



# Selection guide

*High-performance fluids  
for precise temperature control*

Heat transfer fluids by Eastman

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**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  $-175^{\circ}$  to  $750^{\circ}\text{F}$  ( $-115^{\circ}$  to  $400^{\circ}\text{C}$ ), 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

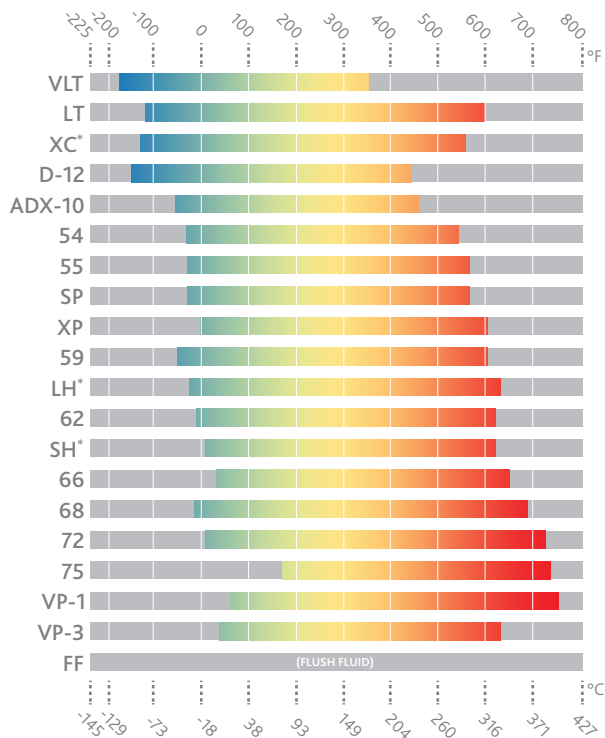
Therminol LT, VP-1, and VP-3 and Marlotherm LH are Eastman's liquid/vapor phase heat transfer fluids. They offer a broad operating temperature range and uniform heat transfer. Other major benefits include precise temperature control and low mechanical maintenance costs. A heat transfer system that utilizes 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<sup>d</sup>

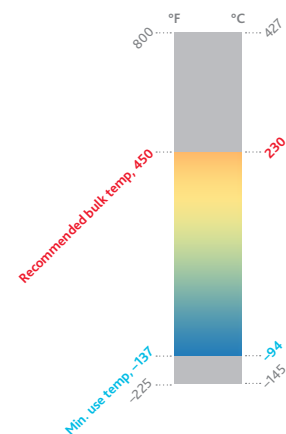
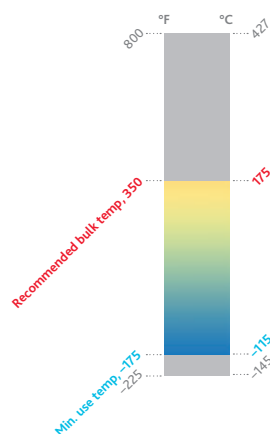
## Typical properties<sup>a</sup>

Appearance	Water-white liquid	Clear, 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 <sup>2</sup> /s) at 2000 cSt (mm <sup>2</sup> /s)	-126°C -135°C	-82°C <sup>e</sup> -94°C <sup>e</sup>
Pour point	-135°C	-100°C
Flash point, CC	-7°C	62°C
Fire point, COC	71°C	71°C
Autoignition temperature <sup>b</sup>	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 <sup>2</sup> /s)	-115°C 53 0°C 1.14 100°C 0.41 175°C 0.24	-50°C 14.8 100°C 0.649 200°C 0.316 230°C 0.266
Density at 25°C (kg/m <sup>3</sup> )	744	759
Density, kg/m <sup>3</sup>	-115°C 862 0°C 766 100°C 676 175°C 598	-50°C 811 100°C 703 200°C 616 230°C 584
Heat capacity, kJ/(kg•K)	-115°C 1.37 0°C 1.87 100°C 2.29 175°C 2.61	-50°C 1.82 100°C 2.41 200°C 2.84 230°C 2.98
Thermal conductivity, W/(m•K)	-115°C 0.130 0°C 0.108 100°C 0.086 175°C 0.067	-50°C 0.120 100°C 0.097 200°C 0.077 230°C 0.071
Vapor pressure, kPa	0°C 1.9 100°C 104 175°C 573	50°C 0.48 150°C 33.2 230°C 229

## Geographic availability<sup>c</sup>

Globally

Globally



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

<sup>b</sup> Visit [www.therminol.com](http://www.therminol.com) for additional typical properties and test values.

<sup>c</sup> Check with your local sales office to determine exact availability by country.

<sup>d</sup> Therminol D-12 outperforms FDA specifications for use in food contact applications.

<sup>e</sup> -45°C for efficient heat transfer

# SI units

Liquid phase heat transfer

## MARLOTHERM XC

High-performance, wide-temperature-range heat transfer fluid<sup>d</sup>

## THERMINOL LT

Wide-range liquid/vapor heat transfer fluid

### Typical properties<sup>a</sup>

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 <sup>2</sup> /s) at 2000 cSt (mm <sup>2</sup> /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 <sup>b</sup>	~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 <sup>2</sup> /s)	-50°C 3.11 0°C 1.28 150°C 0.34 300°C 0.228	-50°C 4.17 100°C 0.48 200°C 0.27 315°C 0.19
Density at 25°C (kg/m <sup>3</sup> )	857	862
Density, kg/m <sup>3</sup>	-50°C 918 0°C 878 150°C 745 300°C 554	-50°C 920 100°C 800 200°C 707 315°C 559
Heat capacity, kJ/(kg•K)	-50°C 1.44 0°C 1.65 150°C 2.28 300°C 3.17	-50°C 1.53 100°C 2.09 200°C 2.45 315°C 3.00
Thermal conductivity, W/(m•K)	-50°C 0.144 0°C 0.133 150°C 0.098 300°C 0.065	-50°C 0.138 100°C 0.109 200°C 0.089 315°C 0.065
Vapor pressure, kPa	100°C 20.7 200°C 301 300°C 1528	100°C 7.1 200°C 164 315°C 1,560

### Geographic availability<sup>c</sup>

Globally

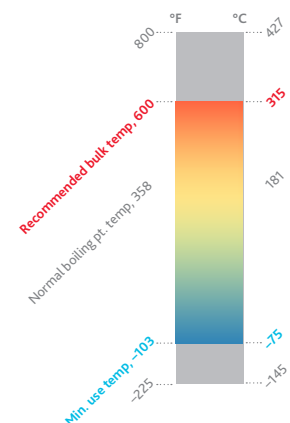
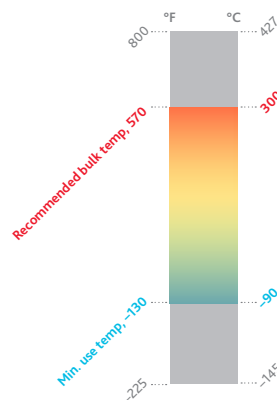
Globally

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<sup>b</sup> Visit [www.therminol.com](http://www.therminol.com) for additional typical properties and test values.

<sup>c</sup> Check with your local sales office to determine exact availability by country.

<sup>d</sup> 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<sup>a</sup>

Appearance	Clear, pale yellow liquid	Colorless, odorless 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 <sup>2</sup> /s) at 2000 cSt (mm <sup>2</sup> /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 <sup>b</sup>	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 <sup>2</sup> /s)	-25°C 75 100°C 1.36 200°C 0.55 250°C 0.40	-25°C 3860 0°C 267 200°C 1.10 250°C 0.746
Density at 25°C (kg/m <sup>3</sup> )	853	875
Density, kg/m <sup>3</sup>	-25°C 887 100°C 801 200°C 727 250°C 686	0°C 891 100°C 827 200°C 761 315°C 678
Heat capacity, kJ/(kg•K)	-25°C 1.74 100°C 2.21 200°C 2.56 250°C 2.72	0°C 1.72 100°C 2.18 200°C 2.60 315°C 3.00
Thermal conductivity, W/(m•K)	-25°C 0.130 100°C 0.113 200°C 0.099 250°C 0.090	0°C 0.117 100°C 0.109 200°C 0.099 315°C 0.085
Vapor pressure, kPa	100°C 0.07 200°C 8.31 250°C 36.6	100°C 0.018 200°C 1.7 315°C 42

### Geographic availability<sup>c</sup>

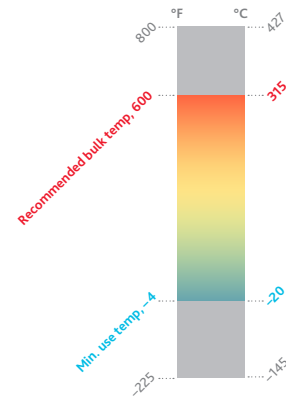
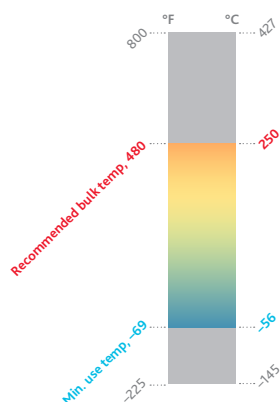
Europe/Middle East/Africa/Americas

Globally

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<sup>b</sup> Visit [www.therminol.com](http://www.therminol.com) for additional typical properties and test values.

<sup>c</sup> Check 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

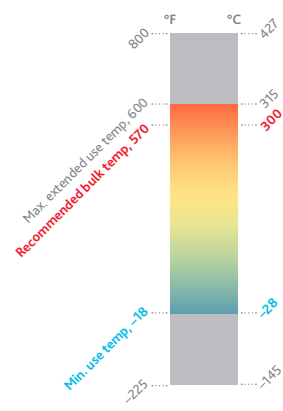
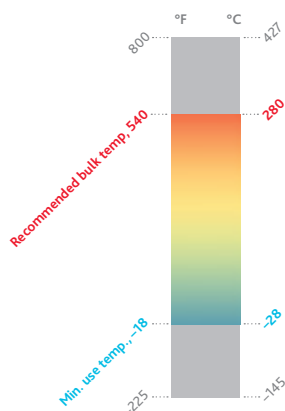
## Typical properties<sup>a</sup>

Appearance	Clear, yellow liquid	Clear, yellow liquid
Composition	Synthetic hydrocarbon mixture	Synthetic hydrocarbon mixture
Recommended bulk temperature	280°C	300°C <sup>d</sup>
Maximum film temperature	310°C	335°C
Normal boiling point	351°C	351°C
Pumpability: at 300 cSt (mm <sup>2</sup> /s) at 2000 cSt (mm <sup>2</sup> /s)	-8°C -28°C	-8°C -28°C
Pour point	<-45°C	-54°C
Flash point, COC	>170°C	193°C
Fire point, COC	>210°C	218°C
Autoignition temperature <sup>b</sup>	>330°C	382°C (DIN 51794)
Fully developed turbulent flow (Re = 10,000, 3.05 m/s, 2.54-cm tube)	67°C	67°C
Kinematic viscosity, cSt (mm <sup>2</sup> /s)	-25°C 1390 100°C 3.52 200°C 1.00 280°C 0.56	-25°C 1390 100°C 3.52 200°C 1.00 290°C 0.53
Density at 25°C (kg/m <sup>3</sup> )	868	868
Density, kg/m <sup>3</sup>	-25°C 902 100°C 818 200°C 748 280°C 688	-25°C 902 100°C 818 200°C 748 290°C 680
Heat capacity, kJ/(kg•K)	-25°C 1.74 100°C 2.19 200°C 2.54 280°C 2.83	-25°C 1.74 100°C 2.19 200°C 2.54 290°C 2.86
Thermal conductivity, W/(m•K)	-25°C 0.134 100°C 0.119 200°C 0.107 280°C 0.098	-25°C 0.134 100°C 0.119 200°C 0.107 290°C 0.097
Vapor pressure, kPa	100°C 0.03 200°C 2.15 280°C 21.3	100°C 0.032 200°C 2.15 290°C 27.2

## Geographic availability<sup>c</sup>

Europe/Middle East/Africa

Americas/Middle East/Africa



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<sup>b</sup> Visit [www.therminol.com](http://www.therminol.com) for additional typical properties and test values.

<sup>c</sup> Check with your local sales office to determine exact availability by country.

<sup>d</sup> Maximum 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

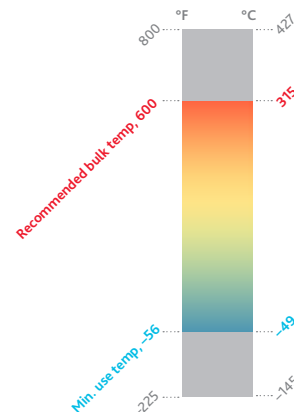
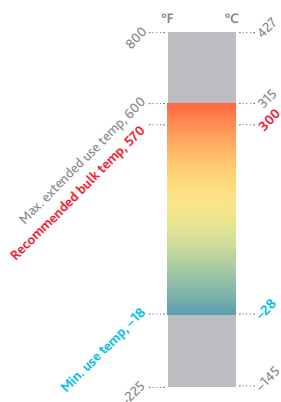
## Typical properties<sup>a</sup>

Appearance	Clear, yellow liquid	Clear, yellow to dark amber liquid
Composition	Synthetic hydrocarbon mixture	Alkyl substituted aromatic
Recommended bulk temperature	300°C <sup>d</sup>	315°C
Maximum film temperature	335°C	345°C
Normal boiling point	351°C	289°C
Pumpability: at 300 cSt (mm <sup>2</sup> /s) at 2000 cSt (mm <sup>2</sup> /s)	-8°C -28°C	-37°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 <sup>b</sup>	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 <sup>2</sup> /s)	-25°C 1390 100°C 3.52 200°C 1.00 290°C 0.53	-25°C 80.9 100°C 1.44 200°C 0.57 315°C 0.31
Density at 25°C (kg/m <sup>3</sup> )	868	971
Density, kg/m <sup>3</sup>	-25°C 902 100°C 818 200°C 748 290°C 680	-25°C 1,007 100°C 916 200°C 840 315°C 741
Heat capacity, kJ/(kg•K)	-25°C 1.74 100°C 2.19 200°C 2.54 290°C 2.862	-25°C 1.54 100°C 1.94 200°C 2.27 315°C 2.67
Thermal conductivity, W/(m•K)	-25°C 0.134 100°C 0.119 200°C 0.107 290°C 0.097	-25°C 0.124 100°C 0.115 200°C 0.104 315°C 0.089
Vapor pressure, kPa	100°C 0.032 200°C 2.15 290°C 27.2	100°C 0.35 200°C 13.1 315°C 161

## Geographic availability<sup>c</sup>

Europe/Middle East

Globally



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<sup>b</sup> Visit [www.therminol.com](http://www.therminol.com) or [www.marlotherm.com](http://www.marlotherm.com) for additional typical properties and test values.

<sup>c</sup> Check with your local sales office to determine exact availability by country.

<sup>d</sup> 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<sup>a</sup>

Appearance	Clear liquid	Water-white liquid
Composition	Benzyltoluene	Isopropyl biphenyl mixture
Recommended bulk temperature	330°C <sup>d</sup>	325°C
Maximum film temperature	380°C	355°C
Normal boiling point	278°C	333°C
Pumpability: at 300 cSt (mm <sup>2</sup> /s) at 2000 cSt (mm <sup>2</sup> /s)	-67°C <sup>e</sup> <-70°C <sup>e</sup>	-11°C -23°C
Pour point	-79°C	-42°C
Flash point, COC	132°C	171°C
Fire point, COC	157°C	196°C
Autoignition temperature <sup>b</sup>	510°C (DIN 51794)	433°C (DIN 51794)
Fully developed turbulent flow (Re = 10,000, 3.05 m/s, 2.54-cm tube)	1°C	50°C
Kinematic viscosity, cSt (mm <sup>2</sup> /s)	-20°C 17.0 100°C 1.08 200°C 0.47 300°C 0.30	0°C 103 100°C 2.52 200°C 0.72 325°C 0.28
Density at 25°C (kg/m <sup>3</sup> )	992	951
Density, kg/m <sup>3</sup>	-20°C 1025 100°C 936 200°C 856 300°C 767	0°C 968 100°C 897 200°C 820 325°C 705
Heat capacity, kJ/(kg•K)	-20°C 1.47 100°C 1.88 200°C 2.22 300°C 2.552	0°C 1.89 100°C 2.14 200°C 2.36 325°C 2.58
Thermal conductivity, W/(m•K)	-20°C 0.136 100°C 0.122 200°C 0.111 300°C 0.099	0°C 0.125 100°C 0.116 200°C 0.106 325°C 0.090
Vapor pressure, kPa	100°C 0.22 200°C 13.1 300°C 162	100°C 0.056 200°C 3.5 325°C 86

### Geographic availability<sup>c</sup>

Globally

Contact your Eastman representative.

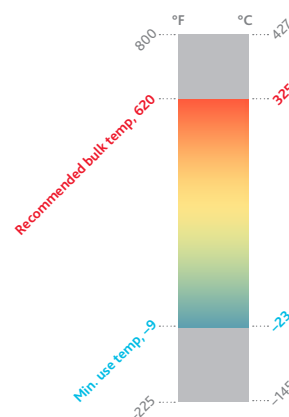
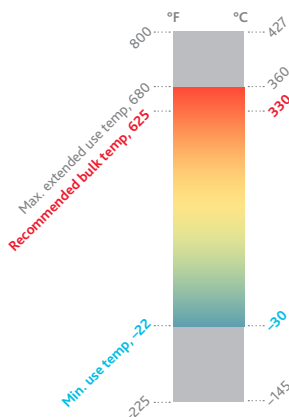
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<sup>c</sup> Check with your local sales office to determine exact availability by country.

<sup>d</sup> Maximum extended use temperature = 360°C

<sup>e</sup> 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<sup>a</sup>

Appearance	Clear liquid	Clear, pale yellow liquid
Composition	Dibenzyltoluene	Modified terphenyl
Recommended bulk temperature	325°C <sup>d</sup>	345°C
Maximum film temperature	380°C	375°C
Normal boiling point	392°C	359°C
Pumpability: at 300 cSt (mm <sup>2</sup> /s) at 2000 cSt (mm <sup>2</sup> /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 <sup>b</sup>	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 <sup>2</sup> /s)	0°C 261 100°C 3.18 200°C 0.92 320°C 0.39	0°C 1300 100°C 3.77 200°C 0.97 345°C 0.43
Density at 25°C (kg/m <sup>3</sup> )	1,039	1,005
Density, kg/m <sup>3</sup>	0°C 1055 100°C 989 200°C 919 320°C 827	0°C 1,021 100°C 955 200°C 885 345°C 770
Heat capacity, kJ/(kg•K)	0°C 1.49 100°C 1.85 200°C 2.22 320°C 2.67	0°C 1.49 100°C 1.84 200°C 2.19 345°C 2.75
Thermal conductivity, W/(m•K)	0°C 0.1331 100°C 0.1201 200°C 0.1070 320°C 0.0910	0°C 0.118 100°C 0.114 200°C 0.106 345°C 0.089
Vapor pressure, kPa	100°C — 200°C 0.723 320°C 21.1	100°C 0.048 200°C 2.2 345°C 78

### Geographic availability<sup>c</sup>

Globally

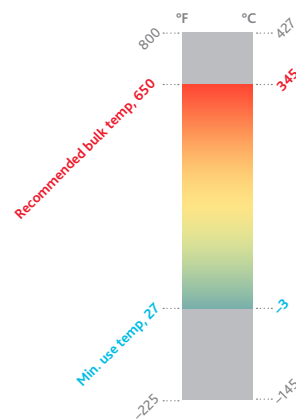
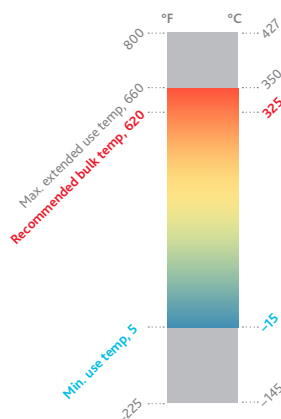
Globally

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<sup>c</sup> Check with your local sales office to determine exact availability by country.

<sup>d</sup> Maximum extended temperature = 350°C



# SI units

Liquid phase heat transfer

THERMINOL

# 68

High-temperature,  
low-viscosity fluid

THERMINOL

# 72

High-temperature,  
medium-pressure fluid

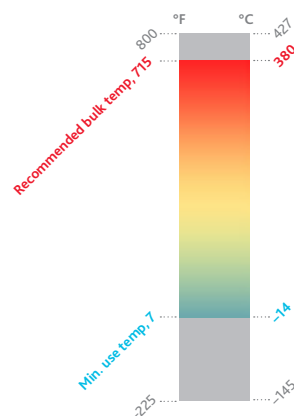
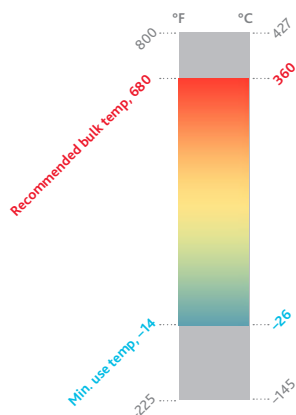
## Typical properties<sup>a</sup>

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 <sup>2</sup> /s) at 2000 cSt (mm <sup>2</sup> /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 <sup>b</sup>	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 <sup>2</sup> /s)	0°C 125 100°C 2.69 200°C 0.78 360°C 0.33	0°C 54 100°C 1.6 250°C 0.38 380°C 0.19
Density at 25°C (kg/m <sup>3</sup> )	1,020	1,075
Density, kg/m <sup>3</sup>	0°C 1,040 100°C 969 200°C 898 360°C 782	0°C 1,100 100°C 1,007 250°C 871 380°C 753
Heat capacity, kJ/(kg•K)	0°C 1.56 100°C 1.88 200°C 2.20 360°C 2.72	0°C 1.50 100°C 1.77 250°C 2.18 380°C 2.53
Thermal conductivity, W/(m•K)	0°C 0.125 100°C 0.117 200°C 0.109 360°C 0.096	0°C 0.142 100°C 0.130 250°C 0.112 380°C 0.096
Vapor pressure, kPa	100°C 0.237 200°C 8.15 360°C 251	100°C 0.33 250°C 61.6 380°C 623

## Geographic availability<sup>c</sup>

Europe/Middle East/Africa

Globally



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

<sup>b</sup> Visit [www.therminol.com](http://www.therminol.com) for additional typical properties and test values.

<sup>c</sup> Check with your local sales office to determine exact availability by country.

# SI units

Liquid phase heat transfer

THERMINOL

# 75

Ultra-high-temperature,  
low-pressure fluid

THERMINOL

# VP-3

High-temperature,  
liquid/vapor phase fluid

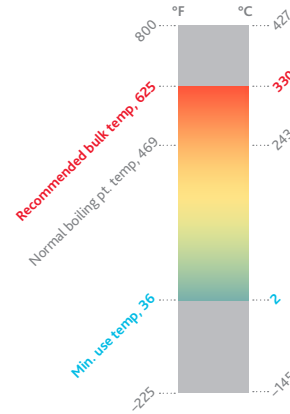
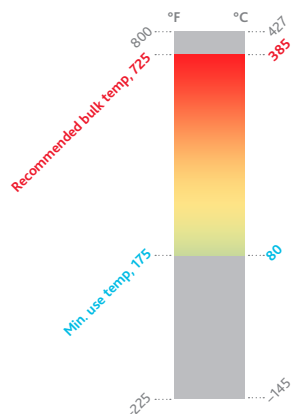
## Typical properties<sup>a</sup>

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 <sup>2</sup> /s) at 2000 cSt (mm <sup>2</sup> /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 <sup>b</sup>	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 <sup>2</sup> /s)	80°C 4.12 200°C 0.89 300°C 0.42 385°C 0.27	25°C 2.79 150°C 0.64 250°C 0.37 330°C 0.25
Density at 25°C (kg/m <sup>3</sup> )	1,041 (80°C)	930
Density, kg/m <sup>3</sup>	80°C 1,040 200°C 953 300°C 873 385°C 794	25°C 930 150°C 847 250°C 750 330°C 641
Heat capacity, kJ/(kg•K)	80°C 1.71 200°C 2.05 300°C 2.28 385°C 2.44	25°C 1.63 150°C 2.16 250°C 2.52 330°C 3.00
Thermal conductivity, W/(m•K)	80°C 0.131 200°C 0.121 300°C 0.112 385°C 0.103	25°C 0.117 150°C 0.101 250°C 0.087 330°C 0.076
Vapor pressure, kPa	150°C 0.55 250°C 12.9 385°C 215	150°C 5.3 250°C 121 330°C 693

## Geographic availability<sup>c</sup>

Globally

Globally



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

<sup>b</sup> Visit [www.therminol.com](http://www.therminol.com) for additional typical properties and test values.

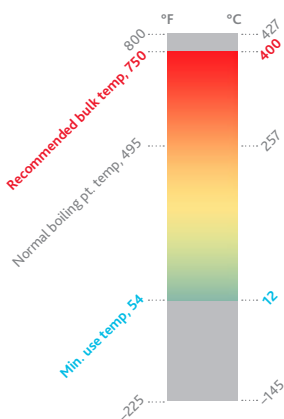
<sup>c</sup> Check with your local sales office to determine exact availability by country.

### Typical properties<sup>a</sup>

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 <sup>2</sup> /s) at 2000 cSt (mm <sup>2</sup> /s)	12°C (crystallizing point) —	
Pour point	NA	
Flash point, COC	124°C	
Fire point, COC	127°C	
Autoignition temperature <sup>b</sup>	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 <sup>2</sup> /s)	25°C	3.52
	150°C	0.61
	250°C	0.33
	400°C	0.21
Density at 25°C (kg/m <sup>3</sup> )	1,060	
Density, kg/m <sup>3</sup>	25°C	1,060
	150°C	957
	250°C	867
	400°C	694
Heat capacity, kJ/(kg•K)	25°C	1.56
	150°C	1.91
	250°C	2.18
	400°C	2.63
Thermal conductivity, W/(m•K)	25°C	0.136
	150°C	0.121
	250°C	0.106
	400°C	0.076
Vapor pressure, kPa	150°C	4.5
	250°C	86
	400°C	1,090

### Geographic availability<sup>c</sup>

Globally



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

<sup>b</sup> Visit [www.therminol.com](http://www.therminol.com) for additional typical properties and test values.

<sup>c</sup> Check 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<sup>d</sup>

Typical properties <sup>a</sup>						
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 <sup>2</sup> /s) at 2000 cSt (mm <sup>2</sup> /s)	-195°F -211°F			-116°F <sup>e</sup> -137°F <sup>e</sup>		
Pour point	-211°F			-148°F		
Flash point, CC	20°F			144°F		
Fire point, COC	20°F (ASTM D1310)			175°F		
Autoignition temperature <sup>b</sup>	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 <sup>2</sup> /s)	-175°F	53		-50°F	11.5	
	-100°F	5.7		100°F	1.26	
	100°F	0.72		300°F	0.44	
	350°F	0.24		450°F	0.26	
Density at 75°F (lb/gal)	6.22			6.34		
Density, various temperatures	-175°F	7.19 lb/gal	53.8 lb/ft <sup>3</sup>	-50°F	6.75 lb/gal	50.5 lb/ft <sup>3</sup>
	-100°F	6.90 lb/gal	51.6 lb/ft <sup>3</sup>	100°F	6.26 lb/gal	46.8 lb/ft <sup>3</sup>
	100°F	6.12 lb/gal	45.8 lb/ft <sup>3</sup>	300°F	5.53 lb/gal	41.4 lb/ft <sup>3</sup>
	350°F	4.97 lb/gal	37.2 lb/ft <sup>3</sup>	450°F	4.86 lb/gal	36.3 lb/ft <sup>3</sup>
Heat capacity, Btu/(lb•°F)	-175°F	0.328		-50°F	0.440	
	-100°F	0.372		100°F	0.517	
	100°F	0.485		300°F	0.626	
	350°F	0.626		450°F	0.715	
Thermal conductivity, Btu/(h•ft•°F)	-175°F	0.0754		-50°F	0.0690	
	-100°F	0.0708		100°F	0.0620	
	100°F	0.0577		300°F	0.0505	
	350°F	0.0382		450°F	0.0404	
Vapor pressure	100°F	91.5 mmHg	1.77 psia	200°F	32.7 mmHg	0.632 psia
	200°F	643 mmHg	12.4 psia	300°F	241 mmHg	4.66 psia
	350°F	4,430 mmHg	85.7 psia	450°F	1,800 mmHg	34.8 psia
Geographic availability <sup>c</sup>						
Globally			Globally			

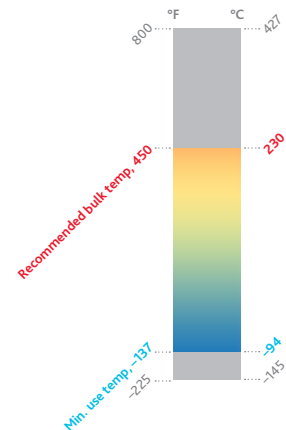
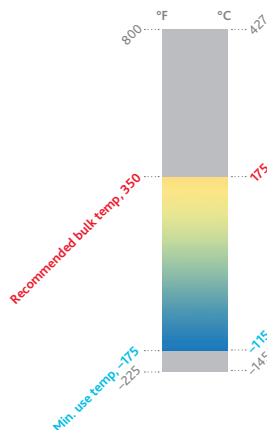
<sup>a</sup> These data are based on samples tested in the laboratory and are not guaranteed for all samples. Contact us for complete sales specifications.

<sup>b</sup> Visit [www.therminol.com](http://www.therminol.com) for additional typical properties and test values.

<sup>c</sup> Check with your local sales office to determine exact availability by country.

<sup>d</sup> Therminol D-12 outperforms FDA specifications for use in food contact applications.

<sup>e</sup> -50°F for efficient heat transfer



# English units

Liquid phase heat transfer

## MARLOTHERM XC

High-performance, wide-temperature-range heat transfer fluid<sup>d</sup>

## THERMINOL LT

Wide-range liquid/vapor heat transfer fluid

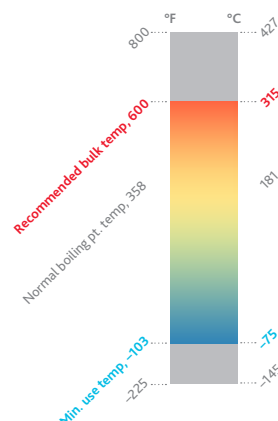
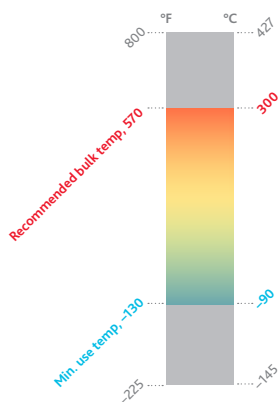
Typical properties <sup>a</sup>						
Appearance	Clear liquid			Clear, light yellow liquid		
Composition	Cumene			Alkyl substituted aromatic		
Recommended bulk temperature	570°F			600°F		
Maximum film temperature	608°F			650°F		
Normal boiling point	306°F			358°F		
Pumpability: at 300 cSt (mm <sup>2</sup> /s) at 2000 cSt (mm <sup>2</sup> /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 <sup>b</sup>	~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 <sup>2</sup> /s)	-100°F	5.54		-100°F	10.8	
	200°F	0.486		100°F	0.83	
	400°F	0.273		300°F	0.35	
	570°F	0.228		600°F	0.19	
Density at 75°F (lb/gal)	7.16 lb/gal			7.20		
Density, various temperatures	-100°F	7.82 lb/gal	58.5 lb/ft <sup>3</sup>	-100°F	7.83 lb/gal	58.6 lb/ft <sup>3</sup>
	200°F	6.66 lb/gal	49.8 lb/ft <sup>3</sup>	100°F	7.11 lb/gal	53.2 lb/ft <sup>3</sup>
	400°F	5.74 lb/gal	42.9 lb/ft <sup>3</sup>	300°F	6.31 lb/gal	47.2 lb/ft <sup>3</sup>
	570°F	4.62 lb/gal	34.6 lb/ft <sup>3</sup>	600°F	4.66 lb/gal	34.8 lb/ft <sup>3</sup>
Heat capacity, Btu/(lb•°F)	-100°F	0.321		-100°F	0.344	
	200°F	0.488		100°F	0.446	
	400°F	0.605		300°F	0.542	
	570°F	0.757		600°F	0.719	
Thermal conductivity, Btu/(h•ft•°F)	-100°F	0.0866		-100°F	0.0825	
	200°F	0.0643		100°F	0.0701	
	400°F	0.0499		300°F	0.0573	
	570°F	0.0377		600°F	0.0374	
Vapor pressure	200°F	121.5 mmHg	2.35 psia	200°F	41 mmHg	0.79 psia
	400°F	2,472 mmHg	47.8 psia	400°F	1,370 mmHg	26.5 psia
	570°F	11,480 mmHg	222 psia	600°F	11,800 mmHg	228 psia
Geographic availability <sup>c</sup>						
Globally			Globally			

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

<sup>b</sup> Visit [www.therminol.com](http://www.therminol.com) for additional typical properties and test values.

<sup>c</sup> Check with your local sales office to determine exact availability by country.

<sup>d</sup> 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

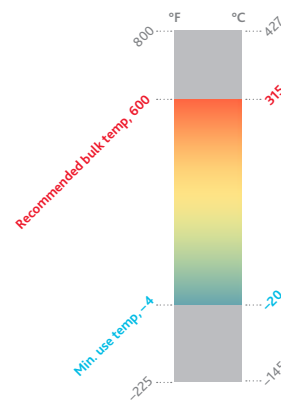
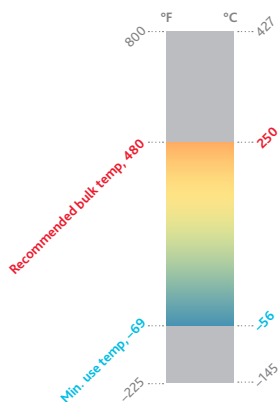
### Typical properties<sup>a</sup>

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 <sup>2</sup> /s) at 2000 cSt (mm <sup>2</sup> /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 <sup>b</sup>	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 <sup>2</sup> /s)	-50°F	508	0°F	1,560		
	200°F	1.49	200°F	4.7		
	400°F	0.531	400°F	1.06		
	480°F	0.403	600°F	0.50		
Density at 75°F (lb/gal)	7.13		7.31			
Density, various temperatures	-50°F	7.53 lb/gal	56.3 lb/ft <sup>3</sup>	0°F	7.53 lb/gal	56.3 lb/ft <sup>3</sup>
	200°F	6.72 lb/gal	50.3 lb/ft <sup>3</sup>	200°F	6.94 lb/gal	51.9 lb/ft <sup>3</sup>
	400°F	6.04 lb/gal	45.2 lb/ft <sup>3</sup>	400°F	6.33 lb/gal	47.3 lb/ft <sup>3</sup>
	480°F	5.73 lb/gal	42.9 lb/ft <sup>3</sup>	600°F	5.66 lb/gal	42.3 lb/ft <sup>3</sup>
Heat capacity, Btu/(lb•°F)	-50°F	0.395		0°F	0.389	
	200°F	0.523		200°F	0.515	
	400°F	0.615		400°F	0.625	
	480°F	0.649		600°F	0.718	
Thermal conductivity, Btu/(h•ft•°F)	-50°F	0.0764		0°F	0.0681	
	200°F	0.0660		200°F	0.0635	
	400°F	0.0565		400°F	0.0571	
	480°F	0.0523		600°F	0.0490	
Vapor pressure	200°F	0.36 mmHg	0.007 psia	200°F	0.09 mmHg	0.002 psia
	400°F	72.4 mmHg	1.40 psia	400°F	15.0 mmHg	0.289 psia
	480°F	266 mmHg	5.15 psia	600°F	318 mmHg	6.16 psia

### Geographic availability<sup>c</sup>

Europe/Middle East/Africa/Americas

Globally



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

<sup>b</sup> Visit [www.therminol.com](http://www.therminol.com) for additional typical properties and test values.

<sup>c</sup> 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

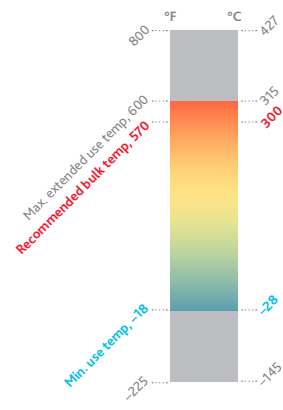
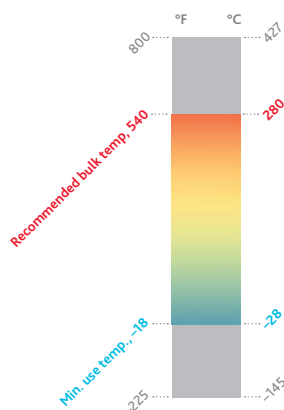
## Typical properties<sup>a</sup>

Appearance	Clear, yellow liquid		Clear, yellow liquid			
Composition	Synthetic hydrocarbon mixture		Synthetic hydrocarbon mixture			
Recommended bulk temperature	540°F		570°F <sup>d</sup>			
Maximum film temperature	590°F		635°F			
Normal boiling point	664°F		664°F			
Pumpability: at 300 cSt (mm <sup>2</sup> /s) at 2000 cSt (mm <sup>2</sup> /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 <sup>b</sup>	>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 <sup>2</sup> /s)	0°F	683	0°F	683		
	200°F	4.03	200°F	4.03		
	400°F	0.96	400°F	0.964		
	540°F	0.56	550°F	0.536		
Density at 75°F (lb/gal)	7.25		7.26			
Density, various temperatures	0°F	7.49 lb/gal	56.0 lb/ft <sup>3</sup>	0°F	7.49 lb/gal	56.0 lb/ft <sup>3</sup>
	200°F	6.86 lb/gal	51.3 lb/ft <sup>3</sup>	200°F	6.86 lb/gal	51.3 lb/ft <sup>3</sup>
	400°F	6.22 lb/gal	46.5 lb/ft <sup>3</sup>	400°F	6.22 lb/gal	46.5 lb/ft <sup>3</sup>
	540°F	5.73 lb/gal	42.8 lb/ft <sup>3</sup>	550°F	5.69 lb/gal	42.6 lb/ft <sup>3</sup>
Heat capacity, Btu/(lb•°F)	0°F	0.42		0°F	0.423	
	200°F	0.52		200°F	0.518	
	400°F	0.61		400°F	0.612	
	540°F	0.68		550°F	0.682	
Thermal conductivity, Btu/(h•ft•°F)	0°F	0.077		0°F	0.0768	
	200°F	0.069		200°F	0.0693	
	400°F	0.062		400°F	0.0618	
	540°F	0.057		550°F	0.0561	
Vapor pressure	200°F	—	—	200°F	0.16 mmHg	0.003 psia
	400°F	18.6 mmHg	0.36 psia	400°F	18.6 mmHg	0.360 psia
	540°F	169 mmHg	3.27 psia	550°F	193 mmHg	3.74 psia

## Geographic availability<sup>c</sup>

Europe/Middle East/Africa

Americas/Middle East/Africa



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

<sup>b</sup> Visit [www.therminol.com](http://www.therminol.com) for additional typical properties and test values.

<sup>c</sup> Check with your local sales office to determine exact availability by country.

<sup>d</sup> 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

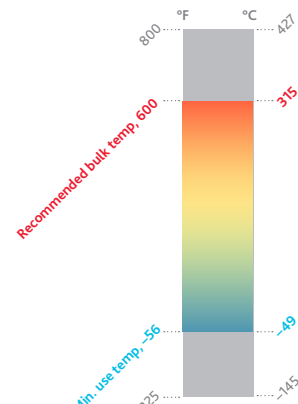
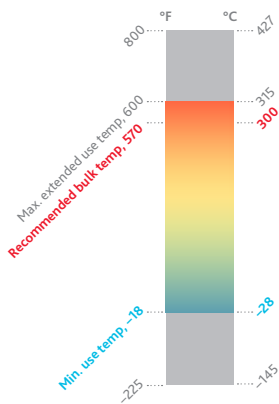
## Typical properties<sup>a</sup>

Appearance	Clear, yellow liquid		Clear, yellow to dark amber liquid			
Composition	Synthetic hydrocarbon mixture		Alkyl substituted aromatic			
Recommended bulk temperature	570°F <sup>d</sup>		600°F			
Maximum film temperature	635°F		650°F			
Normal boiling point	664°F		553°F			
Pumpability: at 300 cSt (mm <sup>2</sup> /s) at 2000 cSt (mm <sup>2</sup> /s)	17°F -18°F		-35°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 <sup>b</sup>	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 <sup>2</sup> /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 <sup>3</sup>	0°F	8.36 lb/gal	62.5 lb/ft <sup>3</sup>
	200°F	6.86 lb/gal	51.3 lb/ft <sup>3</sup>	200°F	7.68 lb/gal	57.5 lb/ft <sup>3</sup>
	400°F	6.22 lb/gal	46.5 lb/ft <sup>3</sup>	400°F	6.98 lb/gal	52.2 lb/ft <sup>3</sup>
	550°F	5.69 lb/gal	42.6 lb/ft <sup>3</sup>	600°F	6.18 lb/gal	46.2 lb/ft <sup>3</sup>
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<sup>c</sup>

Europe/Middle East

Globally



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

<sup>b</sup> Visit [www.therminol.com](http://www.therminol.com) or [www.marlotherm.com](http://www.marlotherm.com) for additional typical properties and test values.

<sup>c</sup> Check with your local sales office to determine exact availability by country.

<sup>d</sup> Maximum 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 <sup>a</sup>		
Appearance	Clear liquid	Water-white liquid
Composition	Benzyltoluene	Isopropyl biphenyl mixture
Recommended bulk temperature	625°F <sup>d</sup>	620°F
Maximum film temperature	715°F	670°F
Normal boiling point	532°F	631°F
Pumpability: at 300 cSt (mm <sup>2</sup> /s) at 2000 cSt (mm <sup>2</sup> /s)	-88°F <sup>e</sup> <-94°F <sup>e</sup>	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 <sup>b</sup>	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 <sup>2</sup> /s)	0°F      15.5 200°F    1.17 400°F    0.46 600°F    0.29	0°F      843 200°F    2.83 400°F    0.69 620°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 <sup>3</sup> 200°F    7.85 lb/gal      58.7 lb/ft <sup>3</sup> 400°F    7.11 lb/gal      53.2 lb/ft <sup>3</sup> 600°F    6.27 lb/gal      46.9 lb/ft <sup>3</sup>	0°F      8.19 lb/gal      61.3 lb/ft <sup>3</sup> 200°F    7.53 lb/gal      56.3 lb/ft <sup>3</sup> 400°F    6.81 lb/gal      50.9 lb/ft <sup>3</sup> 620°F    5.87 lb/gal      43.9 lb/ft <sup>3</sup>
Heat capacity, Btu/(lb•°F)	0°F      0.353 200°F    0.445 400°F    0.534 600°F    0.622	0°F      0.440 200°F    0.509 400°F    0.565 620°F    0.617
Thermal conductivity, Btu/(h•ft•°F)	0°F      0.0785 200°F    0.0712 400°F    0.0638 600°F    0.0564	0°F      0.0729 200°F    0.0673 400°F    0.0610 620°F    0.0518
Vapor pressure	200°F    1.14 mmHg      0.022 psia 400°F    113.3 mmHg     2.19 psia 600°F    1649.7 mmHg    31.9 psia	200°F    0.29 mmHg      0.006 psia 400°F    30.2 mmHg      0.584 psia 620°F    670 mmHg       13.0 psia
Geographic availability <sup>c</sup>		
	Globally	Contact your Eastman representative.

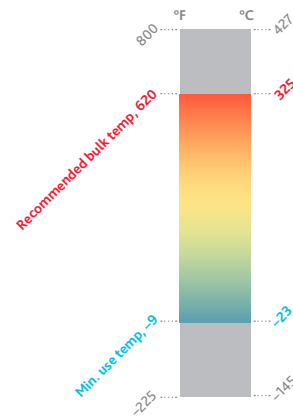
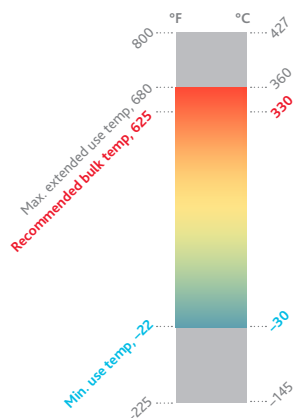
<sup>a</sup> These data are based on samples tested in the laboratory and are not guaranteed for all samples. Contact us for complete sales specifications.

<sup>b</sup> Visit [www.therminol.com](http://www.therminol.com) or [www.marlotherm.com](http://www.marlotherm.com) for additional typical properties and test values.

<sup>c</sup> Check with your local sales office to determine exact availability by country.

<sup>d</sup> Maximum extended use temperature = 680°F

<sup>e</sup> Operation 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<sup>a</sup>

Appearance	Clear liquid		Clear, pale yellow liquid			
Composition	Dibenzyltoluene		Modified terphenyl			
Recommended bulk temperature	620°F <sup>d</sup>		650°F			
Maximum film temperature	715°F		705°F			
Normal boiling point	738°F		678°F			
Pumpability: at 300 cSt (mm <sup>2</sup> /s) at 2000 cSt (mm <sup>2</sup> /s)	30°F 5°F		52°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 <sup>b</sup>	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 <sup>2</sup> /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 <sup>3</sup>	50°F	8.47 lb/gal	63.4 lb/ft <sup>3</sup>
	200°F	8.29 lb/gal	62.0 lb/ft <sup>3</sup>	300°F	7.69 lb/gal	57.5 lb/ft <sup>3</sup>
	400°F	7.64 lb/gal	57.2 lb/ft <sup>3</sup>	500°F	7.01 lb/gal	52.5 lb/ft <sup>3</sup>
	620°F	6.85 lb/gal	51.3 lb/ft <sup>3</sup>	650°F	6.44 lb/gal	48.2 lb/ft <sup>3</sup>
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	0.056 psia
	400°F	6.36 mmHg	0.123 psia	500°F	90 mmHg	1.7 psia
	620°F	184.1 mmHg	3.56 psia	650°F	570 mmHg	11 psia

## Geographic availability<sup>c</sup>

Globally

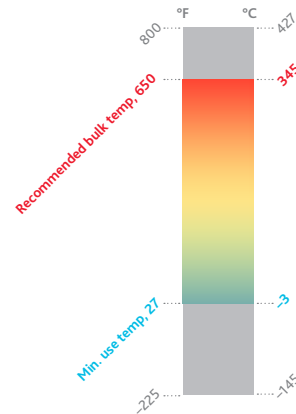
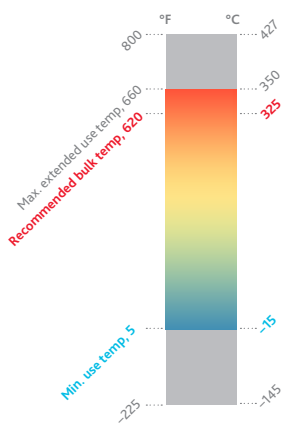
Globally

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

<sup>b</sup> Visit [www.therminol.com](http://www.therminol.com) for additional typical properties and test values.

<sup>c</sup> Check with your local sales office to determine exact availability by country.

<sup>d</sup> 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

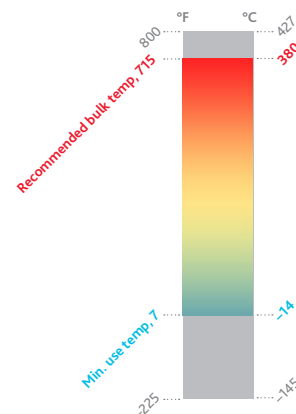
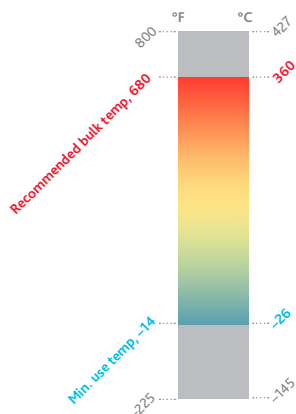
#### Typical properties<sup>a</sup>

Appearance	Clear, pale yellow liquid		Clear, amber liquid			
Composition	Mixture of synthetic aromatics		Mixture of synthetic aromatics			
Recommended bulk temperature	680°F		715°F			
Maximum film temperature	735°F		750°F			
Normal boiling point	586°F		520°F			
Pumpability: at 300 cSt (mm <sup>2</sup> /s) at 2000 cSt (mm <sup>2</sup> /s)	14°F -14°F		16°F 7°F			
Pour point	-27°F		0°F			
Flash point, COC	311°F		270°F			
Fire point, COC	345°F		290°F			
Autoignition temperature <sup>b</sup>	752°F (DIN 51794)		1,117°F (ASTM E659)			
Fully developed turbulent flow (Re = 10,000, 10 ft/s, 1-in. tube)	135°F		89°F			
Kinematic viscosity, cSt (mm <sup>2</sup> /s)	20°F	219	15°F	291		
	300°F	1.29	300°F	0.868		
	500°F	0.516	500°F	0.355		
	680°F	0.332	715°F	0.19		
Density at 75°F (lb/gal)	8.56		8.98			
Density, various temperatures	20°F	8.73 lb/gal	65.3 lb/ft <sup>3</sup>	15°F	9.23 lb/gal	69.0 lb/ft <sup>3</sup>
	300°F	7.79 lb/gal	58.3 lb/ft <sup>3</sup>	300°F	8.03 lb/gal	60.1 lb/ft <sup>3</sup>
	500°F	7.13 lb/gal	53.3 lb/ft <sup>3</sup>	500°F	7.19 lb/gal	53.8 lb/ft <sup>3</sup>
	680°F	6.52 lb/gal	48.8 lb/ft <sup>3</sup>	715°F	6.29 lb/gal	47.0 lb/ft <sup>3</sup>
Heat capacity, Btu/(lb•°F)	20°F	0.368		15°F	0.352	
	300°F	0.487		300°F	0.454	
	500°F	0.573		500°F	0.526	
	680°F	0.650		715°F	0.604	
Thermal conductivity, Btu/(h•ft•°F)	20°F	0.0727		15°F	0.0828	
	300°F	0.0654		300°F	0.0717	
	500°F	0.0602		500°F	0.0639	
	680°F	0.0556		715°F	0.0555	
Vapor pressure	300°F	12.2 mmHg	0.236 psia	300°F	22.4 mmHg	0.43 psia
	500°F	278 mmHg	5.38 psia	500°F	579 mmHg	11.2 psia
	680°F	1,888 mmHg	36.5 psia	715°F	4,640 mmHg	89.8 psia

#### Geographic availability<sup>c</sup>

Europe/Middle East/Africa

Globally



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<sup>b</sup> Visit [www.therminol.com](http://www.therminol.com) for additional typical properties and test values.

<sup>c</sup> Check with your local sales office to determine exact availability by country.

# English units

Liquid phase heat transfer

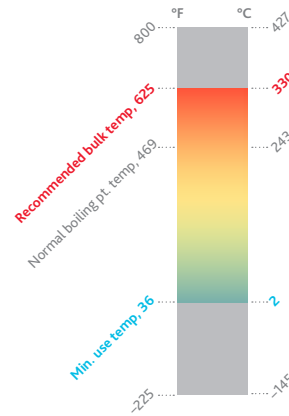
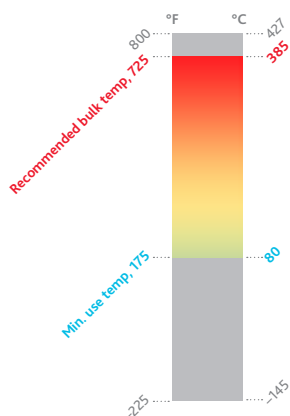
## THERMINOL 75

Ultrahigh-temperature,  
low-pressure fluid

## THERMINOL VP-3

High-temperature,  
liquid/vapor phase fluid

Typical properties <sup>a</sup>						
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 <sup>2</sup> /s) at 2000 cSt (mm <sup>2</sup> /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 <sup>b</sup>	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 <sup>2</sup> /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 <sup>3</sup>	100°F	7.71 lb/gal	57.7 lb/ft <sup>3</sup>
	400°F	7.93 lb/gal	59.3 lb/ft <sup>3</sup>	300°F	7.08 lb/gal	52.9 lb/ft <sup>3</sup>
	600°F	7.17 lb/gal	53.6 lb/ft <sup>3</sup>	500°F	6.16 lb/gal	46.1 lb/ft <sup>3</sup>
	725°F	6.62 lb/gal	49.6 lb/ft <sup>3</sup>	625°F	5.36 lb/gal	40.1 lb/ft <sup>3</sup>
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 <sup>c</sup>						
Globally			Globally			



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

<sup>b</sup> Visit [www.therminol.com](http://www.therminol.com) for additional typical properties and test values.

<sup>c</sup> Check with your local sales office to determine exact availability by country.

# English units

Liquid phase heat transfer

## THERMINOL VP-1

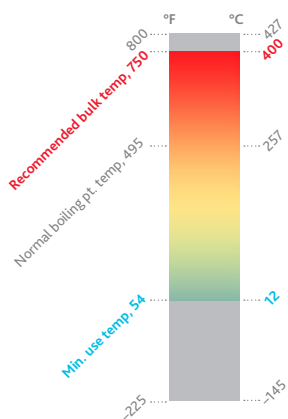
Ultrahigh-temperature,  
liquid/vapor phase fluid

### Typical properties<sup>a</sup>

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 <sup>2</sup> /s) at 2000 cSt (mm <sup>2</sup> /s)	54°F (crystallizing point) —		
Pour point	NA		
Flash point, COC	255°F		
Fire point, COC	260°F		
Autoignition temperature <sup>b</sup>	1,150°F (DIN 51794)		
Fully developed turbulent flow (Re = 10,000, 10 ft/s, 1-in. tube)	54°F		
Kinematic viscosity, cSt (mm <sup>2</sup> /s)	100°F	2.60	
	300°F	0.62	
	500°F	0.32	
	750°F	0.21	
Density at 75°F (lb/gal)	8.85		
Density, various temperatures	100°F	8.76 lb/gal	65.5 lb/ft <sup>3</sup>
	300°F	7.99 lb/gal	59.8 lb/ft <sup>3</sup>
	500°F	7.16 lb/gal	53.5 lb/ft <sup>3</sup>
	750°F	5.81 lb/gal	43.4 lb/ft <sup>3</sup>
Heat capacity, Btu/(lb•°F)	100°F	0.382	
	300°F	0.457	
	500°F	0.528	
	750°F	0.627	
Thermal conductivity, Btu/(h•ft•°F)	100°F	0.0778	
	300°F	0.0701	
	500°F	0.0600	
	750°F	0.0439	
Vapor pressure	300°F	32 mmHg	0.62 psia
	500°F	810 mmHg	15.7 psia
	750°F	8,060 mmHg	156 psia

### Geographic availability<sup>c</sup>

Globally



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<sup>b</sup> Visit [www.therminol.com](http://www.therminol.com) for additional typical properties and test values.

<sup>c</sup> Check with your local sales office to determine exact availability by country.



# 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.

### 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](http://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\*

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](http://Therminol.com) and [Marlotherm.com](http://Marlotherm.com).



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[www.eastman.com/locations](http://www.eastman.com/locations)

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