



**DURATHERM**  
Heat Transfer Fluids

# DURATHERM S

An extremely oxidative and thermally stable heat transfer fluid offering precise temperature control in applications requiring the highest level of oxidative resistance across a wide temperature range.

## APPLICATION

Duratherm S is ideal for applications such as negative pressure mold heaters, annealing tanks, open bath forming, or any processing equipment where oxidation is prevalent and problematic.

Duratherm S resists the affects of oxidation seen with most other heat transfer fluids.

High temperature stability is maintained to 315°C (600°F), this combined with a low end working temperature of -51°C (-60°F) also makes Duratherm S ideally suited for low temperature applications, batch processing application requiring a single fluid for both heating and cooling.

## THE DIFFERENCE

- Superior oxidation resistance (virtually unaffected)
- Non-fouling - extremely long life
- Low odor
- Non corrosive
- Non hazardous

- Non Toxic
- Extremely high working temperature 315°C (600°F)
- Extremely low working temperature -51°C (-60°F)

## LASTS LONGER

Duratherm S is a high performance, extremely stable, long lasting silicone based heat transfer fluid.

Virtually unaffected by oxidation under 204°C (400°F), Duratherm S is perfect for use in a variety of applications requiring a safe, non-reportable, non-toxic and non-corrosive heat transfer fluid.

[www.durathermfluids.it](http://www.durathermfluids.it)

# DURATHERM S

- Maximum temperature: 315°C / 600°F
- Flash point 323°C / 615°F
- Highest Duratherm flash point
- Silicone-based fluid
- Great oxidation stability for open baths
- Non-toxic/non-hazardous
- Includes free fluid analysis and tech support



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## TEMPERATURE RATINGS

|                                    |       |       |
|------------------------------------|-------|-------|
| Maximum Bulk Temp. (Closed System) | 315°C | 600°F |
| Maximum Bulk Temp. (Open System)   | 204°C | 400°F |
| Maximum Film Temp.                 | 365°C | 690°F |
| Pour Point ASTM D97                | -66°C | -87°F |

## SAFETY DATA

|                            |       |       |
|----------------------------|-------|-------|
| Flash Point ASTM D92       | 323°C | 615°F |
| Fire Point ASTM D92        | 335°C | 636°F |
| Autoignition ASTM E-659-78 | 436°C | 818°F |

## THERMAL PROPERTIES

|                               |            |             |
|-------------------------------|------------|-------------|
| Thermal Expansion Coefficient | 0.105 %/°C | 0.0584 %/°F |
| Thermal Conductivity          | W/m K      | BTU/hr F ft |
| -17°C / 0°F                   | 0.142      | 0.082       |
| 38°C / 100°F                  | 0.134      | 0.077       |
| 148°C / 300°F                 | 0.118      | 0.068       |
| 260°C / 500°F                 | 0.101      | 0.058       |
| 316°C / 600°F                 | 0.093      | 0.054       |
| Heat Capacity                 | kJ/kg K    | BTU/lb F    |
| -17°C / 0°F                   | 1.611      | 0.385       |
| 38°C / 100°F                  | 1.714      | 0.410       |
| 148°C / 300°F                 | 1.921      | 0.461       |
| 260°C / 500°F                 | 2.137      | 0.512       |
| 316°C / 600°F                 | 2.246      | 0.537       |

## PHYSICAL PROPERTIES

|                                              |        |                |
|----------------------------------------------|--------|----------------|
| Appearance: clear liquid, slight yellow tint |        |                |
| Viscosity ASTM D445                          |        |                |
| cSt at -51°C / -60°F                         | 299.88 |                |
| cSt at -18°C / 0°F                           | 113.08 |                |
| cSt at 40°C / 104°F                          | 36.13  |                |
| cSt at 149°C / 300°F                         | 10.57  |                |
| cSt at 260°C / 500°F                         | 5.19   |                |
| cSt at 316°C / 600°F                         | 4.03   |                |
| Density ASTM D1298                           | kg/m3  | lb/ft3         |
| 38°C / 100°F                                 | 0.9486 | 59.23          |
| 260°C / 500°F                                | 0.7668 | 47.88          |
| 316°C / 600°F                                | 0.7209 | 45.01          |
| Vapor Pressure ASTM D2879                    | kPa    | psi            |
| 38°C / 100°F                                 | 0.00   | 0.00           |
| 260°C / 500°F                                | 1.83   | 0.26           |
| 316°C / 600°F                                | 7.21   | 0.99           |
| Distillation Range ASTM D2887                | 10%    | 494°C (922°F)  |
|                                              | 90%    | 679°C (1255°F) |

The values quoted are typical of normal production. They do not constitute a specification.

| TEMPERATURE<br>(Celsius) | DENSITY<br>(kg/l) | KINEMATIC VISCOSITY<br>(Centistoke) | DYNAMIC VISCOSITY<br>(Centipoise) | THERMAL CONDUCTIVITY<br>(W/m-K) | HEAT CAPACITY<br>(kJ/kg-K) | VAPOR PRESSURE<br>(kPa) |
|--------------------------|-------------------|-------------------------------------|-----------------------------------|---------------------------------|----------------------------|-------------------------|
| -50                      | 1.0290            | 288.71                              | 283.33                            | 0.147                           | 1.551                      | 0.00                    |
| -40                      | 1.0200            | 209.03                              | 204.58                            | 0.145                           | 1.569                      | 0.00                    |
| -30                      | 1.0110            | 156.02                              | 152.30                            | 0.144                           | 1.587                      | 0.00                    |
| -20                      | 1.0020            | 119.58                              | 116.41                            | 0.142                           | 1.606                      | 0.00                    |
| -10                      | 0.9920            | 93.79                               | 91.06                             | 0.141                           | 1.624                      | 0.00                    |
| 0                        | 0.9820            | 75.07                               | 72.68                             | 0.139                           | 1.643                      | 0.00                    |
| 10                       | 0.9730            | 61.17                               | 59.06                             | 0.138                           | 1.662                      | 0.00                    |
| 20                       | 0.9640            | 50.63                               | 48.75                             | 0.136                           | 1.680                      | 0.00                    |
| 30                       | 0.9556            | 42.50                               | 40.81                             | 0.135                           | 1.699                      | 0.00                    |
| 40                       | 0.9468            | 36.13                               | 34.60                             | 0.133                           | 1.718                      | 0.00                    |
| 50                       | 0.9380            | 31.06                               | 29.66                             | 0.132                           | 1.736                      | 0.00                    |
| 60                       | 0.9298            | 26.97                               | 25.68                             | 0.130                           | 1.755                      | 0.00                    |
| 70                       | 0.9216            | 23.63                               | 22.45                             | 0.129                           | 1.774                      | 0.00                    |
| 80                       | 0.9134            | 20.88                               | 19.78                             | 0.127                           | 1.793                      | 0.00                    |
| 90                       | 0.9052            | 18.59                               | 17.55                             | 0.126                           | 1.811                      | 0.00                    |
| 100                      | 0.8970            | 16.66                               | 15.69                             | 0.124                           | 1.830                      | 0.00                    |
| 110                      | 0.8890            | 15.02                               | 14.11                             | 0.123                           | 1.849                      | 0.00                    |
| 120                      | 0.8810            | 13.63                               | 12.76                             | 0.121                           | 1.868                      | 0.00                    |
| 130                      | 0.8730            | 12.42                               | 11.60                             | 0.120                           | 1.887                      | 0.01                    |
| 140                      | 0.8650            | 11.38                               | 10.60                             | 0.119                           | 1.906                      | 0.01                    |
| 150                      | 0.8570            | 10.47                               | 9.72                              | 0.117                           | 1.925                      | 0.01                    |
| 160                      | 0.8488            | 9.67                                | 8.96                              | 0.116                           | 1.944                      | 0.02                    |
| 170                      | 0.8406            | 8.97                                | 8.28                              | 0.114                           | 1.963                      | 0.03                    |
| 180                      | 0.8324            | 8.35                                | 7.68                              | 0.113                           | 1.982                      | 0.05                    |
| 190                      | 0.8242            | 7.79                                | 7.15                              | 0.111                           | 2.002                      | 0.07                    |
| 200                      | 0.8160            | 7.30                                | 6.68                              | 0.110                           | 2.021                      | 0.12                    |
| 210                      | 0.8078            | 6.85                                | 6.25                              | 0.108                           | 2.040                      | 0.19                    |
| 220                      | 0.7996            | 6.45                                | 5.87                              | 0.107                           | 2.059                      | 0.30                    |
| 230                      | 0.7914            | 6.09                                | 5.53                              | 0.105                           | 2.079                      | 0.48                    |
| 240                      | 0.7832            | 5.76                                | 5.21                              | 0.104                           | 2.098                      | 0.77                    |
| 250                      | 0.7750            | 5.46                                | 4.93                              | 0.102                           | 2.117                      | 1.22                    |
| 260                      | 0.7668            | 5.19                                | 4.67                              | 0.101                           | 2.137                      | 1.82                    |
| 270                      | 0.7586            | 4.94                                | 4.43                              | 0.099                           | 2.156                      | 2.40                    |
| 280                      | 0.7504            | 4.71                                | 4.21                              | 0.098                           | 2.175                      | 2.98                    |
| 290                      | 0.7422            | 4.50                                | 4.01                              | 0.097                           | 2.195                      | 3.72                    |
| 300                      | 0.7340            | 4.30                                | 3.82                              | 0.095                           | 2.214                      | 4.62                    |
| 310                      | 0.7258            | 4.12                                | 3.65                              | 0.094                           | 2.234                      | 5.94                    |
| 315                      | 0.7217            | 4.04                                | 3.57                              | 0.093                           | 2.244                      | 6.85                    |

The values quoted are typical of normal production. They do not constitute a specification.

| TEMPERATURE<br>(Fahrenheit) | DENSITY<br>(lb/ft <sup>3</sup> ) | KINEMATIC VISCOSITY<br>(Centistoke) | DYNAMIC VISCOSITY<br>(Centipoise) | THERMAL CONDUCTIVITY<br>(BTU/hr-F-ft) | HEAT CAPACITY<br>(BTU/lb-F) | VAPOR PRESSURE<br>(Psia) |
|-----------------------------|----------------------------------|-------------------------------------|-----------------------------------|---------------------------------------|-----------------------------|--------------------------|
| -60                         | 64.34                            | 299.88                              | 294.57                            | 0.085                                 | 0.370                       | 0.00                     |
| -40                         | 63.69                            | 209.03                              | 204.71                            | 0.084                                 | 0.375                       | 0.00                     |
| -20                         | 63.04                            | 151.29                              | 147.72                            | 0.083                                 | 0.380                       | 0.00                     |
| 0                           | 62.38                            | 113.08                              | 110.08                            | 0.082                                 | 0.385                       | 0.00                     |
| 20                          | 61.73                            | 86.90                               | 84.34                             | 0.081                                 | 0.390                       | 0.00                     |
| 40                          | 61.08                            | 68.40                               | 66.18                             | 0.080                                 | 0.395                       | 0.00                     |
| 60                          | 60.45                            | 54.97                               | 53.02                             | 0.079                                 | 0.400                       | 0.00                     |
| 80                          | 59.84                            | 44.99                               | 43.27                             | 0.078                                 | 0.405                       | 0.00                     |
| 100                         | 59.23                            | 37.42                               | 35.88                             | 0.077                                 | 0.410                       | 0.00                     |
| 120                         | 58.65                            | 31.57                               | 30.17                             | 0.076                                 | 0.415                       | 0.00                     |
| 140                         | 58.06                            | 26.97                               | 25.70                             | 0.075                                 | 0.421                       | 0.00                     |
| 160                         | 57.49                            | 23.30                               | 22.14                             | 0.074                                 | 0.426                       | 0.00                     |
| 180                         | 56.93                            | 20.34                               | 19.26                             | 0.073                                 | 0.431                       | 0.00                     |
| 200                         | 56.36                            | 17.91                               | 16.91                             | 0.072                                 | 0.436                       | 0.00                     |
| 220                         | 55.79                            | 15.90                               | 14.96                             | 0.072                                 | 0.441                       | 0.00                     |
| 240                         | 55.23                            | 14.22                               | 13.34                             | 0.071                                 | 0.446                       | 0.00                     |
| 260                         | 54.67                            | 12.80                               | 11.98                             | 0.070                                 | 0.451                       | 0.00                     |
| 280                         | 54.12                            | 11.60                               | 10.81                             | 0.069                                 | 0.456                       | 0.00                     |
| 300                         | 53.56                            | 10.57                               | 9.82                              | 0.068                                 | 0.461                       | 0.00                     |
| 320                         | 53.00                            | 9.67                                | 8.96                              | 0.067                                 | 0.466                       | 0.00                     |
| 340                         | 52.44                            | 8.90                                | 8.22                              | 0.066                                 | 0.471                       | 0.00                     |
| 360                         | 51.87                            | 8.22                                | 7.57                              | 0.065                                 | 0.476                       | 0.01                     |
| 380                         | 51.31                            | 7.62                                | 6.99                              | 0.064                                 | 0.481                       | 0.01                     |
| 400                         | 50.74                            | 7.09                                | 6.49                              | 0.063                                 | 0.486                       | 0.02                     |
| 420                         | 50.16                            | 6.63                                | 6.04                              | 0.062                                 | 0.491                       | 0.04                     |
| 440                         | 49.59                            | 6.21                                | 5.64                              | 0.061                                 | 0.496                       | 0.06                     |
| 460                         | 49.02                            | 5.83                                | 5.28                              | 0.060                                 | 0.501                       | 0.10                     |
| 480                         | 48.45                            | 5.49                                | 4.96                              | 0.059                                 | 0.506                       | 0.17                     |
| 500                         | 47.88                            | 5.19                                | 4.67                              | 0.058                                 | 0.512                       | 0.26                     |
| 520                         | 47.30                            | 4.91                                | 4.41                              | 0.057                                 | 0.517                       | 0.35                     |
| 540                         | 46.73                            | 4.66                                | 4.17                              | 0.056                                 | 0.522                       | 0.46                     |
| 560                         | 46.16                            | 4.43                                | 3.95                              | 0.056                                 | 0.527                       | 0.58                     |
| 580                         | 45.60                            | 4.22                                | 3.75                              | 0.055                                 | 0.532                       | 0.74                     |
| 600                         | 45.01                            | 4.03                                | 3.57                              | 0.054                                 | 0.537                       | 0.99                     |

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