



# DURATHERM FG

Rated for use up to 327°C (620°F) it's engineered and manufactured to comply with the demands of food grade applications ranging from food processing and packaging to pharmaceutical and more.

## APPLICATION

Duratherm FG is rated for use up to 327°C (620°F) and is amongst the highest temperature rated food grade fluids available. It is ideal for the oxidation rich environments often found in food processing and food packaging operations.

Duratherm FG meets USDA requirements for incidental food contact (H1) and meets the requirements of 21CFR1783570 and is NSF registered.

## THE DIFFERENCE

Our exclusive additive package, including a proprietary dual stage anti-oxidant, ensures long trouble free operation. Duratherm FG also incorporates metal deactivators, a seal and gasket extender, defoaming and particle suspension agents.

## LASTS LONGER

In the heat transfer fluid industry cost is always a concern, however fluid longevity and resistance to harmful fouling are of equal importance.

Air contact is normally detrimental to a fluid. Oxidation can cripple your system and if left unchecked will ultimately cause catastrophic failure. Unscheduled downtime due to oil failure has a high cost and negative effect on production.

The Duratherm product line was developed with this in mind. Most other fluids fall short in their protection from oxidation and can quickly foul a system. Duratherm FG is engineered to give unsurpassed levels of protection and service life.

## ENVIRONMENTAL

Duratherm FG is environmentally friendly, non-toxic, non-hazardous and non-reportable. Worker health and safety is of great concern, Duratherm FG poses no ill effect to worker safety. After its long service life it can easily be disposed of with other waste oils.

## SYSTEM CLEANING

If your existing fluid has let you down and left you with a system full of sludge or carbon, we've developed a full line of heat transfer system cleaners to get your system back to like-new condition. Contact us for complete details.

1 800 446 4910

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

# DURATHERM FG

- Maximum temperature: 327°C / 620°F
- Flash point 440°F / 227°C
- NFS HT1 rated food grade
- Rated for use to 327°C (620°F)
- Non-toxic/non-hazardous
- Includes free fluid analysis and tech support



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## TEMPERATURE RATINGS

|                        |       |       |
|------------------------|-------|-------|
| Maximum Bulk/Use Temp. | 327°C | 620°F |
| Maximum Film Temp.     | 354°C | 670°F |
| Pour Point ASTM D97    | -17°C | 1°F   |

## SAFETY DATA

|                            |       |       |
|----------------------------|-------|-------|
| Flash Point ASTM D92       | 227°C | 440°F |
| Fire Point ASTM D92        | 241°C | 466°F |
| Autoignition ASTM E-659-78 | 361°C | 682°F |

## THERMAL PROPERTIES

|                               |             |             |
|-------------------------------|-------------|-------------|
| Thermal Expansion Coefficient | 0.1016 %/°C | 0.0564 %/°F |
| Thermal Conductivity          | W/m K       | BTU/hr F ft |
| 38°C / 100°F                  | 0.143       | 0.083       |
| 260°C / 500°F                 | 0.130       | 0.075       |
| 316°C / 600°F                 | 0.127       | 0.074       |
| Heat Capacity                 | kJ/kg K     | BTU/lb F    |
| 38°C / 100°F                  | 1.972       | 0.470       |
| 260°C / 500°F                 | 2.699       | 0.644       |
| 316°C / 600°F                 | 2.878       | 0.688       |

## PHYSICAL PROPERTIES

|  |                   |                    |
|--|-------------------|--------------------|
| Appearance: colorless, clear and bright liquid |                   |                    |
| Viscosity ASTM D445                            |                   |                    |
| cSt at 40°C / 104°F                            | 40.29             |                    |
| cSt at 100°C / 212°F                           | 6.50              |                    |
| cSt at 316°C / 600°F                           | 0.76              |                    |
| Density ASTM D1298                             | kg/m <sup>3</sup> | lb/ft <sup>3</sup> |
| 38°C / 100°F                                   | 844.56            | 52.73              |
| 260°C / 500°F                                  | 695.18            | 43.40              |
| 316°C / 600°F                                  | 657.50            | 41.07              |
| Vapor Pressure ASTM D2879                      | kPa               | psi                |
| 38°C / 100°F                                   | 0.00              | 0.00               |
| 260°C / 500°F                                  | 2.41              | 0.35               |
| 316°C / 600°F                                  | 10.33             | 1.48               |
| Distillation Range ASTM D2887                  | 10%               | 383°C (721°F)      |
|  | 90%               | 494°C (921°F)      |
| Average Molecular Weight                       | 395               |                    |

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

| TEMPERATURE<br>(Celsius) | DENSITY<br>(kg/m <sup>3</sup> ) | KINEMATIC VISCOSITY<br>(Centistoke) | DYNAMIC VISCOSITY<br>(Centipoise) | THERMAL CONDUCTIVITY<br>(W/m-K) | HEAT CAPACITY<br>(kJ/kg-K) | VAPOR PRESSURE<br>(kPa) |
|--------------------------|---------------------------------|-------------------------------------|-----------------------------------|---------------------------------|----------------------------|-------------------------|
| -5                       | 873.50                          | 661.34                              | 577.68                            | 0.146                           | 1.832                      | 0.00                    |
| 5                        | 866.77                          | 295.88                              | 256.46                            | 0.145                           | 1.862                      | 0.00                    |
| 15                       | 860.04                          | 149.49                              | 128.56                            | 0.145                           | 1.892                      | 0.00                    |
| 25                       | 853.31                          | 83.40                               | 71.16                             | 0.144                           | 1.933                      | 0.00                    |
| 35                       | 846.58                          | 50.47                               | 42.73                             | 0.144                           | 1.963                      | 0.00                    |
| 45                       | 839.85                          | 32.66                               | 27.43                             | 0.143                           | 1.993                      | 0.00                    |
| 55                       | 833.12                          | 22.34                               | 18.61                             | 0.142                           | 2.023                      | 0.00                    |
| 65                       | 826.39                          | 16.00                               | 13.22                             | 0.142                           | 2.063                      | 0.00                    |
| 75                       | 819.67                          | 11.91                               | 9.76                              | 0.141                           | 2.093                      | 0.00                    |
| 85                       | 812.94                          | 9.16                                | 7.45                              | 0.141                           | 2.123                      | 0.00                    |
| 95                       | 806.21                          | 7.24                                | 5.84                              | 0.140                           | 2.153                      | 0.00                    |
| 105                      | 799.48                          | 5.86                                | 4.69                              | 0.139                           | 2.193                      | 0.00                    |
| 115                      | 792.75                          | 4.84                                | 3.84                              | 0.139                           | 2.223                      | 0.01                    |
| 125                      | 786.02                          | 4.07                                | 3.20                              | 0.138                           | 2.253                      | 0.01                    |
| 135                      | 779.29                          | 3.47                                | 2.71                              | 0.138                           | 2.283                      | 0.02                    |
| 145                      | 772.56                          | 3.00                                | 2.32                              | 0.137                           | 2.323                      | 0.04                    |
| 155                      | 765.83                          | 2.63                                | 2.01                              | 0.136                           | 2.353                      | 0.05                    |
| 165                      | 759.11                          | 2.32                                | 1.76                              | 0.136                           | 2.383                      | 0.08                    |
| 175                      | 752.38                          | 2.07                                | 1.56                              | 0.135                           | 2.423                      | 0.13                    |
| 185                      | 745.65                          | 1.87                                | 1.39                              | 0.135                           | 2.453                      | 0.19                    |
| 195                      | 738.92                          | 1.69                                | 1.25                              | 0.134                           | 2.483                      | 0.28                    |
| 205                      | 732.19                          | 1.54                                | 1.13                              | 0.134                           | 2.513                      | 0.41                    |
| 215                      | 725.46                          | 1.42                                | 1.03                              | 0.133                           | 2.553                      | 0.58                    |
| 225                      | 718.73                          | 1.31                                | 0.94                              | 0.132                           | 2.583                      | 0.81                    |
| 235                      | 712.00                          | 1.21                                | 0.86                              | 0.132                           | 2.613                      | 1.13                    |
| 245                      | 705.28                          | 1.13                                | 0.80                              | 0.131                           | 2.643                      | 1.53                    |
| 255                      | 698.55                          | 1.06                                | 0.74                              | 0.131                           | 2.684                      | 2.07                    |
| 265                      | 691.82                          | 0.99                                | 0.69                              | 0.130                           | 2.714                      | 2.76                    |
| 275                      | 685.09                          | 0.94                                | 0.64                              | 0.130                           | 2.744                      | 3.64                    |
| 285                      | 678.36                          | 0.89                                | 0.60                              | 0.129                           | 2.784                      | 4.76                    |
| 295                      | 671.63                          | 0.84                                | 0.57                              | 0.129                           | 2.814                      | 6.16                    |
| 305                      | 664.90                          | 0.80                                | 0.53                              | 0.128                           | 2.844                      | 7.91                    |
| 315                      | 658.17                          | 0.77                                | 0.50                              | 0.127                           | 2.874                      | 10.07                   |
| 325                      | 651.45                          | 0.73                                | 0.48                              | 0.127                           | 2.914                      | 12.71                   |
| 327                      | 648.08                          | 0.72                                | 0.47                              | 0.127                           | 2.929                      | 14.31                   |

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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) |
|-----------------------------|----------------------------------|-------------------------------------|-----------------------------------|---------------------------------------|-----------------------------|--------------------------|
| 15                          | 54.72                            | 990.22                              | 868.44                            | 0.084                                 | 0.433                       | 0.00                     |
| 25                          | 54.48                            | 600.69                              | 524.57                            | 0.084                                 | 0.438                       | 0.00                     |
| 35                          | 54.25                            | 381.18                              | 331.45                            | 0.084                                 | 0.442                       | 0.00                     |
| 45                          | 54.02                            | 251.79                              | 218.00                            | 0.084                                 | 0.446                       | 0.00                     |
| 55                          | 53.78                            | 172.37                              | 148.59                            | 0.084                                 | 0.451                       | 0.00                     |
| 65                          | 53.55                            | 121.83                              | 104.57                            | 0.084                                 | 0.455                       | 0.00                     |
| 75                          | 53.32                            | 88.60                               | 75.72                             | 0.083                                 | 0.459                       | 0.00                     |
| 85                          | 53.08                            | 66.11                               | 56.25                             | 0.083                                 | 0.464                       | 0.00                     |
| 95                          | 52.85                            | 50.47                               | 42.75                             | 0.083                                 | 0.468                       | 0.00                     |
| 105                         | 52.62                            | 39.33                               | 33.17                             | 0.083                                 | 0.473                       | 0.00                     |
| 115                         | 52.38                            | 31.23                               | 26.22                             | 0.083                                 | 0.477                       | 0.00                     |
| 125                         | 52.15                            | 25.21                               | 21.07                             | 0.082                                 | 0.481                       | 0.00                     |
| 135                         | 51.92                            | 20.66                               | 17.19                             | 0.082                                 | 0.486                       | 0.00                     |
| 145                         | 51.68                            | 17.17                               | 14.22                             | 0.082                                 | 0.490                       | 0.00                     |
| 155                         | 51.45                            | 14.44                               | 11.91                             | 0.082                                 | 0.494                       | 0.00                     |
| 165                         | 51.22                            | 12.29                               | 10.09                             | 0.082                                 | 0.499                       | 0.00                     |
| 175                         | 50.98                            | 10.56                               | 8.63                              | 0.081                                 | 0.503                       | 0.00                     |
| 185                         | 50.75                            | 9.16                                | 7.45                              | 0.081                                 | 0.507                       | 0.00                     |
| 195                         | 50.52                            | 8.02                                | 6.49                              | 0.081                                 | 0.512                       | 0.00                     |
| 205                         | 50.28                            | 7.07                                | 5.70                              | 0.081                                 | 0.516                       | 0.00                     |
| 215                         | 50.05                            | 6.28                                | 5.04                              | 0.081                                 | 0.520                       | 0.00                     |
| 225                         | 49.82                            | 5.61                                | 4.48                              | 0.081                                 | 0.525                       | 0.00                     |
| 235                         | 49.58                            | 5.05                                | 4.01                              | 0.080                                 | 0.529                       | 0.00                     |
| 245                         | 49.35                            | 4.56                                | 3.61                              | 0.080                                 | 0.533                       | 0.00                     |
| 255                         | 49.12                            | 4.15                                | 3.27                              | 0.080                                 | 0.538                       | 0.00                     |
| 265                         | 48.88                            | 3.79                                | 2.97                              | 0.080                                 | 0.542                       | 0.00                     |
| 275                         | 48.65                            | 3.47                                | 2.71                              | 0.080                                 | 0.546                       | 0.00                     |
| 285                         | 48.42                            | 3.20                                | 2.48                              | 0.079                                 | 0.551                       | 0.00                     |
| 295                         | 48.18                            | 2.96                                | 2.29                              | 0.079                                 | 0.555                       | 0.01                     |
| 305                         | 47.95                            | 2.75                                | 2.11                              | 0.079                                 | 0.559                       | 0.01                     |
| 315                         | 47.72                            | 2.56                                | 1.95                              | 0.079                                 | 0.564                       | 0.01                     |
| 325                         | 47.48                            | 2.39                                | 1.82                              | 0.079                                 | 0.568                       | 0.01                     |
| 335                         | 47.25                            | 2.24                                | 1.69                              | 0.079                                 | 0.572                       | 0.02                     |
| 345                         | 47.02                            | 2.10                                | 1.58                              | 0.078                                 | 0.577                       | 0.02                     |
| 355                         | 46.78                            | 1.98                                | 1.48                              | 0.078                                 | 0.581                       | 0.02                     |
| 365                         | 46.55                            | 1.87                                | 1.39                              | 0.078                                 | 0.586                       | 0.03                     |
| 375                         | 46.32                            | 1.76                                | 1.31                              | 0.078                                 | 0.590                       | 0.04                     |
| 385                         | 46.08                            | 1.67                                | 1.24                              | 0.078                                 | 0.594                       | 0.04                     |
| 395                         | 45.85                            | 1.59                                | 1.17                              | 0.077                                 | 0.599                       | 0.05                     |
| 405                         | 45.62                            | 1.51                                | 1.11                              | 0.077                                 | 0.603                       | 0.06                     |
| 415                         | 45.38                            | 1.44                                | 1.05                              | 0.077                                 | 0.607                       | 0.08                     |
| 425                         | 45.15                            | 1.38                                | 1.00                              | 0.077                                 | 0.612                       | 0.09                     |
| 435                         | 44.92                            | 1.32                                | 0.95                              | 0.077                                 | 0.616                       | 0.12                     |
| 445                         | 44.68                            | 1.26                                | 0.91                              | 0.076                                 | 0.620                       | 0.14                     |
| 455                         | 44.45                            | 1.21                                | 0.86                              | 0.076                                 | 0.625                       | 0.16                     |
| 465                         | 44.22                            | 1.17                                | 0.83                              | 0.076                                 | 0.629                       | 0.20                     |
| 475                         | 43.98                            | 1.12                                | 0.79                              | 0.076                                 | 0.633                       | 0.23                     |
| 485                         | 43.75                            | 1.08                                | 0.76                              | 0.076                                 | 0.638                       | 0.27                     |
| 495                         | 43.52                            | 1.04                                | 0.73                              | 0.076                                 | 0.642                       | 0.32                     |
| 505                         | 43.28                            | 1.01                                | 0.70                              | 0.075                                 | 0.646                       | 0.38                     |
| 515                         | 43.05                            | 0.98                                | 0.67                              | 0.075                                 | 0.651                       | 0.44                     |
| 525                         | 42.82                            | 0.94                                | 0.65                              | 0.075                                 | 0.655                       | 0.51                     |
| 535                         | 42.58                            | 0.92                                | 0.62                              | 0.075                                 | 0.659                       | 0.60                     |
| 545                         | 42.35                            | 0.89                                | 0.60                              | 0.075                                 | 0.664                       | 0.69                     |
| 555                         | 42.12                            | 0.86                                | 0.58                              | 0.074                                 | 0.668                       | 0.80                     |
| 565                         | 41.88                            | 0.84                                | 0.56                              | 0.074                                 | 0.672                       | 0.92                     |
| 575                         | 41.65                            | 0.82                                | 0.54                              | 0.074                                 | 0.677                       | 1.05                     |
| 585                         | 41.42                            | 0.79                                | 0.53                              | 0.074                                 | 0.681                       | 1.21                     |
| 595                         | 41.18                            | 0.77                                | 0.51                              | 0.074                                 | 0.685                       | 1.39                     |
| 605                         | 40.95                            | 0.76                                | 0.50                              | 0.074                                 | 0.690                       | 1.58                     |
| 615                         | 40.72                            | 0.74                                | 0.48                              | 0.073                                 | 0.694                       | 1.79                     |
| 620                         | 40.60                            | 0.73                                | 0.47                              | 0.073                                 | 0.696                       | 1.91                     |

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