



**THERMINOL®**

Heat Transfer Fluids by Eastman

## Selection guide

*High performance fluids  
for precise temperature control*

**EASTMAN**

# Eastman Therminol<sup>®</sup> heat transfer fluids

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

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

## Liquid phase heat transfer fluids

Therminol liquid phase heat transfer fluids operate over a broad temperature range of  $-175^{\circ}$  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. All Eastman Therminol heat transfer fluids can provide effective operations in liquid phase. When above their normal boiling points, Therminol D-12, LT, 59, 68, 72, 75, VP-1, and VP-3 fluids require system pressures to be greater than their vapor pressures for liquid phase operation to their recommended bulk temperature ratings.

## Liquid/vapor phase heat transfer fluids

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

## Specialty and customized heat transfer fluids

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



# TLC Total Lifecycle Care® program

Eastman's TLC Total Lifecycle Care® program is designed to support Therminol customers throughout their systems' life cycle. This comprehensive program includes system design support, start-up assistance, training, sample analysis, flush and refill fluids, and our fluid trade-in program. In North America, call our hotline at 1-800-433-6997 or contact your local sales or technical representative.

## In-service heat transfer fluid sample analysis

When Therminol heat transfer fluids are used within suggested temperature limits, they may provide years of trouble-free service. To help users get maximum life, Eastman offers testing of in-service heat transfer fluids to detect contamination, moisture, thermal degradation, and other conditions that may impact system performance. This comprehensive analysis includes acid number, kinematic viscosity, insoluble solids, low boilers, high boilers, and moisture content. Additional special analyses are available on request. Sample analysis includes sample collection kits that are easy to use. Most systems should be sampled annually. Users should also sample anytime a fluid-related problem is suspected.



Results of the test are presented in a detailed report that provides suggestions for corrective action. Test results are stored in a database for future reference. Customers can access their specific test information via [my.therminol.com](http://my.therminol.com).

## Technical service hotline

Experienced technical service specialists can help answer your questions regarding heat transfer fluid selection, system start-ups, system design, and operational issues.

## System design support

Eastman regularly assists some of the world's largest engineering, chemical, and equipment manufacturing companies on the design and operation of heat transfer systems. Our liquid phase and vapor phase design guide information and system design data have been field tested in numerous installations. Eastman also conducts engineering seminars

for customers, engineering firms, and equipment manufacturers to cover a wide range of heat transfer fluid system design and operation issues. Customers can request a technical service visit to audit heat transfer systems for fluid loss and leak prevention opportunities.

## Operational training

Eastman believes that by sharing our experience with customers, we can help improve system design, promote safety, and reduce overall cost. Customers can take advantage of Eastman's heat transfer system operation and product training programs. These programs are customized to suit the varied needs of frontline technicians, operations supervisors, maintenance technicians, and design engineers. Customers can also receive training assistance for dealing with important topics like fluid safety and handling.

## Safety awareness training

At Eastman, we're "All in for Safety." We provide our customers safety awareness training that focuses on the design, start-up, operation, and maintenance of heat transfer fluid systems.

## Start-up assistance

Eastman provides start-up assistance by reviewing procedures and offering suggestions to reduce typical problems. Customers can also receive help by calling their local Eastman technical specialist or through on-site assistance.

## Flush fluid and fluid refill

Liquid phase heat transfer systems can be cleaned with Therminol® FF flushing fluid. After the system is flushed, the appropriate liquid phase Therminol heat transfer fluid can be added.

## Fluid trade-in program\*

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

\*Available in North America. Contact your local sales representative for more information.

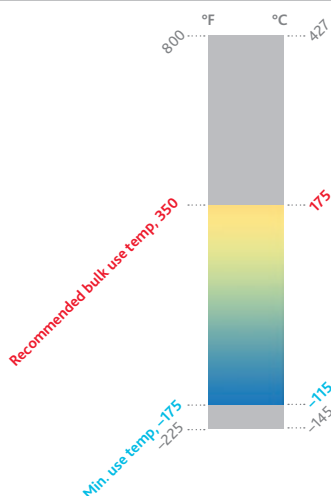
# English units

Liquid phase heat transfer

**THERMINOL**

## VLT

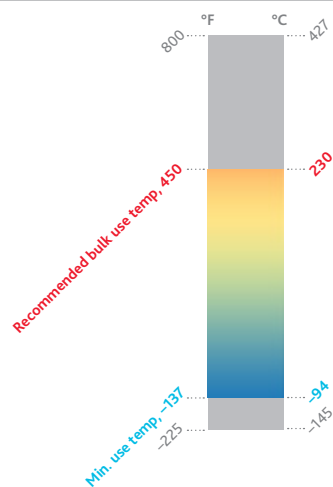
Very low-temperature  
coolant/heat transfer fluid



**THERMINOL**

## D-12

Low-temperature  
coolant/heat transfer fluid<sup>e</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:<br>at 300 cSt (mm <sup>2</sup> /s)<br>at 2000 cSt (mm <sup>2</sup> /s) | -195°F                                     |             |                         | -116°F <sup>d</sup><br>-137°F <sup>d</sup> |             |                         |
| Pour point                                                                          | -211°F                                     |             |                         | -148°F                                     |             |                         |
| Flash point, COC                                                                    | 20°F (Tag closed cup)                      |             |                         | 144°F (Pensky-Martens)                     |             |                         |
| Fire point, COC                                                                     | 20°F (ASTM D-1310)                         |             |                         | 175°F                                      |             |                         |
| Autoignition temperature <sup>b</sup>                                               | 562°F (DIN 51794)                          |             |                         | 531°F (DIN 51794)                          |             |                         |
| Fully developed turbulent flow<br>(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.

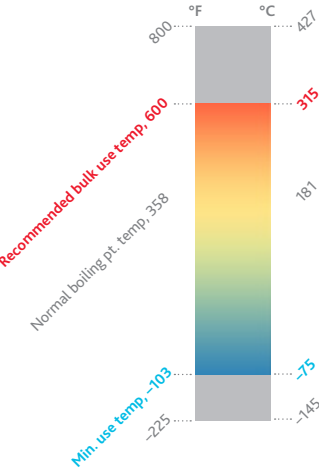
<sup>d</sup> -50°F for efficient heat transfer

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

THERMINOL

LT

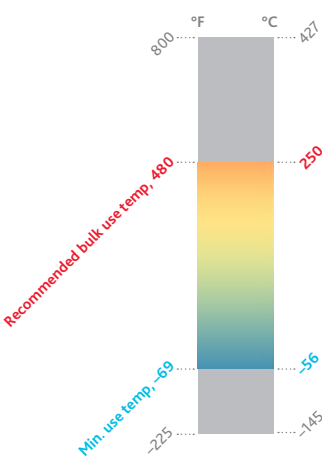
Wide-range liquid/  
vapor heat transfer fluid



THERMINOL

ADX-10

Low-temperature pumpability, medium-  
temperature fluid



|                              |             |                         |                                        |             |                         |
|------------------------------|-------------|-------------------------|----------------------------------------|-------------|-------------------------|
| Clear, light yellow liquid   |             |                         | Clear, pale yellow liquid              |             |                         |
| Alkyl substituted aromatic   |             |                         | Synthetic aromatic hydrocarbon mixture |             |                         |
| 600°F                        |             |                         | 480°F                                  |             |                         |
| 650°F                        |             |                         | 535°F                                  |             |                         |
| 358°F                        |             |                         | 559°F                                  |             |                         |
| -103°F (crystallizing point) |             |                         | -41°F<br>-69°F                         |             |                         |
| NA                           |             |                         | -112°F                                 |             |                         |
| 134°F (Pensky-Martens)       |             |                         | 277°F                                  |             |                         |
| 150°F                        |             |                         | 284°F                                  |             |                         |
| 804°F (DIN 51794)            |             |                         | 621°F (DIN 51794)                      |             |                         |
| 193°F                        |             |                         | 66°F                                   |             |                         |
| -100°F                       | 10.8        |                         | -50°F                                  | 508         |                         |
| 100°F                        | 0.83        |                         | 200°F                                  | 1.49        |                         |
| 300°F                        | 0.35        |                         | 400°F                                  | 0.531       |                         |
| 600°F                        | 0.19        |                         | 480°F                                  | 0.403       |                         |
| 7.20                         |             |                         | 7.13                                   |             |                         |
| -100°F                       | 7.83 lb/gal | 58.6 lb/ft <sup>3</sup> | -50°F                                  | 7.53 lb/gal | 56.3 lb/ft <sup>3</sup> |
| 100°F                        | 7.11 lb/gal | 53.2 lb/ft <sup>3</sup> | 200°F                                  | 6.72 lb/gal | 50.3 lb/ft <sup>3</sup> |
| 300°F                        | 6.31 lb/gal | 47.2 lb/ft <sup>3</sup> | 400°F                                  | 6.04 lb/gal | 45.2 lb/ft <sup>3</sup> |
| 600°F                        | 4.66 lb/gal | 34.8 lb/ft <sup>3</sup> | 480°F                                  | 5.73 lb/gal | 42.9 lb/ft <sup>3</sup> |
| -100°F                       | 0.344       |                         | -50°F                                  | 0.395       |                         |
| 100°F                        | 0.446       |                         | 200°F                                  | 0.523       |                         |
| 300°F                        | 0.542       |                         | 400°F                                  | 0.615       |                         |
| 600°F                        | 0.719       |                         | 480°F                                  | 0.649       |                         |
| -100°F                       | 0.0825      |                         | -50°F                                  | 0.0764      |                         |
| 100°F                        | 0.0701      |                         | 200°F                                  | 0.0660      |                         |
| 300°F                        | 0.0573      |                         | 400°F                                  | 0.0565      |                         |
| 600°F                        | 0.0374      |                         | 480°F                                  | 0.0523      |                         |
| 200°F                        | 41 mmHg     | 0.79 psia               | 200°F                                  | 0.36 mmHg   | 0.007 psia              |
| 400°F                        | 1,370 mmHg  | 26.5 psia               | 400°F                                  | 72.4 mmHg   | 1.40 psia               |
| 600°F                        | 11,800 mmHg | 228 psia                | 480°F                                  | 266 mmHg    | 5.15 psia               |
| Globally                     |             |                         | Europe/Middle East/Africa              |             |                         |

# English units

Liquid phase heat transfer

**THERMINOL**

## XP

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

**THERMINOL**

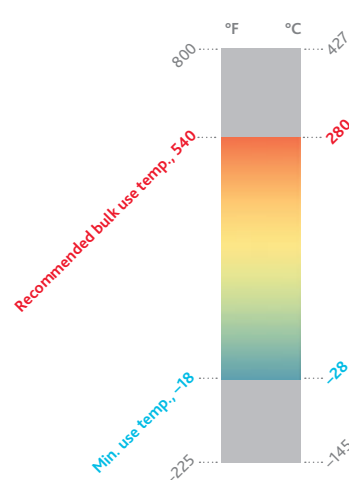
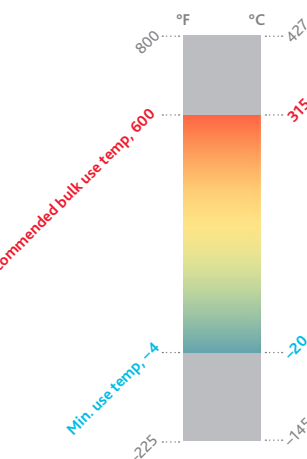
## 54

Economical, medium-temperature-range fluid

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

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

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



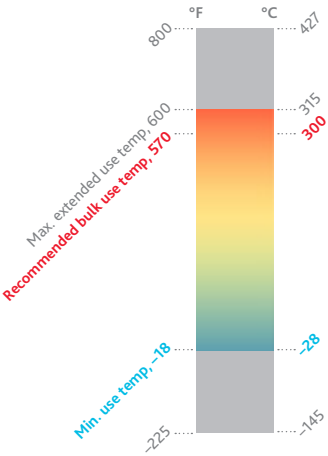
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<sup>c</sup> Check with your local sales office to determine exact availability by country.

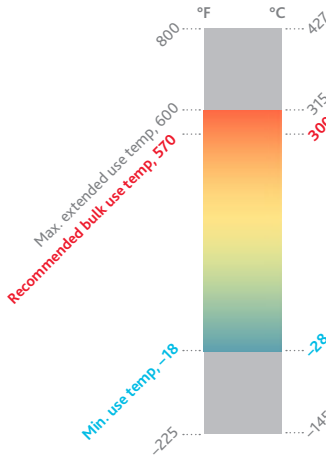
**THERMINOL**  
**55**

Trusted, medium-temperature-  
range fluid



**THERMINOL**  
**SP**

Trusted, medium-temperature-  
range fluid



Clear, yellow liquid

Synthetic hydrocarbon mixture

570°F

635°F

664°F

17°F

-18°F

-65°F

350°F

425°F

719°F (DIN 51794)

152°F

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

7.26

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

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

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

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

Americas/Asia Pacific

Clear, yellow liquid

Synthetic hydrocarbon mixture

570°F

635°F

664°F

17°F

-18°F

-65°F

350°F

425°F

719°F (DIN 51794)

152°F

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

7.26

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

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

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

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

Europe/Middle East/Africa

# English units

Liquid phase heat transfer

**THERMINOL**

## 59

Economical, wide-temperature-range fluid

**THERMINOL**

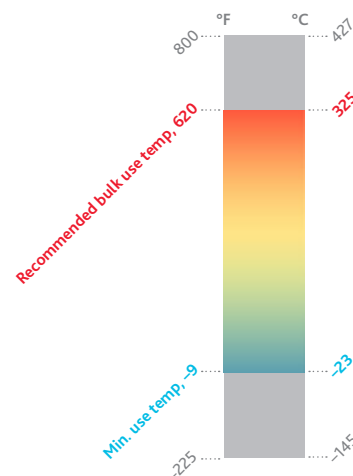
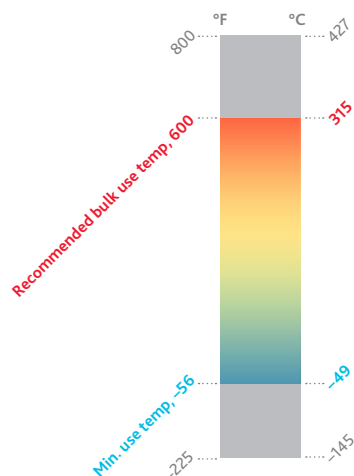
## 62

High-performance, low-pressure fluid

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

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

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

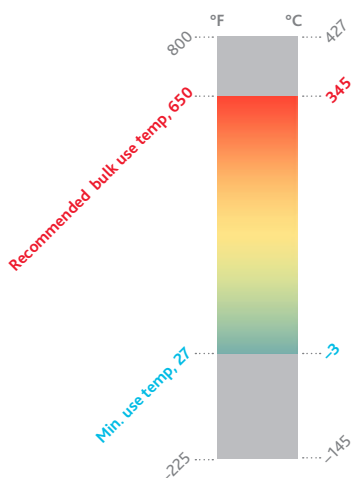


<sup>a</sup> These data are based on samples tested in the laboratory and are not guaranteed for all samples. Contact us for complete sales specifications.

<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.

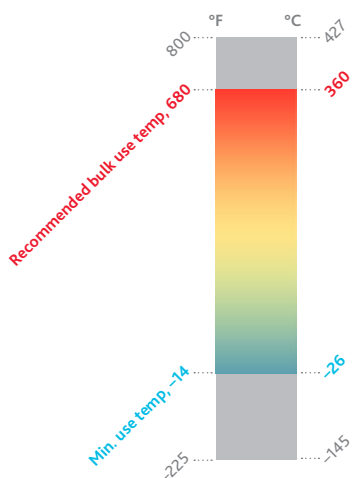
THERMINOL

66

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

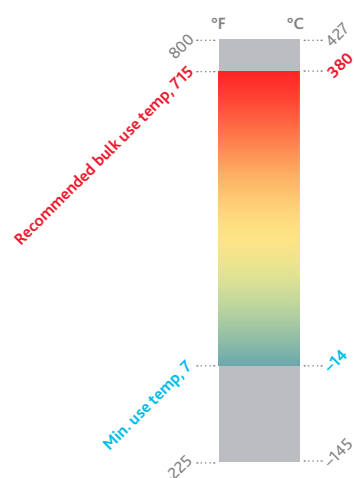
THERMINOL

68

High-temperature,  
low-viscosity fluid

THERMINOL

72

High-temperature,  
medium-pressure fluid

Clear, pale yellow liquid

Modified terphenyl

650°F

705°F

678°F

52°F

27°F

-25°F

363°F

414°F

750°F (DIN 51794)

162°F

50°F

339

300°F

1.68

500°F

0.63

650°F

0.43

8.39

50°F

8.47 lb/gal

63.4 lb/ft<sup>3</sup>

300°F

7.69 lb/gal

57.5 lb/ft<sup>3</sup>

500°F

7.01 lb/gal

52.5 lb/ft<sup>3</sup>

650°F

6.44 lb/gal

48.2 lb/ft<sup>3</sup>

50°F

0.365

300°F

0.480

500°F

0.578

650°F

0.655

50°F

0.0682

300°F

0.0636

500°F

0.0574

650°F

0.0514

Globally

Clear, pale yellow liquid

Mixture of synthetic aromatics

680°F

735°F

586°F

14°F

-14°F

-27°F

311°F

345°F

752°F (DIN 51794)

135°F

20°F

219

300°F

1.29

500°F

0.516

680°F

0.332

8.56

20°F

8.73 lb/gal

65.3 lb/ft<sup>3</sup>

300°F

7.79 lb/gal

58.3 lb/ft<sup>3</sup>

500°F

7.13 lb/gal

53.3 lb/ft<sup>3</sup>

680°F

6.52 lb/gal

48.8 lb/ft<sup>3</sup>

20°F

0.368

300°F

0.487

500°F

0.573

680°F

0.650

20°F

0.0727

300°F

0.0654

500°F

0.0602

680°F

0.0556

Europe/Middle East/Africa

Clear, amber liquid

Mixture of synthetic aromatics

715°F

750°F

520°F

16°F

7°F

0°F

270°F

290°F

1,117°F (ASTM E-659)

86°F

15°F

291

300°F

0.868

500°F

0.355

715°F

0.19

8.98

15°F

9.23 lb/gal

69.0 lb/ft<sup>3</sup>

300°F

8.03 lb/gal

60.1 lb/ft<sup>3</sup>

500°F

7.19 lb/gal

53.8 lb/ft<sup>3</sup>

715°F

6.29 lb/gal

47.0 lb/ft<sup>3</sup>

15°F

0.352

300°F

0.454

500°F

0.526

715°F

0.604

15°F

0.0828

300°F

0.0717

500°F

0.0639

715°F

0.0555

Globally

0.056 psia

90 mmHg

570 mmHg

11 psia

12.2 mmHg

278 mmHg

1,888 mmHg

0.236 psia

5.38 psia

36.5 psia

22.4 mmHg

579 mmHg

4,640 mmHg

0.43 psia

11.2 psia

89.8 psia

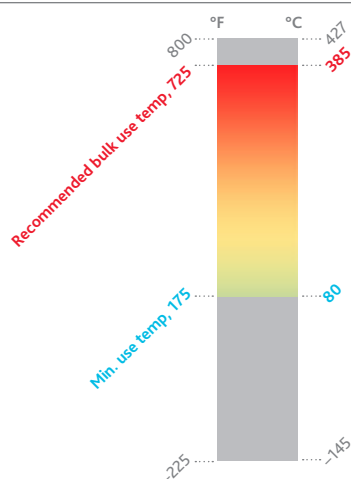
# English units

Liquid phase heat transfer

**THERMINOL**

## 75

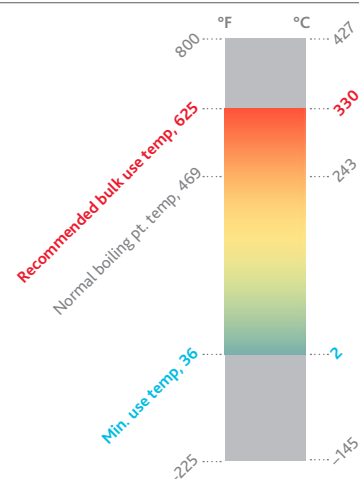
Ultrahigh-temperature,  
low-pressure fluid



**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:<br>at 300 cSt (mm <sup>2</sup> /s)<br>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 E-659)                |             |                         | 680°F (ASTM E-659)                             |             |                         |
| Fully developed turbulent flow<br>(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.

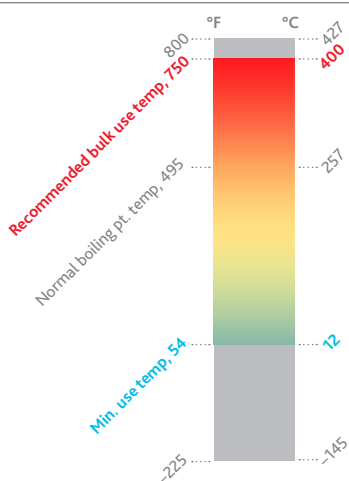
<sup>b</sup> Visit [www.therminol.com](http://www.therminol.com) for additional typical properties and test values.

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

**THERMINOL**

# VP-1

Ultrahigh-temperature,  
liquid/vapor phase fluid



Clear, water-white liquid

Biphenyl/diphenyl oxide (DPO) eutectic mixture

750°F

800°F

495°F

54°F (crystallizing point)

NA

255°F

260°F

1,150°F (DIN 51794)

54°F

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

8.85

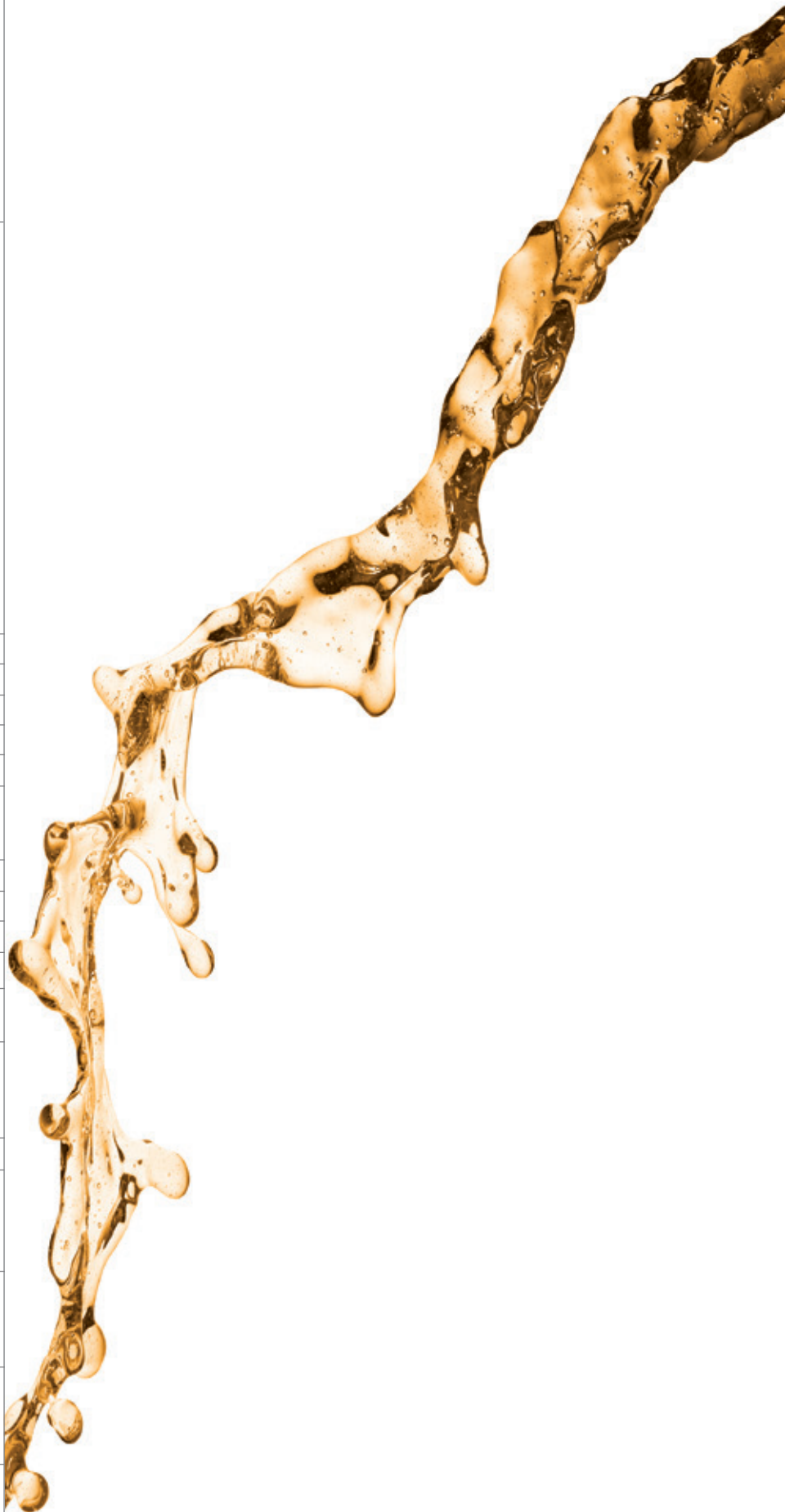
|       |             |                         |
|-------|-------------|-------------------------|
| 100°F | 8.76 lb/gal | 65.5 lb/ft <sup>3</sup> |
| 300°F | 7.99 lb/gal | 59.8 lb/ft <sup>3</sup> |
| 500°F | 7.16 lb/gal | 53.5 lb/ft <sup>3</sup> |
| 750°F | 5.81 lb/gal | 43.4 lb/ft <sup>3</sup> |

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

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

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

Globally



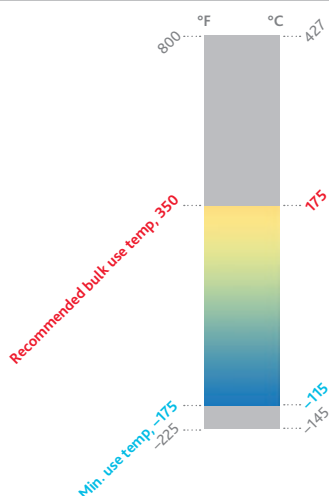
# SI units

Liquid phase heat transfer

**THERMINOL**

## VLT

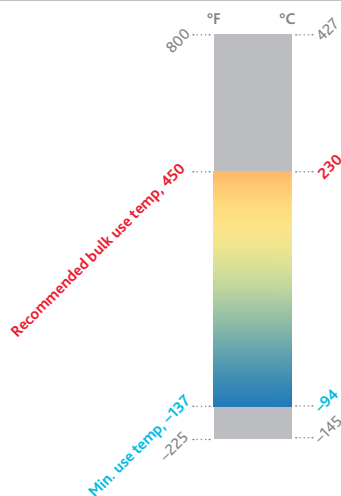
Very low-temperature  
coolant/heat transfer fluid



**THERMINOL**

## D-12

Low-temperature  
coolant/heat transfer fluid<sup>e</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:<br>at 300 cSt (mm <sup>2</sup> /s)<br>at 2000 cSt (mm <sup>2</sup> /s) | -126°C                                     |       | -82°C <sup>d</sup><br>-94°C <sup>d</sup> |       |
| Pour point                                                                          | -135°C                                     |       | -100°C                                   |       |
| Flash point, COC                                                                    | -7°C (Tag closed cup)                      |       | 62°C (Pensky-Martens)                    |       |
| Fire point, COC                                                                     | 71°C                                       |       | 71°C                                     |       |
| Autoignition temperature <sup>b</sup>                                               | 294°C (DIN 51794)                          |       | 277°C (DIN 51794)                        |       |
| Fully developed turbulent flow<br>(Re = 10,000, 3.05 m/s, 2.54 cm tube)             | -76°C                                      |       | -37°C                                    |       |
| Viscosity, mPa·s (cP)                                                               | -115°C                                     | 45    | -50°C                                    | 12.0  |
|                                                                                     | 0°C                                        | 0.88  | 100°C                                    | 0.46  |
|                                                                                     | 100°C                                      | 0.28  | 200°C                                    | 0.19  |
|                                                                                     | 175°C                                      | 0.14  | 230°C                                    | 0.16  |
| Density at 25°C (kg/m <sup>3</sup> )                                                | 744                                        |       | 759                                      |       |
| Density, kg/m <sup>3</sup>                                                          | -115°C                                     | 862   | -50°C                                    | 811   |
|                                                                                     | 0°C                                        | 766   | 100°C                                    | 703   |
|                                                                                     | 100°C                                      | 676   | 200°C                                    | 616   |
|                                                                                     | 175°C                                      | 598   | 230°C                                    | 584   |
| Heat capacity, kJ/(kg·K)                                                            | -115°C                                     | 1.37  | -50°C                                    | 1.82  |
|                                                                                     | 0°C                                        | 1.87  | 100°C                                    | 2.41  |
|                                                                                     | 100°C                                      | 2.29  | 200°C                                    | 2.84  |
|                                                                                     | 175°C                                      | 2.61  | 230°C                                    | 2.98  |
| Thermal conductivity, W/(m·K)                                                       | -115°C                                     | 0.130 | -50°C                                    | 0.120 |
|                                                                                     | 0°C                                        | 0.108 | 100°C                                    | 0.097 |
|                                                                                     | 100°C                                      | 0.086 | 200°C                                    | 0.077 |
|                                                                                     | 175°C                                      | 0.067 | 230°C                                    | 0.071 |
| Vapor pressure, kPa                                                                 | 0°C                                        | 1.9   | 50°C                                     | 0.48  |
|                                                                                     | 100°C                                      | 104   | 150°C                                    | 33.2  |
|                                                                                     | 175°C                                      | 573   | 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.

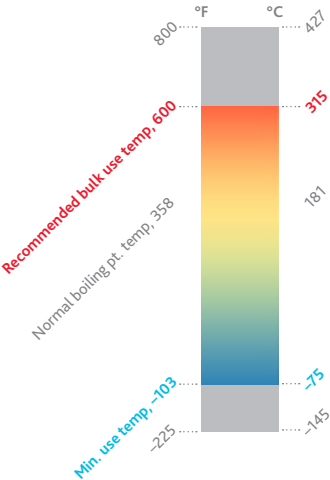
<sup>d</sup> -50°F for efficient heat transfer

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

THERMINOL

LT

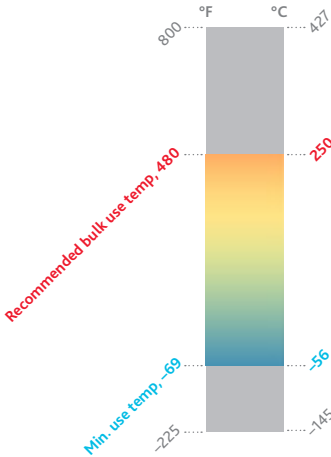
Wide-range liquid/  
vapor heat transfer fluid



THERMINOL

ADX-10

Low-temperature pumpability,  
medium-temperature fluid



Clear, light yellow liquid

Alkyl substituted aromatic

315°C

345°C

181°C

-75°C (crystallizing point)

NA

58°C (Pensky-Martens)

66°C

429°C (DIN 51794)

-66°C

|       |      |
|-------|------|
| -50°C | 3.8  |
| 100°C | 0.38 |
| 200°C | 0.19 |
| 315°C | 0.11 |

862

|       |     |
|-------|-----|
| -50°C | 920 |
| 100°C | 800 |
| 200°C | 707 |
| 315°C | 559 |

|       |      |
|-------|------|
| -50°C | 1.53 |
| 100°C | 2.09 |
| 200°C | 2.45 |
| 315°C | 3.00 |

|       |       |
|-------|-------|
| -50°C | 0.138 |
| 100°C | 0.109 |
| 200°C | 0.089 |
| 315°C | 0.065 |

|       |       |
|-------|-------|
| 100°C | 7.1   |
| 200°C | 164   |
| 315°C | 1,560 |

Globally

Clear, pale yellow liquid

Synthetic aromatic hydrocarbon mixture

250°C

280°C

293°C

-41°C

-56°C

-80°C

136°C

140°C

327°C (DIN 51794)

19°C

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

853

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

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

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

|       |      |
|-------|------|
| 100°C | 0.07 |
| 200°C | 8.31 |
| 250°C | 36.6 |

Europe/Middle East/Africa

# SI units

Liquid phase heat transfer

**THERMINOL**

# XP

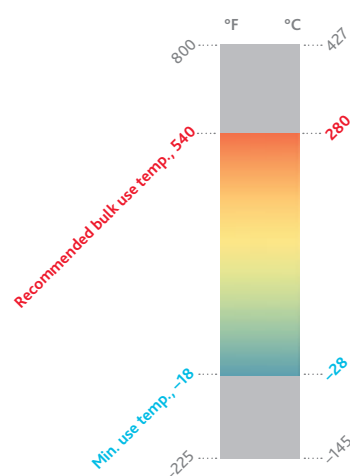
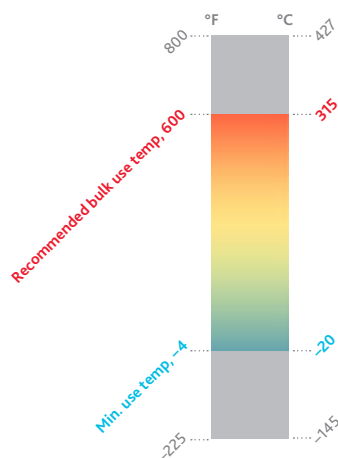
High-purity heat transfer fluid with NSF HT1 incidental food contact registration

**THERMINOL**

# 54

Economical, medium-temperature-range fluid

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



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

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

Globally

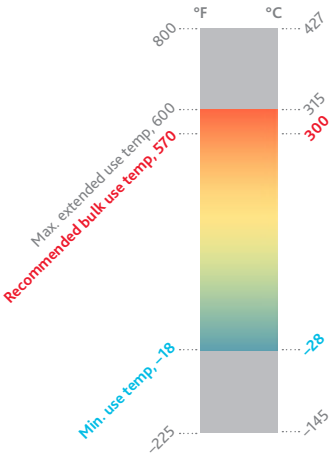
Europe/Middle East/Africa

<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.

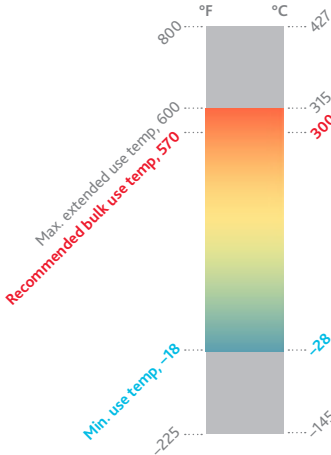
**THERMINOL**  
**55**

Trusted, medium-temperature-range fluid



**THERMINOL**  
**SP**

Trusted, medium-temperature-range fluid



|                               |                               |
|-------------------------------|-------------------------------|
| Clear, yellow liquid          | Clear, yellow liquid          |
| Synthetic hydrocarbon mixture | Synthetic hydrocarbon mixture |
| 300°C                         | 300°C                         |
| 335°C                         | 335°C                         |
| 351°C                         | 351°C                         |
| -8°C                          | -8°C                          |
| -28°C                         | -28°C                         |
| -54°C                         | -54°C                         |
| 177°C                         | 177°C                         |
| 218°C                         | 218°C                         |
| 382°C (DIN 51794)             | 382°C (DIN 51794)             |
| 67°C                          | 67°C                          |
| -25°C1,250                    | -25°C1,250                    |
| 100°C2.88                     | 100°C2.88                     |
| 200°C0.75                     | 200°C0.75                     |
| 290°C0.36                     | 290°C0.36                     |
| 868                           | 868                           |
| -25°C902                      | -25°C902                      |
| 100°C818                      | 100°C818                      |
| 200°C748                      | 200°C748                      |
| 290°C680                      | 290°C680                      |
| -25°C1.74                     | -25°C1.74                     |
| 100°C2.19                     | 100°C2.19                     |
| 200°C2.54                     | 200°C2.54                     |
| 290°C2.86                     | 290°C2.86                     |
| -25°C0.134                    | -25°C0.134                    |
| 100°C0.119                    | 100°C0.119                    |
| 200°C0.107                    | 200°C0.107                    |
| 290°C0.097                    | 290°C0.097                    |
| 100°C0.032                    | 100°C0.032                    |
| 200°C2.15                     | 200°C2.15                     |
| 290°C27.2                     | 290°C27.2                     |
| Americas/Asia Pacific         | Europe/Middle East/Africa     |

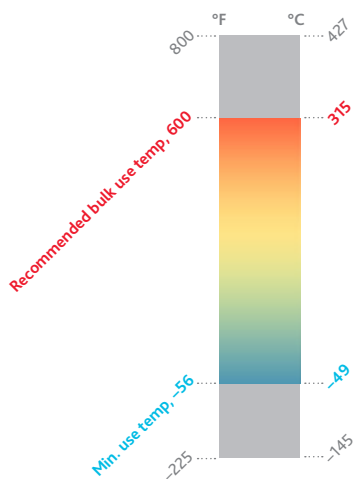
# SI units

Liquid phase heat transfer

**THERMINOL**

# 59

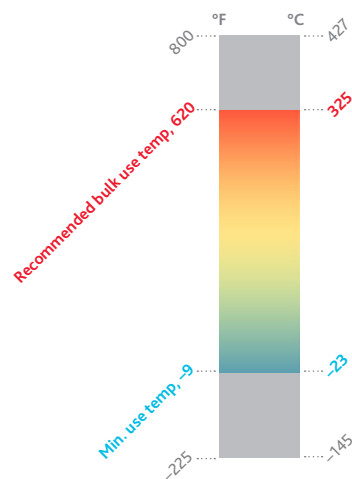
Economical, wide-temperature-range fluid



**THERMINOL**

# 62

High-performance, low-pressure fluid



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

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

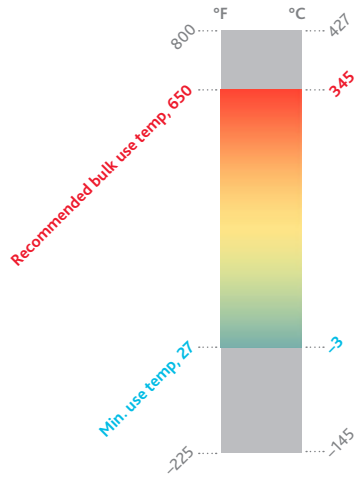
<sup>a</sup> These data are based on samples tested in the laboratory and are not guaranteed for all samples. Contact us for complete sales specifications.

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

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

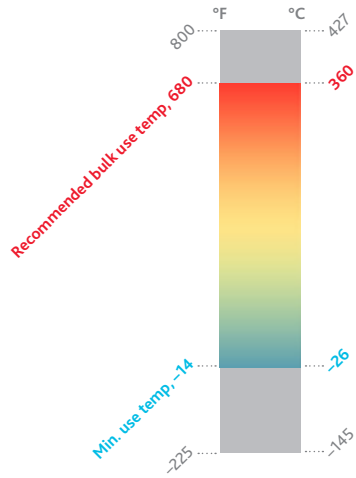
THERMINOL

66

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

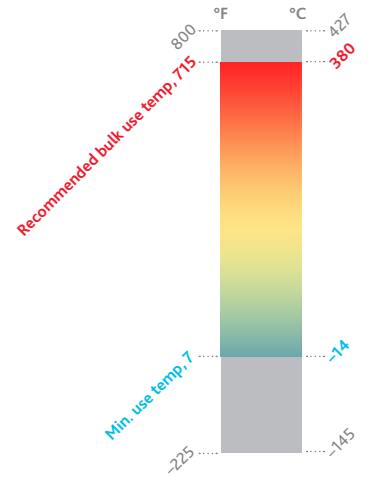
THERMINOL

68

High-temperature,  
low-viscosity fluid

THERMINOL

72

High-temperature,  
medium-pressure fluid

Clear, pale yellow liquid

Modified terphenyl

345°C

375°C

359°C

11°C

-3°C

-32°C

184°C

212°C

399°C (DIN 51794)

72°C

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

1,005

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

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

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

|       |       |
|-------|-------|
| 100°C | 0.048 |
| 200°C | 2.2   |
| 345°C | 78    |

Globally

Clear, pale yellow liquid

Mixture of synthetic aromatics

360°C

390°C

308°C

-10°C

-26°C

-33°C

155°C

174°C

400°C (DIN 51794)

57°C

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

1,020

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

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

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

|       |       |
|-------|-------|
| 100°C | 0.237 |
| 200°C | 8.15  |
| 360°C | 251   |

Europe/Middle East/Africa

Clear, amber liquid

Mixture of synthetic aromatics

380°C

400°C

271°C

-10°C

-14°C

-18°C

132°C

143°C

603°C (ASTM E-659)

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

1,075

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

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

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

|       |      |
|-------|------|
| 100°C | 0.33 |
| 250°C | 61.6 |
| 380°C | 623  |

Globally

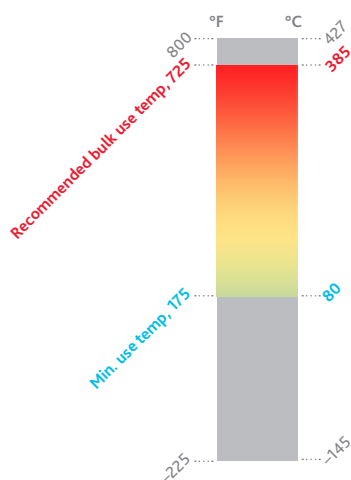
# SI units

Liquid phase heat transfer

**THERMINOL**

## 75

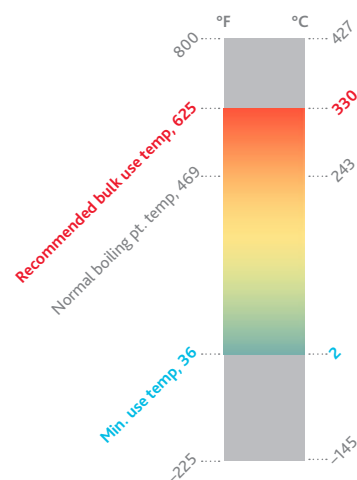
Ultrahigh-temperature,  
low-pressure fluid



**THERMINOL**

## VP-3

High-temperature,  
liquid/vapor phase fluid



### Typical properties<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:<br>at 300 cSt (mm <sup>2</sup> /s)<br>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 E-659)                  |       | 360°C (ASTM E-659)                             |       |
| Fully developed turbulent flow<br>(Re = 10,000, 3.05 m/s, 2.54 cm tube)             | 98°C                                |       | 2.4°C                                          |       |
| Viscosity, mPa·s (cP)                                                               | 80°C                                | 4.3   | 25°C                                           | 2.6   |
|                                                                                     | 200°C                               | 0.85  | 150°C                                          | 0.54  |
|                                                                                     | 300°C                               | 0.37  | 250°C                                          | 0.28  |
|                                                                                     | 385°C                               | 0.22  | 330°C                                          | 0.16  |
| Density at 25°C (kg/m <sup>3</sup> )                                                | 1,041 (80°C)                        |       | 930                                            |       |
| Density, kg/m <sup>3</sup>                                                          | 80°C                                | 1,040 | 25°C                                           | 930   |
|                                                                                     | 200°C                               | 953   | 150°C                                          | 847   |
|                                                                                     | 300°C                               | 873   | 250°C                                          | 750   |
|                                                                                     | 385°C                               | 794   | 330°C                                          | 641   |
| Heat capacity, kJ/(kg·K)                                                            | 80°C                                | 1.71  | 25°C                                           | 1.63  |
|                                                                                     | 200°C                               | 2.05  | 150°C                                          | 2.16  |
|                                                                                     | 300°C                               | 2.28  | 250°C                                          | 2.52  |
|                                                                                     | 385°C                               | 2.44  | 330°C                                          | 3.00  |
| Thermal conductivity, W/(m·K)                                                       | 80°C                                | 0.131 | 25°C                                           | 0.117 |
|                                                                                     | 200°C                               | 0.121 | 150°C                                          | 0.101 |
|                                                                                     | 300°C                               | 0.112 | 250°C                                          | 0.087 |
|                                                                                     | 385°C                               | 0.103 | 330°C                                          | 0.076 |
| Vapor pressure, kPa                                                                 | 150°C                               | 0.55  | 150°C                                          | 5.3   |
|                                                                                     | 250°C                               | 12.9  | 250°C                                          | 121   |
|                                                                                     | 385°C                               | 215   | 330°C                                          | 693   |
| Geographic availability <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.

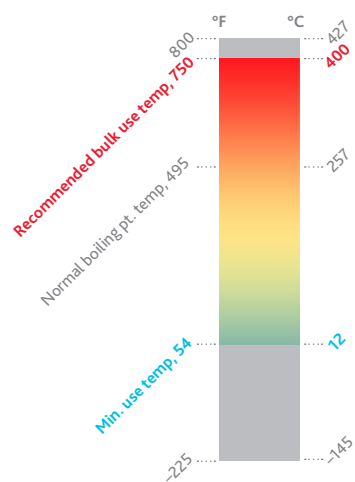
<sup>b</sup> Visit [www.therminol.com](http://www.therminol.com) for additional typical properties and test values.

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

THERMINOL

# VP-1

Ultrahigh-temperature,  
liquid/vapor phase fluid



Clear, water-white liquid

Biphenyl/diphenyl oxide (DPO) eutectic mixture

400°C

430°C

257°C

12°C (crystallizing point)

NA

124°C

127°C

621°C (DIN 51794)

12°C

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

1,060

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

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

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

|       |       |
|-------|-------|
| 150°C | 4.5   |
| 250°C | 86    |
| 400°C | 1,090 |

Globally



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



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