® D-12, LT, 59, 68, 72, 75, VP-1, and VP-3 and Marlotherm® LH heat transfer fluids require system pressures greater than their vapor pressures for liquid phase operation to their recommended bulk temperature ratings.

Liquid/vapor phase heat transfer fluids

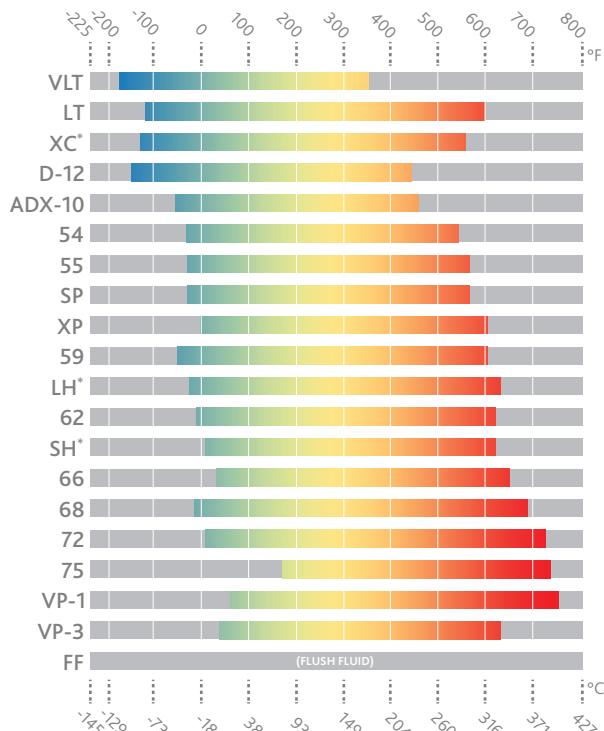
Therminol LT, VP-1, and VP-3 and Marlotherm LH are Eastman's liquid/vapor phase heat transfer fluids. They offer a broad operating temperature range and uniform heat transfer. Other major benefits include precise temperature control and low mechanical maintenance costs. A heat transfer system that utilizes 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 several specialty fluids. We are happy to work with you in developing a customized fluid for your application.



Product temperature scales at a glance



*Denotes a Marlotherm product

Global footprint



Eastman's heat transfer fluids are the top-selling synthetic fluids in the world, with manufacturing facilities and product supply on four continents. As one of the largest heat transfer fluid producers, Eastman has the infrastructure to deliver sizable quantities of synthetic fluids.

Strong foundations



With a long, robust history of thermal fluid innovation, our high-performance fluids have a strong foundation of more than 50 years in the industry.

Expert technical support



Our TLC Total Lifecycle Care® program is designed to support customers throughout a system's life cycle. This comprehensive program includes sample analysis, system design support, operational training, safety awareness training, start-up assistance, and flush and refill fluids.

High-performance portfolio



Designed to provide precise temperature control in a variety of applications, Eastman heat transfer fluids provide proven performance, superior product life, and worry-free fluid maintenance.

SI units

Liquid phase heat transfer

THERMINOL VLT

Ultralow-temperature
coolant/heat transfer fluid

THERMINOL D-12

Low-temperature coolant/heat
transfer fluid that is NSF HT1 certified^d

Typical properties^a

Appearance	Water-white liquid			
Composition	Methylcyclohexane/trimethylpentane mixture			Synthetic hydrocarbons
Recommended bulk temperature	175°C			230°C
Maximum film temperature	210°C			245°C
Normal boiling point	99°C			192°C
Pumpability: at 300 cSt (mm ² /s) at 2000 cSt (mm ² /s)	-126°C -135°C			-82°C ^e -94°C ^e
Pour point	-135°C			-100°C
Flash point, CC	-7°C			62°C
Fire point, COC	71°C			71°C
Autoignition temperature ^b	294°C (DIN 51794)			277°C (DIN 51794)
Fully developed turbulent flow (Re = 10,000, 3.05 m/s, 2.54-cm tube)	-76°C			-37°C
Kinematic viscosity, cSt (mm ² /s)	-115°C 0°C 100°C 175°C	53 1.14 0.41 0.24	-50°C 100°C 200°C 230°C	14.8 0.649 0.316 0.266
Density at 25°C (kg/m ³)	744			759
Density, kg/m ³	-115°C 0°C 100°C 175°C	862 766 676 598	-50°C 100°C 200°C 230°C	811 703 616 584
Heat capacity, kJ/(kg•K)	-115°C 0°C 100°C 175°C	1.37 1.87 2.29 2.61	-50°C 100°C 200°C 230°C	1.82 2.41 2.84 2.98
Thermal conductivity, W/(m•K)	-115°C 0°C 100°C 175°C	0.130 0.108 0.086 0.067	-50°C 100°C 200°C 230°C	0.120 0.097 0.077 0.071
Vapor pressure, kPa	0°C 100°C 175°C	1.9 104 573	50°C 150°C 230°C	0.48 33.2 229
Geographic availability ^c	Globally			Globally

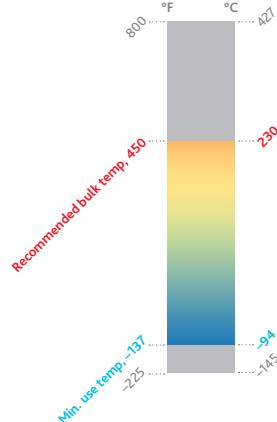
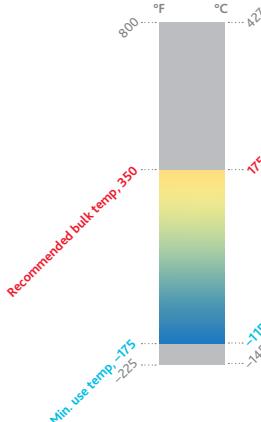
^aThese data are based on samples tested in the laboratory and are not guaranteed for all samples. Contact us for complete sales specifications.

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

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

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

^e-45°C for efficient heat transfer



SI units

Liquid phase heat transfer

MARLOTHERM XC

High-performance, wide-temperature-range heat transfer fluid^d

THERMINOL LT

Wide-range liquid/vapor heat transfer fluid

Typical properties^a

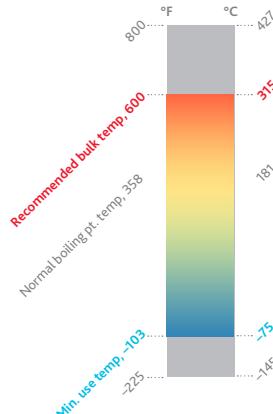
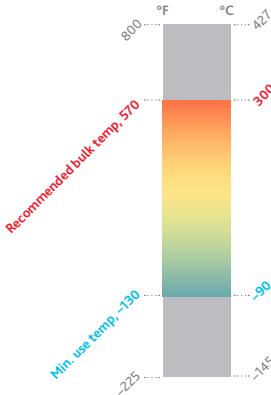
Appearance	Clear liquid		Clear, light yellow liquid	
Composition	Cumene		Alkyl substituted aromatic	
Recommended bulk temperature	300°C		315°C	
Maximum film temperature	320°C		345°C	
Normal boiling point	152°C		181°C	
Pumpability: at 300 cSt (mm ² /s) at 2000 cSt (mm ² /s)	<-90°C —		-75°C (crystallizing point) —	
Pour point	<-90°C		NA	
Flash point, CC	38.8°C		58°C	
Fire point, COC	50°C		66°C	
Autoignition temperature ^b	~420° C (DIN 51794)		429°C (DIN 51794)	
Fully developed turbulent flow (Re = 10,000, 3.05 m/s, 2.54-cm tube)	-84°C		-66°C	
Kinematic viscosity, cSt (mm ² /s)	-50°C 0°C 150°C 300°C	3.11 1.28 0.34 0.228	-50°C 100°C 200°C 315°C	4.17 0.48 0.27 0.19
Density at 25°C (kg/m ³)	857		862	
Density, kg/m ³	-50°C 0°C 150°C 300°C	918 878 745 554	-50°C 100°C 200°C 315°C	920 800 707 559
Heat capacity, kJ/(kg•K)	-50°C 0°C 150°C 300°C	1.44 1.65 2.28 3.17	-50°C 100°C 200°C 315°C	1.53 2.09 2.45 3.00
Thermal conductivity, W/(m•K)	-50°C 0°C 150°C 300°C	0.144 0.133 0.098 0.065	-50°C 100°C 200°C 315°C	0.138 0.109 0.089 0.065
Vapor pressure, kPa	100°C 200°C 300°C	20.7 301 1528	100°C 200°C 315°C	7.1 164 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 Marlotherm XC is a high-performance, wide-temperature-range heat transfer fluid for heating and cooling in the most varied fields of applications.



SI units

Liquid phase heat transfer

THERMINOL ADX-10

Low-temperature pumpability,
medium-temperature fluid

THERMINOL XP

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

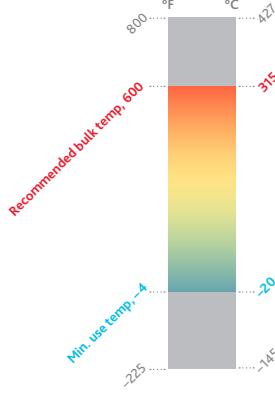
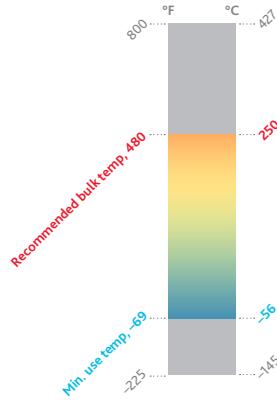
Typical properties^a

Appearance	Clear, pale yellow liquid			
Composition	Synthetic, aromatic hydrocarbon mixture			White mineral oil
Recommended bulk temperature	250°C			315°C
Maximum film temperature	280°C			345°C
Normal boiling point	293°C			358°C
Pumpability: at 300 cSt (mm ² /s) at 2000 cSt (mm ² /s)	-41°C -56°C			-1°C -20°C
Pour point	-80°C			-29°C
Flash point, COC	136°C			199°C
Fire point, COC	140°C			232°C
Autoignition temperature ^b	327°C (DIN 51794)			363°C (DIN 51794)
Fully developed turbulent flow (Re = 10,000, 3.05 m/s, 2.54-cm tube)	19°C			72°C
Kinematic viscosity, cSt (mm ² /s)	-25°C 100°C 200°C 250°C	75 1.36 0.55 0.40	-25°C 0°C 200°C 250°C	3860 267 1.10 0.746
Density at 25°C (kg/m ³)	853			875
Density, kg/m ³	-25°C 100°C 200°C 250°C	887 801 727 686	0°C 100°C 200°C 315°C	891 827 761 678
Heat capacity, kJ/(kg·K)	-25°C 100°C 200°C 250°C	1.74 2.21 2.56 2.72	0°C 100°C 200°C 315°C	1.72 2.18 2.60 3.00
Thermal conductivity, W/(m·K)	-25°C 100°C 200°C 250°C	0.130 0.113 0.099 0.090	0°C 100°C 200°C 315°C	0.117 0.109 0.099 0.085
Vapor pressure, kPa	100°C 200°C 250°C	0.07 8.31 36.6	100°C 200°C 315°C	0.018 1.7 42
Geographic availability ^c	Europe/Middle East/Africa/Americas			Globally

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

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



SI units

Liquid phase heat transfer

THERMINOL 54

Economical medium-temperature-range fluid

THERMINOL 55

Trusted medium-temperature-range fluid

Typical properties^a

Appearance	Clear, yellow liquid			
Composition	Synthetic hydrocarbon mixture			
Recommended bulk temperature	280°C			
Maximum film temperature	310°C			
Normal boiling point	351°C			
Pumpability: at 300 cSt (mm ² /s) at 2000 cSt (mm ² /s)	-8°C -28°C			
Pour point	<-45°C			
Flash point, COC	>170°C			
Fire point, COC	>210°C			
Autoignition temperature ^b	>330°C			
Fully developed turbulent flow (Re = 10,000, 3.05 m/s, 2.54-cm tube)	67°C			
Kinematic viscosity, cSt (mm ² /s)	-25°C 100°C 200°C 280°C	1390 3.52 1.00 0.56	-25°C 100°C 200°C 290°C	1390 3.52 1.00 0.53
Density at 25°C (kg/m ³)	868			
Density, kg/m ³	-25°C 100°C 200°C 280°C	902 818 748 688	-25°C 100°C 200°C 290°C	902 818 748 680
Heat capacity, kJ/(kg·K)	-25°C 100°C 200°C 280°C	1.74 2.19 2.54 2.83	-25°C 100°C 200°C 290°C	1.74 2.19 2.54 2.86
Thermal conductivity, W/(m·K)	-25°C 100°C 200°C 280°C	0.134 0.119 0.107 0.098	-25°C 100°C 200°C 290°C	0.134 0.119 0.107 0.097
Vapor pressure, kPa	100°C 200°C 280°C	0.03 2.15 21.3	100°C 200°C 290°C	0.032 2.15 27.2
Geographic availability ^c	Europe/Middle East/Africa			

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

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

^dMaximum extended use temperature = 315°C

SI units

Liquid phase heat transfer

THERMINOL SP

Trusted medium-temperature-range fluid

THERMINOL 59

Wide-operating-range fluid with excellent low-temperature pumpability

Typical properties^a

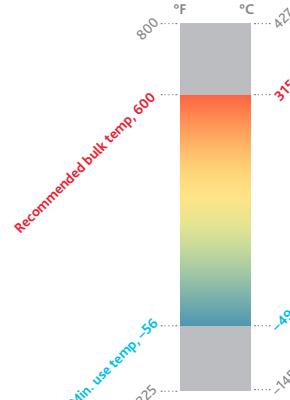
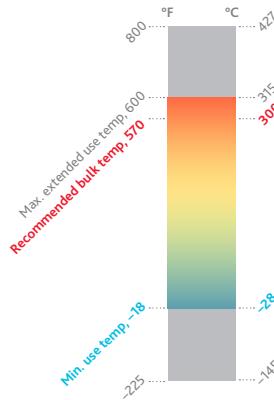
Appearance	Clear, yellow liquid		Clear, yellow to dark amber liquid	
Composition	Synthetic hydrocarbon mixture		Alkyl substituted aromatic	
Recommended bulk temperature	300°C ^d		315°C	
Maximum film temperature	335°C		345°C	
Normal boiling point	351°C		289°C	
Pumpability:				
at 300 cSt (mm ² /s)	-8°C		-37°C	
at 2000 cSt (mm ² /s)	-28°C		-49°C	
Pour point	-54°C		-68°C (ISO 3016)	
Flash point, COC	193°C		146°C	
Fire point, COC	218°C		154°C	
Autoignition temperature ^b	382°C (DIN 51794)		404°C (DIN 51794)	
Fully developed turbulent flow (Re = 10,000, 3.05 m/s, 2.54-cm tube)	67°C		17°C	
Kinematic viscosity, cSt (mm ² /s)	-25°C	1390	-25°C	80.9
	100°C	3.52	100°C	1.44
	200°C	1.00	200°C	0.57
	290°C	0.53	315°C	0.31
Density at 25°C (kg/m ³)	868		971	
Density, kg/m ³	-25°C	902	-25°C	1,007
	100°C	818	100°C	916
	200°C	748	200°C	840
	290°C	680	315°C	741
Heat capacity, kJ/(kg•K)	-25°C	1.74	-25°C	1.54
	100°C	2.19	100°C	1.94
	200°C	2.54	200°C	2.27
	290°C	2.862	315°C	2.67
Thermal conductivity, W/(m•K)	-25°C	0.134	-25°C	0.124
	100°C	0.119	100°C	0.115
	200°C	0.107	200°C	0.104
	290°C	0.097	315°C	0.089
Vapor pressure, kPa	100°C	0.032	100°C	0.35
	200°C	2.15	200°C	13.1
	290°C	27.2	315°C	161
Geographic availability ^c	Europe/Middle East		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 or www.marlotherm.com for additional typical properties and test values.

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

^d Maximum extended use temperature = 360°C



SI units

Liquid phase heat transfer

MARLOTHERM LH

Wide-temperature-range fluid
for heating and cooling

THERMINOL 62

High-performance,
low-pressure fluid

Typical properties^a

Appearance	Clear liquid			
Composition	Benzyltoluene			
Recommended bulk temperature	330°C ^d			
Maximum film temperature	380°C			
Normal boiling point	278°C			
Pumpability: at 300 cSt (mm ² /s) at 2000 cSt (mm ² /s)	-67°C ^e <-70°C ^e			
Pour point	-79°C			
Flash point, COC	132°C			
Fire point, COC	157°C			
Autoignition temperature ^b	510°C (DIN 51794)			
Fully developed turbulent flow (Re = 10,000, 3.05 m/s, 2.54-cm tube)	1°C			
Kinematic viscosity, cSt (mm ² /s)	-20°C 100°C 200°C 300°C	17.0 1.08 0.47 0.30	0°C 100°C 200°C 325°C	103 2.52 0.72 0.28
Density at 25°C (kg/m ³)	992			
Density, kg/m ³	-20°C 100°C 200°C 300°C	1025 936 856 767	0°C 100°C 200°C 325°C	968 897 820 705
Heat capacity, kJ/(kg•K)	-20°C 100°C 200°C 300°C	1.47 1.88 2.22 2.552	0°C 100°C 200°C 325°C	1.89 2.14 2.36 2.58
Thermal conductivity, W/(m•K)	-20°C 100°C 200°C 300°C	0.136 0.122 0.111 0.099	0°C 100°C 200°C 325°C	0.125 0.116 0.106 0.090
Vapor pressure, kPa	100°C 200°C 300°C	0.22 13.1 162	100°C 200°C 325°C	0.056 3.5 86
Geographic availability ^c	Globally			

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

^d Maximum extended use temperature = 360°C

^e Operation at temperatures < -30°C (-22°F) is not advised due to potential formation and effects of crystals at lower temperatures.

SI units

Liquid phase heat transfer

MARLOTHERM SH

High-boiling-point, low-viscosity,
low-pressure heat transfer fluid

THERMINOL 66

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

Typical properties^a

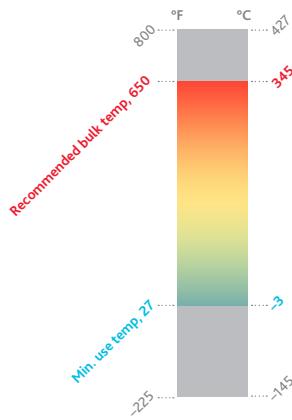
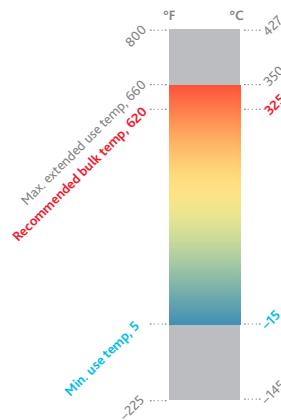
Appearance	Clear liquid		Clear, pale yellow liquid	
Composition	Dibenzyltoluene		Modified terphenyl	
Recommended bulk temperature	325°C ^d		345°C	
Maximum film temperature	380°C		375°C	
Normal boiling point	392°C		359°C	
Pumpability: at 300 cSt (mm ² /s) at 2000 cSt (mm ² /s)	-1°C -15°C		11°C -3°C	
Pour point	-34°C		-32°C	
Flash point, COC	219°C		184°C	
Fire point, COC	250°C		212°C	
Autoignition temperature ^b	500°C (DIN 51794)		399°C (DIN 51794)	
Fully developed turbulent flow (Re = 10,000, 3.05 m/s, 2.54-cm tube)	61°C		72°C	
Kinematic viscosity, cSt (mm ² /s)	0°C	261	0°C	1300
	100°C	3.18	100°C	3.77
	200°C	0.92	200°C	0.97
	320°C	0.39	345°C	0.43
Density at 25°C (kg/m ³)	1,039		1,005	
Density, kg/m ³	0°C	1055	0°C	1,021
	100°C	989	100°C	955
	200°C	919	200°C	885
	320°C	827	345°C	770
Heat capacity, kJ/(kg•K)	0°C	1.49	0°C	1.49
	100°C	1.85	100°C	1.84
	200°C	2.22	200°C	2.19
	320°C	2.67	345°C	2.75
Thermal conductivity, W/(m•K)	0°C	0.1331	0°C	0.118
	100°C	0.1201	100°C	0.114
	200°C	0.1070	200°C	0.106
	320°C	0.0910	345°C	0.089
Vapor pressure, kPa	100°C	—	100°C	0.048
	200°C	0.723	200°C	2.2
	320°C	21.1	345°C	78
Geographic availability ^c	Globally		Globally	

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

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

^dMaximum extended temperature = 350°C



SI units

Liquid phase heat transfer

THERMINOL 68

High-temperature,
low-viscosity fluid

THERMINOL 72

High-temperature,
medium-pressure fluid

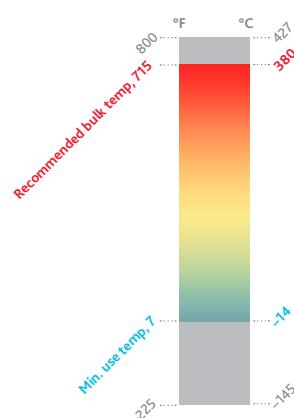
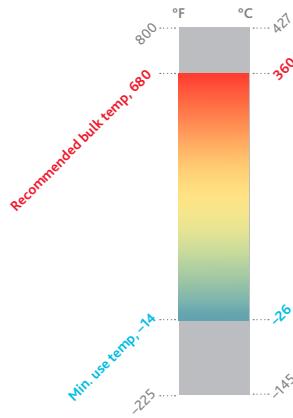
Typical properties^a

Appearance	Clear, pale yellow liquid		Clear, amber liquid	
Composition	Mixture of synthetic aromatics		Mixture of synthetic aromatics	
Recommended bulk temperature	360°C		380°C	
Maximum film temperature	390°C		400°C	
Normal boiling point	308°C		271°C	
Pumpability: at 300 cSt (mm ² /s) at 2000 cSt (mm ² /s)	-10°C -26°C		-10°C -14°C	
Pour point	-33°C		-18°C	
Flash point, COC	155°C		132°C	
Fire point, COC	174°C		143°C	
Autoignition temperature ^b	400°C (DIN 51794)		603°C (ASTM E659)	
Fully developed turbulent flow (Re = 10,000, 3.05 m/s, 2.54-cm tube)	57°C		32°C	
Kinematic viscosity, cSt (mm ² /s)	0°C 100°C 200°C 360°C	125 2.69 0.78 0.33	0°C 100°C 250°C 380°C	54 1.6 0.38 0.19
Density at 25°C (kg/m ³)	1,020		1,075	
Density, kg/m ³	0°C 100°C 200°C 360°C	1,040 969 898 782	0°C 100°C 250°C 380°C	1,100 1,007 871 753
Heat capacity, kJ/(kg•K)	0°C 100°C 200°C 360°C	1.56 1.88 2.20 2.72	0°C 100°C 250°C 380°C	1.50 1.77 2.18 2.53
Thermal conductivity, W/(m•K)	0°C 100°C 200°C 360°C	0.125 0.117 0.109 0.096	0°C 100°C 250°C 380°C	0.142 0.130 0.112 0.096
Vapor pressure, kPa	100°C 200°C 360°C	0.237 8.15 251	100°C 250°C 380°C	0.33 61.6 623
Geographic availability ^c	Europe/Middle East/Africa		Globally	

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



SI units

Liquid phase heat transfer

THERMINOL 75

Ultrahigh-temperature,
low-pressure fluid

THERMINOL VP-3

High-temperature,
liquid/vapor phase fluid

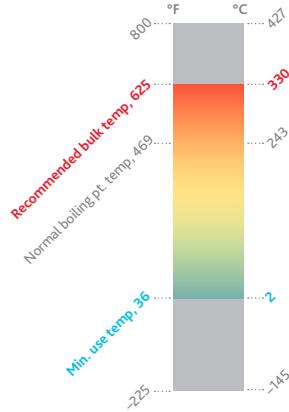
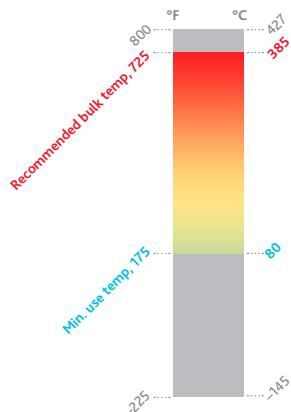
Typical properties^a

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 E659)		360°C (ASTM E659)	
Fully developed turbulent flow (Re = 10,000, 3.05 m/s, 2.54 cm tube)	98°C		2.4°C	
Kinematic viscosity, cSt (mm ² /s)	80°C 200°C 300°C 385°C	4.12 0.89 0.42 0.27	25°C 150°C 250°C 330°C	2.79 0.64 0.37 0.25
Density at 25°C (kg/m ³)	1,041 (80°C)		930	
Density, kg/m ³	80°C 200°C 300°C 385°C	1,040 953 873 794	25°C 150°C 250°C 330°C	930 847 750 641
Heat capacity, kJ/(kg•K)	80°C 200°C 300°C 385°C	1.71 2.05 2.28 2.44	25°C 150°C 250°C 330°C	1.63 2.16 2.52 3.00
Thermal conductivity, W/(m•K)	80°C 200°C 300°C 385°C	0.131 0.121 0.112 0.103	25°C 150°C 250°C 330°C	0.117 0.101 0.087 0.076
Vapor pressure, kPa	150°C 250°C 385°C	0.55 12.9 215	150°C 250°C 330°C	5.3 121 693
Geographic availability ^c	Globally		Globally	

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

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

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



SI units

Liquid phase heat transfer

THERMINOL VP-1

Ultrahigh-temperature,
liquid/vapor phase fluid

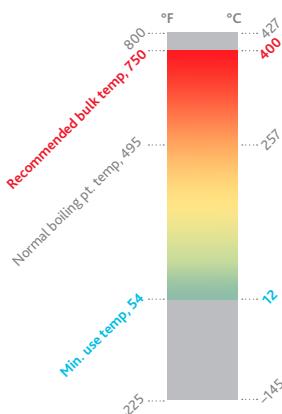
Typical properties^a

Appearance	Clear, water-white liquid	
Composition	Biphenyl/diphenyl oxide (DPO) eutectic mixture	
Recommended bulk temperature	400°C	
Maximum film temperature	430°C	
Normal boiling point	257°C	
Pumpability: at 300 cSt (mm ² /s) at 2000 cSt (mm ² /s)	12°C (crystallizing point) —	
Pour point	NA	
Flash point, COC	124°C	
Fire point, COC	127°C	
Autoignition temperature ^b	621°C (DIN 51794)	
Fully developed turbulent flow (Re = 10,000, 3.05 m/s, 2.54 cm tube)	12°C	
Kinematic viscosity, cSt (mm ² /s)	25°C 150°C 250°C 400°C	3.52 0.61 0.33 0.21
Density at 25°C (kg/m ³)	1,060	
Density, kg/m ³	25°C 150°C 250°C 400°C	1,060 957 867 694
Heat capacity, kJ/(kg•K)	25°C 150°C 250°C 400°C	1.56 1.91 2.18 2.63
Thermal conductivity, W/(m•K)	25°C 150°C 250°C 400°C	0.136 0.121 0.106 0.076
Vapor pressure, kPa	150°C 250°C 400°C	4.5 86 1,090
Geographic availability ^c	Globally	

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

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

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



English units

Liquid phase heat transfer

THERMINOL VLT

Ultralow-temperature
coolant/heat transfer fluid

THERMINOL D-12

Low-temperature coolant/heat
transfer fluid that is NSF HT1 certified^d

Typical properties^a

Appearance	Water-white liquid			Clear, water-white liquid	
Composition	Methylcyclohexane/trimethylpentane mixture			Synthetic hydrocarbons	
Recommended bulk temperature	350°F			450°F	
Maximum film temperature	410°F			475°F	
Normal boiling point	211°F			378°F	
Pumpability: at 300 cSt (mm ² /s) at 2000 cSt (mm ² /s)	-195°F -211°F			-116°F ^e -137°F ^e	
Pour point	-211°F			-148°F	
Flash point, CC	20°F			144°F	
Fire point, COC	20°F (ASTM D1310)			175°F	
Autoignition temperature ^b	562°F (DIN 51794)			531°F (DIN 51794)	
Fully developed turbulent flow (Re = 10,000, 10 ft/s, 1-in. tube)	-105°F			-35°F	
Kinematic viscosity, cSt (mm ² /s)	-175°F -100°F 100°F 350°F	53 5.7 0.72 0.24		-50°F 100°F 300°F 450°F	11.5 1.26 0.44 0.26
Density at 75°F (lb/gal)	6.22			6.34	
Density, various temperatures	-175°F -100°F 100°F 350°F	7.19 lb/gal 6.90 lb/gal 6.12 lb/gal 4.97 lb/gal	53.8 lb/ft ³ 51.6 lb/ft ³ 45.8 lb/ft ³ 37.2 lb/ft ³	-50°F 100°F 300°F 450°F	6.75 lb/gal 6.26 lb/gal 5.53 lb/gal 4.86 lb/gal
Heat capacity, Btu/(lb·°F)	-175°F -100°F 100°F 350°F	0.328 0.372 0.485 0.626		-50°F 100°F 300°F 450°F	0.440 0.517 0.626 0.715
Thermal conductivity, Btu/(h·ft·°F)	-175°F -100°F 100°F 350°F	0.0754 0.0708 0.0577 0.0382		-50°F 100°F 300°F 450°F	0.0690 0.0620 0.0505 0.0404
Vapor pressure	100°F 200°F 350°F	91.5 mmHg 643 mmHg 4,430 mmHg	1.77 psia 12.4 psia 85.7 psia	200°F 300°F 450°F	32.7 mmHg 241 mmHg 1,800 mmHg
Geographic availability ^c	Globally			Globally	

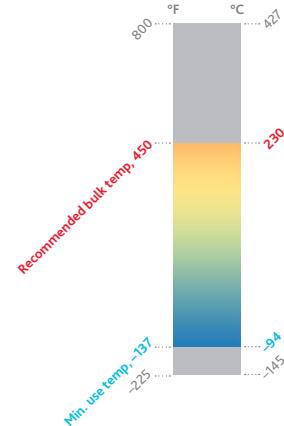
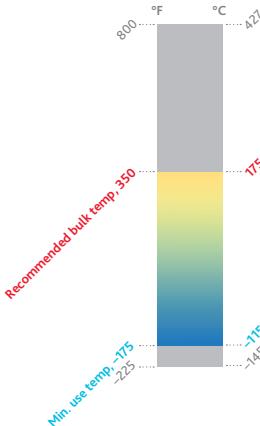
^a These data are based on samples tested in the laboratory and are not guaranteed for all samples. Contact us for complete sales specifications.

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

^e -50°F for efficient heat transfer



English units

Liquid phase heat transfer

MARLOTHERM XC

High-performance, wide-temperature-range heat transfer fluid^d

THERMINOL LT

Wide-range liquid/vapor heat transfer fluid

Typical properties^a

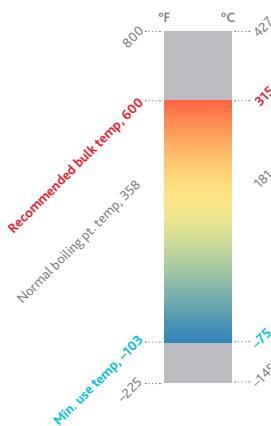
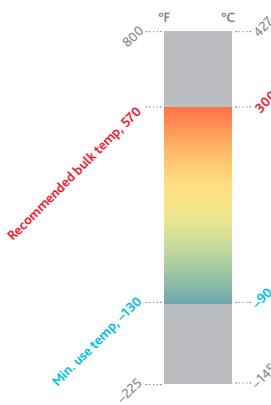
Appearance	Clear liquid			Clear, light yellow liquid	
Composition	Cumene			Alkyl substituted aromatic	
Recommended bulk temperature	570°F			600°F	
Maximum film temperature	608°F			650°F	
Normal boiling point	306°F			358°F	
Pumpability: at 300 cSt (mm ² /s) at 2000 cSt (mm ² /s)	<-130°F —			-103°F (crystallizing point) —	
Pour point	<-130°F			NA	
Flash point, CC	102°F			134°F	
Fire point, COC	122°F			150°F	
Autoignition temperature ^b	~788°F (DIN 51794)			804°F (DIN 51794)	
Fully developed turbulent flow (Re = 10,000, 10 ft/s, 1-in. tube)	-119°F			-87°F	
Kinematic viscosity, cSt (mm ² /s)	-100°F 200°F 400°F 570°F	5.54 0.486 0.273 0.228	-100°F 100°F 300°F 600°F	10.8 0.83 0.35 0.19	
Density at 75°F (lb/gal)	7.16 lb/gal			7.20	
Density, various temperatures	-100°F 200°F 400°F 570°F	7.82 lb/gal 6.66 lb/gal 5.74 lb/gal 4.62 lb/gal	58.5 lb/ft ³ 49.8 lb/ft ³ 42.9 lb/ft ³ 34.6 lb/ft ³	-100°F 100°F 300°F 600°F	7.83 lb/gal 7.11 lb/gal 6.31 lb/gal 4.66 lb/gal
Heat capacity, Btu/(lb·°F)	-100°F 200°F 400°F 570°F	0.321 0.488 0.605 0.757	-100°F 100°F 300°F 600°F	0.344 0.446 0.542 0.719	58.6 lb/ft ³ 53.2 lb/ft ³ 47.2 lb/ft ³ 34.8 lb/ft ³
Thermal conductivity, Btu/(h·ft·°F)	-100°F 200°F 400°F 570°F	0.0866 0.0643 0.0499 0.0377	-100°F 100°F 300°F 600°F	0.0825 0.0701 0.0573 0.0374	
Vapor pressure	200°F 400°F 570°F	121.5 mmHg 2,472 mmHg 11,480 mmHg	2.35 psia 47.8 psia 222 psia	200°F 400°F 600°F	41 mmHg 1,370 mmHg 11,800 mmHg
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 Marlotherm XC is a high-performance, wide-temperature-range heat transfer fluid for heating and cooling in the most varied fields of applications.



English units

Liquid phase heat transfer

THERMINOL ADX-10

Low-temperature pumpability,
medium-temperature fluid

THERMINOL XP

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

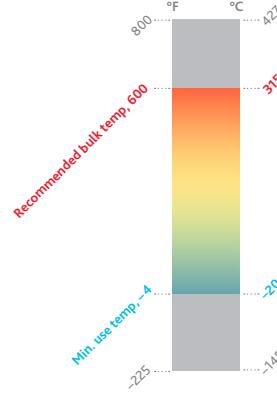
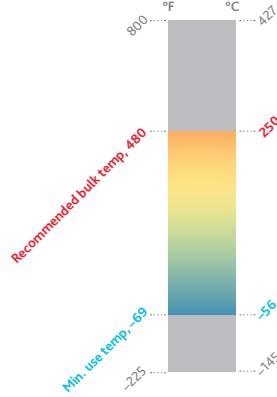
Typical properties^a

Appearance	Clear, pale yellow liquid			Colorless, odorless liquid	
Composition	Synthetic aromatic hydrocarbon mixture			White mineral oil	
Recommended bulk temperature	480°F			600°F	
Maximum film temperature	535°F			650°F	
Normal boiling point	559°F			676°F	
Pumpability: at 300 cSt (mm ² /s) at 2000 cSt (mm ² /s)	-41°F -69°F			30°F -4°F	
Pour point	-112°F			-20°F	
Flash point, COC	277°F			390°F	
Fire point, COC	284°F			450°F	
Autoignition temperature ^b	621°F (DIN 51794)			685°F (DIN 51794)	
Fully developed turbulent flow (Re = 10,000, 10 ft/s, 1-in. tube)	66°F			162°F	
Kinematic viscosity, cSt (mm ² /s)	-50°F 200°F 400°F 480°F	508 1.49 0.531 0.403	0°F 200°F 400°F 600°F	1,560 4.7 1.06 0.50	56.3 lb/ft ³ 51.9 lb/ft ³ 47.3 lb/ft ³ 42.3 lb/ft ³
Density at 75°F (lb/gal)	7.13			7.31	
Density, various temperatures	-50°F 200°F 400°F 480°F	7.53 lb/gal 6.72 lb/gal 6.04 lb/gal 5.73 lb/gal	56.3 lb/ft ³ 50.3 lb/ft ³ 45.2 lb/ft ³ 42.9 lb/ft ³	0°F 200°F 400°F 600°F	7.53 lb/gal 6.94 lb/gal 6.33 lb/gal 5.66 lb/gal
Heat capacity, Btu/(lb·°F)	-50°F 200°F 400°F 480°F	0.395 0.523 0.615 0.649	0°F 200°F 400°F 600°F	0.389 0.515 0.625 0.718	56.3 lb/ft ³ 51.9 lb/ft ³ 47.3 lb/ft ³ 42.3 lb/ft ³
Thermal conductivity, Btu/(h·ft·°F)	-50°F 200°F 400°F 480°F	0.0764 0.0660 0.0565 0.0523	0°F 200°F 400°F 600°F	0.0681 0.0635 0.0571 0.0490	56.3 lb/ft ³ 51.9 lb/ft ³ 47.3 lb/ft ³ 42.3 lb/ft ³
Vapor pressure	200°F 400°F 480°F	0.36 mmHg 72.4 mmHg 266 mmHg	0.007 psia 1.40 psia 5.15 psia	200°F 400°F 600°F	0.09 mmHg 15.0 mmHg 318 mmHg
Globally	Europe/Middle East/Africa/Americas			0.002 psia 0.289 psia 6.16 psia	

^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.



English units

Liquid phase heat transfer

THERMINOL 54

Economical medium-temperature-range fluid

THERMINOL 55

Trusted medium-temperature-range fluid

Typical properties^a

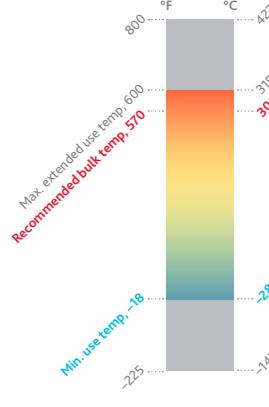
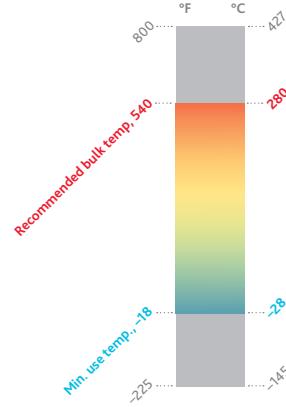
Appearance	Clear, yellow liquid		Clear, yellow liquid			
Composition	Synthetic hydrocarbon mixture		Synthetic hydrocarbon mixture			
Recommended bulk temperature	540°F		570°F ^d			
Maximum film temperature	590°F		635°F			
Normal boiling point	664°F		664°F			
Pumpability: at 300 cSt (mm ² /s) at 2000 cSt (mm ² /s)	17°F -18°F		17°F -18°F			
Pour point	<-50°F		-65°F			
Flash point, COC	>340°F		379°F			
Fire point, COC	>410°F		425°F			
Autoignition temperature ^b	>625°F		719°F (DIN 51794)			
Fully developed turbulent flow (Re = 10,000, 10 ft/s, 1-in. tube)	152°F		152°F			
Kinematic viscosity, cSt (mm ² /s)	0°F 200°F 400°F 540°F	683 4.03 0.96 0.56	0°F 200°F 400°F 550°F	683 4.03 0.964 0.536		
Density at 75°F (lb/gal)	7.25		7.26			
Density, various temperatures	0°F 200°F 400°F 540°F	7.49 lb/gal 6.86 lb/gal 6.22 lb/gal 5.73 lb/gal	56.0 lb/ft ³ 51.3 lb/ft ³ 46.5 lb/ft ³ 42.8 lb/ft ³	0°F 200°F 400°F 550°F	7.49 lb/gal 6.86 lb/gal 6.22 lb/gal 5.69 lb/gal	56.0 lb/ft ³ 51.3 lb/ft ³ 46.5 lb/ft ³ 42.6 lb/ft ³
Heat capacity, Btu/(lb·°F)	0°F 200°F 400°F 540°F	0.42 0.52 0.61 0.68	0°F 200°F 400°F 550°F	0.423 0.518 0.612 0.682		
Thermal conductivity, Btu/(h·ft·°F)	0°F 200°F 400°F 540°F	0.077 0.069 0.062 0.057	0°F 200°F 400°F 550°F	0.0768 0.0693 0.0618 0.0561		
Vapor pressure	200°F 400°F 540°F	— 18.6 mmHg 169 mmHg	0.36 psia 3.27 psia	200°F 400°F 550°F	0.16 mmHg 18.6 mmHg 193 mmHg	0.003 psia 0.360 psia 3.74 psia
Geographic availability ^c	Europe/Middle East/Africa		Americas/Middle East/Africa			

^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 Maximum extended use temperature = 600°F



English units

Liquid phase heat transfer

THERMINOL SP

Trusted medium-temperature-range fluid

THERMINOL 59

Wide-operating-range fluid with excellent low-temperature pumpability

Typical properties^a

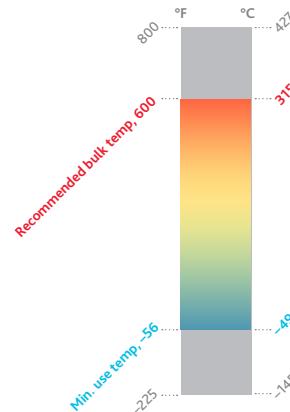
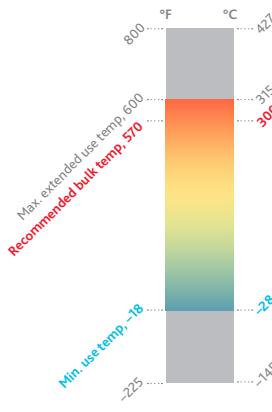
Appearance	Clear, yellow liquid		Clear, yellow to dark amber liquid			
Composition	Synthetic hydrocarbon mixture		Alkyl substituted aromatic			
Recommended bulk temperature	570°F ^d		600°F			
Maximum film temperature	635°F		650°F			
Normal boiling point	664°F		553°F			
Pumpability:						
at 300 cSt (mm ² /s)	17°F		-35°F			
at 2000 cSt (mm ² /s)	-18°F		-56°F			
Pour point	-65°F		-90°F (ISO 3016)			
Flash point, COC	379°F		295°F			
Fire point, COC	425°F		310°F			
Autoignition temperature ^b	719°F (DIN 51794)		760°F (DIN 51794)			
Fully developed turbulent flow (Re = 10,000, 10 ft/s, 1-in. tube)	152°F		63°F			
Kinematic viscosity, cSt (mm ² /s)	0°F	683	0°F	45		
	200°F	4.03	200°F	1.57		
	400°F	0.964	400°F	0.55		
	550°F	0.536	600°F	0.31		
Density at 75°F (lb/gal)	7.26		8.11			
Density, various temperatures	0°F	7.49 lb/gal	56.0 lb/ft ³	0°F	8.36 lb/gal	62.5 lb/ft ³
	200°F	6.86 lb/gal	51.3 lb/ft ³	200°F	7.68 lb/gal	57.5 lb/ft ³
	400°F	6.22 lb/gal	46.5 lb/ft ³	400°F	6.98 lb/gal	52.2 lb/ft ³
	550°F	5.69 lb/gal	42.6 lb/ft ³	600°F	6.18 lb/gal	46.2 lb/ft ³
Heat capacity, Btu/(lb·°F)	0°F	0.423	0°F	0.373		
	200°F	0.518	200°F	0.459		
	400°F	0.612	400°F	0.547		
	550°F	0.682	600°F	0.640		
Thermal conductivity, Btu/(h·ft·°F)	0°F	0.0768	0°F	0.0716		
	200°F	0.0693	200°F	0.0668		
	400°F	0.0618	400°F	0.0600		
	550°F	0.0561	600°F	0.0513		
Vapor pressure	200°F	0.16 mmHg	0.003 psia	200°F	19.5 mmHg	0.036 psia
	400°F	18.6 mmHg	0.360 psia	400°F	111 mmHg	2.14 psia
	550°F	193 mmHg	3.74 psia	600°F	1,220 mmHg	23.6 psia
Geographic availability ^c	Europe/Middle East		Globally			

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

^bVisit www.therminol.com or www.marlotherm.com for additional typical properties and test values.

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

^dMaximum extended use temperature = 680°F



English units

Liquid phase heat transfer

MARLOTHERM LH

Wide-temperature-range fluid
for heating and cooling

THERMINOL 62

High-performance,
low-pressure fluid

Typical properties^a

Appearance	Clear liquid			Water-white liquid		
Composition	Benzyltoluene			Isopropyl biphenyl mixture		
Recommended bulk temperature	625°F ^d			620°F		
Maximum film temperature	715°F			670°F		
Normal boiling point	532°F			631°F		
Pumpability: at 300 cSt (mm ² /s) at 2000 cSt (mm ² /s)	-88°F ^e <-94°F ^e			12°F -9°F		
Pour point	-110°F			-44°F		
Flash point, COC	270°F			340°F		
Fire point, COC	315°F			385°F		
Autoignition temperature ^b	950°F (DIN 51794)			813°F (DIN 51794)		
Fully developed turbulent flow (Re = 10,000, 10 ft/s, 1-in. tube)	34°F			122°F		
Kinematic viscosity, cSt (mm ² /s)	0°F	15.5		0°F	843	
	200°F	1.17		200°F	2.83	
	400°F	0.46		400°F	0.69	
	600°F	0.29		620°F	0.28	
Density at 75°F (lb/gal)	8.29			7.96		
Density, various temperatures	0°F	8.54 lb/gal	63.9 lb/ft ³	0°F	8.19 lb/gal	61.3 lb/ft ³
	200°F	7.85 lb/gal	58.7 lb/ft ³	200°F	7.53 lb/gal	56.3 lb/ft ³
	400°F	7.11 lb/gal	53.2 lb/ft ³	400°F	6.81 lb/gal	50.9 lb/ft ³
	600°F	6.27 lb/gal	46.9 lb/ft ³	620°F	5.87 lb/gal	43.9 lb/ft ³
Heat capacity, Btu/(lb·°F)	0°F	0.353		0°F	0.440	
	200°F	0.445		200°F	0.509	
	400°F	0.534		400°F	0.565	
	600°F	0.622		620°F	0.617	
Thermal conductivity, Btu/(h·ft·°F)	0°F	0.0785		0°F	0.0729	
	200°F	0.0712		200°F	0.0673	
	400°F	0.0638		400°F	0.0610	
	600°F	0.0564		620°F	0.0518	
Vapor pressure	200°F	1.14 mmHg	0.022 psia	200°F	0.29 mmHg	0.006 psia
	400°F	113.3 mmHg	2.19 psia	400°F	30.2 mmHg	0.584 psia
	600°F	1649.7 mmHg	31.9 psia	620°F	670 mmHg	13.0 psia
Geographic availability ^c	Globally			Contact your Eastman representative.		

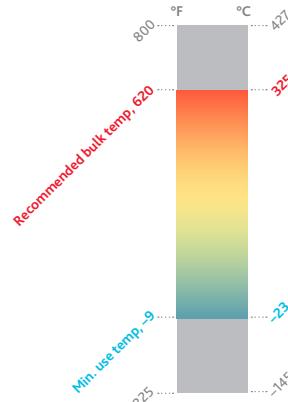
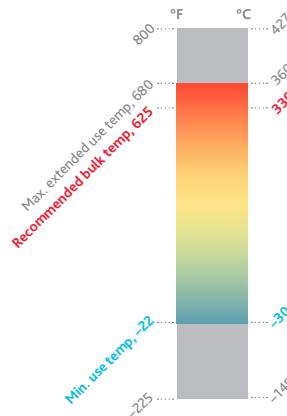
^aThese data are based on samples tested in the laboratory and are not guaranteed for all samples. Contact us for complete sales specifications.

^bVisit www.therminol.com or www.marlotherm.com for additional typical properties and test values.

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

^dMaximum extended use temperature = 680°F

^eOperation at temperatures < -30°C (-22°F) is not advised due to potential formation and effects of crystals at lower temperatures.



English units

Liquid phase heat transfer

MARLOTHERM SH

High-boiling-point, low-viscosity,
low-pressure heat transfer fluid

THERMINOL 66

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

Typical properties^a

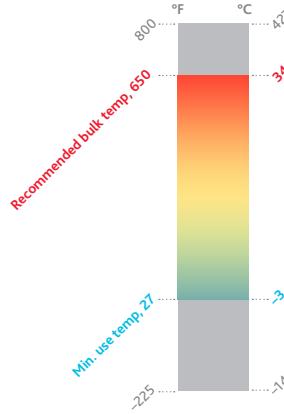
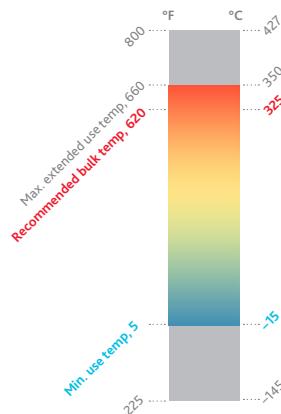
Appearance	Clear liquid				Clear, pale yellow liquid
Composition	Dibenzyltoluene				Modified terphenyl
Recommended bulk temperature	620°F ^d				650°F
Maximum film temperature	715°F				705°F
Normal boiling point	738°F				678°F
Pumpability: at 300 cSt (mm ² /s)	30°F				52°F
at 2000 cSt (mm ² /s)	5°F				27°F
Pour point	-29.2°F				-25°F
Flash point, COC	426°F				363°F
Fire point, COC	482°F				414°F
Autoignition temperature ^b	932°F (DIN 51794)				750°F (DIN 51794)
Fully developed turbulent flow (Re = 10,000, 10 ft/s, 1-in. tube)	142°F				162°F
Kinematic viscosity, cSt (mm ² /s)	20°F	588	50°F	339	
	200°F	3.60	300°F	1.68	
	400°F	0.882	500°F	0.63	
	620°F	0.384	650°F	0.43	
Density at 75°F (lb/gal)	8.67				8.39
Density, various temperatures	20°F	8.84 lb/gal	66.1 lb/ft ³	50°F	8.47 lb/gal
	200°F	8.29 lb/gal	62.0 lb/ft ³	300°F	7.69 lb/gal
	400°F	7.64 lb/gal	57.2 lb/ft ³	500°F	7.01 lb/gal
	620°F	6.85 lb/gal	51.3 lb/ft ³	650°F	6.44 lb/gal
Heat capacity, Btu/(lb·°F)	20°F	0.351	50°F	0.365	
	200°F	0.436	300°F	0.480	
	400°F	0.534	500°F	0.578	
	620°F	0.644	650°F	0.655	
Thermal conductivity, Btu/(h·ft·°F)	20°F	0.0774	50°F	0.0682	
	200°F	0.0700	300°F	0.0636	
	400°F	0.0615	500°F	0.0574	
	620°F	0.0521	650°F	0.0514	
Vapor pressure	200°F	0.05 mmHg	0.001 psia	300°F	2.9 mmHg
	400°F	6.36 mmHg	0.123 psia	500°F	90 mmHg
	620°F	184.1 mmHg	3.56 psia	650°F	570 mmHg
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 Maximum extended temperature = 660°F



English units

Liquid phase heat transfer

THERMINOL 68

High-temperature,
low-viscosity fluid

THERMINOL 72

High-temperature,
medium-pressure fluid

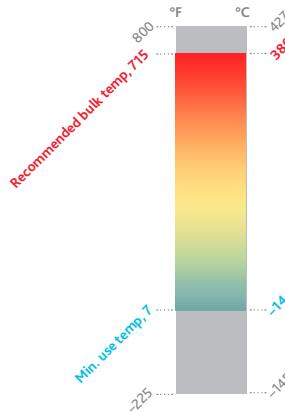
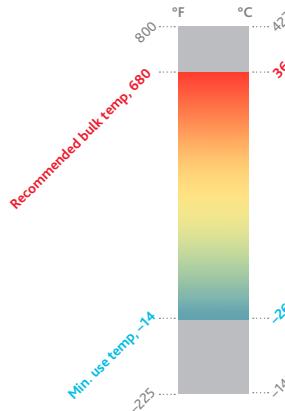
Typical properties^a

Appearance	Clear, pale yellow liquid					
Composition	Mixture of synthetic aromatics					
Recommended bulk temperature	680°F					
Maximum film temperature	735°F					
Normal boiling point	586°F					
Pumpability: at 300 cSt (mm ² /s) at 2000 cSt (mm ² /s)	14°F -14°F					
Pour point	-27°F					
Flash point, COC	311°F					
Fire point, COC	345°F					
Autoignition temperature ^b	752°F (DIN 51794)					
Fully developed turbulent flow (Re = 10,000, 10 ft/s, 1-in. tube)	135°F					
Kinematic viscosity, cSt (mm ² /s)	20°F 300°F 500°F 680°F	219 1.29 0.516 0.332	15°F 300°F 500°F 715°F	291 0.868 0.355 0.19		
Density at 75°F (lb/gal)	8.56					
Density, various temperatures	20°F 300°F 500°F 680°F	8.73 lb/gal 7.79 lb/gal 7.13 lb/gal 6.52 lb/gal	65.3 lb/ft ³ 58.3 lb/ft ³ 53.3 lb/ft ³ 48.8 lb/ft ³	15°F 300°F 500°F 715°F	9.23 lb/gal 8.03 lb/gal 7.19 lb/gal 6.29 lb/gal	69.0 lb/ft ³ 60.1 lb/ft ³ 53.8 lb/ft ³ 47.0 lb/ft ³
Heat capacity, Btu/(lb·°F)	20°F 300°F 500°F 680°F	0.368 0.487 0.573 0.650	15°F 300°F 500°F 715°F	0.352 0.454 0.526 0.604		
Thermal conductivity, Btu/(h·ft·°F)	20°F 300°F 500°F 680°F	0.0727 0.0654 0.0602 0.0556	15°F 300°F 500°F 715°F	0.0828 0.0717 0.0639 0.0555		
Vapor pressure	300°F 500°F 680°F	12.2 mmHg 278 mmHg 1,888 mmHg	0.236 psia 5.38 psia 36.5 psia	300°F 500°F 715°F	22.4 mmHg 579 mmHg 4,640 mmHg	0.43 psia 11.2 psia 89.8 psia
Geographic availability ^c	Europe/Middle East/Africa				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.



English units

Liquid phase heat transfer

THERMINOL 75

Ultrahigh-temperature,
low-pressure fluid

THERMINOL VP-3

High-temperature,
liquid/vapor phase fluid

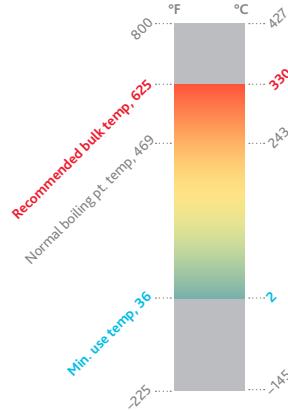
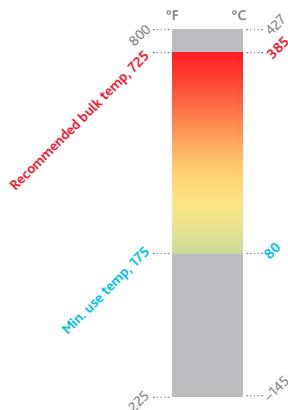
Typical properties^a

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	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 E659)			680°F (ASTM E659)		
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.

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English units

Liquid phase heat transfer

THERMINOL VP-1

Ultrahigh-temperature,
liquid/vapor phase fluid

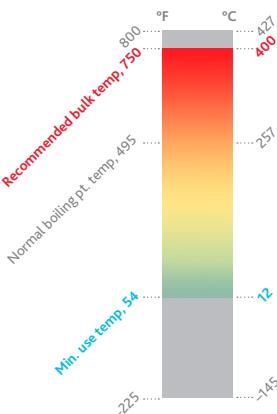
Typical properties^a

Appearance	Clear, water-white liquid		
Composition	Biphenyl/diphenyl oxide (DPO) eutectic mixture		
Recommended bulk temperature	750°F		
Maximum film temperature	800°F		
Normal boiling point	495°F		
Pumpability: at 300 cSt (mm ² /s) at 2000 cSt (mm ² /s)	54°F (crystallizing point) —		
Pour point	NA		
Flash point, COC	255°F		
Fire point, COC	260°F		
Autoignition temperature ^b	1,150°F (DIN 51794)		
Fully developed turbulent flow (Re = 10,000, 10 ft/s, 1-in. tube)	54°F		
Kinematic viscosity, cSt (mm ² /s)	100°F 300°F 500°F 750°F	2.60 0.62 0.32 0.21	
Density at 75°F (lb/gal)	8.85		
Density, various temperatures	100°F 300°F 500°F 750°F	8.76 lb/gal 7.99 lb/gal 7.16 lb/gal 5.81 lb/gal	65.5 lb/ft ³ 59.8 lb/ft ³ 53.5 lb/ft ³ 43.4 lb/ft ³
Heat capacity, Btu/(lb·°F)	100°F 300°F 500°F 750°F	0.382 0.457 0.528 0.627	
Thermal conductivity, Btu/(h·ft·°F)	100°F 300°F 500°F 750°F	0.0778 0.0701 0.0600 0.0439	
Vapor pressure	300°F 500°F 750°F	32 mmHg 810 mmHg 8,060 mmHg	0.62 psia 15.7 psia 156 psia
Geographic availability ^c	Globally		

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TLC Total Lifecycle Care® program

The TLC Total Lifecycle Care® program is designed to support all Eastman heat transfer fluid 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 heat transfer fluids are used within suggested temperature limits, they can 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 analysis may be 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.



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. For questions in North America, call our hotline 800-433-6997. For questions in other regions, contact your local technical support representative.

System design support

Eastman regularly assists 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 operational 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 Eastman's special cleaning fluids. After the system is flushed, the appropriate liquid phase Therminol or Marlotherm heat transfer fluid can be added.

Eastman's fluid sustainability support*

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

*Therminol fluid trade-in program is only available in North America. Marlotherm fluid trade-in program is only available in Germany. Contact your local sales representative for more information.

For more information, visit **[Therminol.com](#)** and **[Marlotherm.com](#)**.



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