

DuPont™ Krytox®

performance lubricants

Typical Properties of Krytox® General-Purpose Oils and Greases¹

| GPL Oil Grades | 100 | 101 | 102 | 103 | 104 | 105 | 106 | 107 |
|---|-------------------------|----------|---------|---------|---------|---------|---------|---------|
| GPL Standard Grease Grades | 200 | 201 | 202 | 203 | 204 | 205 | 206 | 207 |
| GPL Extreme Pressure Grease Grades | 210 | 211 | 212 | — | 214 | 215 | 216 | 217 |
| GPL Anticorrosion Grease Grades | 220 | 221 | 222 | 223 | 224 | 225 | 226 | 227 |
| ISO Grade of Oil ² | 5 | 7 | 15 | 32 | 68 | 150 | 220 | 460 |
| Estimated Useful Range ³ | | | | | | | | |
| °C | <-70-66 | <-70-104 | -63-132 | -60-154 | -51-179 | -36-204 | -36-260 | -30-288 |
| °F | <-94-150 | <-94-220 | -81-270 | -76-310 | -60-355 | -33-400 | -33-500 | -22-550 |
| Oil Viscosity, cSt | ASTM D445 | | | | | | | |
| 20°C (68°F) | 7 | 16 | 36 | 80 | 180 | 550 | 810 | 1600 |
| 40°C (104°F) | 4 | 8 | 15 | 30 | 60 | 160 | 240 | 440 |
| 100°C (212°F) | — | 2 | 3 | 5 | 9 | 18 | 25 | 42 |
| 204°C (400°F) | — | — | — | — | — | 3 | 3.9 | 6 |
| 260°C (500°F) | — | — | — | — | — | — | 2.1 | 3 |
| Oil Viscosity Index | ASTM D2270 | — | — | 29 | 92 | 124 | 134 | 144 |
| Oil Pour Point | ASTM D97 | | | | | | | |
| °C | <-70 | <-70 | -63 | -60 | -51 | -36 | -36 | -30 |
| °F | <-94 | <-94 | -81 | -76 | -60 | -33 | -33 | -22 |
| Oil Density, g/mL | | | | | | | | |
| 0°C (32°F) | 1.87 | 1.89 | 1.91 | 1.92 | 1.93 | 1.94 | 1.95 | 1.95 |
| 100°C (212°F) | 1.67 | 1.70 | 1.72 | 1.74 | 1.75 | 1.76 | 1.77 | 1.78 |
| Maximum Oil Volatility, % in 22 hr | ASTM D972 (Modified) | | | | | | | |
| 66°C (150°F) | 11 | 2 | 2 | 1 | 1 | 1 | <1 | — |
| 121°C (250°F) | 87 | 35 | 20 | 7 | 3 | 2 | 1 | — |
| 204°C (400°F) | — | — | — | — | — | 10 | <5 | <1 |
| Oil Separation from Grease, FTMS 791B 321.1 | | | | | | | | |
| wt loss, %/30 hr | | | | | | | | |
| 99°C (210°F) | 18 | 9 | 7 | 5 | 4 | 4 | 3 | 3 |
| 204°C (400°F) | — | — | — | — | — | — | 11 | 10 |
| Oil, 4-Ball Wear Test, (20 kg/107°C [225°F])/ 1200 rpm/60 min | ASTM D4172 | | | | | | | |
| Wear Scar, mm (+0.01) ⁴ | 0.4 | 0.4 | 0.4 | 0.3 | 0.4 | 0.3 | 0.3 | 0.4 |
| Friction Coefficient (+0.003) ⁴ | 0.08 | 0.07 | 0.07 | 0.08 | 0.07 | 0.07 | 0.08 | 0.08 |
| Oil, Falex Pin/ V-Block Load Carrying | ASTM D3233 | | | | | | | |
| Ability, Max. Load, lb (gauge) | 1375 | 1400 | 1250 | 1555 | 1450 | >4500 | >4500 | >4500 |
| Torque at Max. Load, in-lb | 30 | 31 | 32 | 35 | 32 | 56 | 65 | 65 |

¹ This table gives typical properties (not specifications) based on historical production performance. Viscosity may vary within ±10%. DuPont does not make any express or implied warranty that these products will continue to have these typical properties.

² Approximate

³ Based on pour point and where evaporation is approximately 10%

⁴ Average standard deviation

Krytox® GPL 100–107 oils are clear, colorless, fluorinated synthetic oils that are nonreactive, nonflammable, safe in chemical and oxygen service, and are long-lasting. Krytox® is a perfluoropolyether (PFPE)—also called perfluoro-alkylether (PFAE) or perfluoropolyalkylether (PFPAE)—with the following chemical structure:



The polymer chain is completely saturated and contains only carbon, oxygen, and fluorine. On a weight basis, a typical Krytox® oil contains 21.6% carbon, 9.4% oxygen, and 69.0% fluorine.

All standard grades of grease are thickened with Krytox® 2000 polytetrafluoroethylene (PTFE), whose formula is $(\text{CF}_2-\text{CF}_2)_n$. This special high efficiency thickener has a melting point of 325°C (617°F) and has low molecular weight and sub-micron (0.2 μm) particle size for higher performance in bearings.

Krytox® GPL 200–207 greases are white buttery greases with all of the same properties as the GPL 100–107 oils that they are made from, but they are in grease form.

Krytox® GPL 210–217 EP greases are black greases that contain 5% molybdenum disulfide added as an extreme pressure additive for highly loaded gears and bearings.

Krytox® GPL 220–227 anticorrosion greases are white greases that contain 2% sodium nitrite. These grades provide rust protection at ambient temperatures, corrosion protection at high temperatures, and antiwear protection.

The grease additives may alter the chemical resistance of the grease.

The standard grease consistency is NLGI grade 2 penetration (265–295). Softer or harder NLGI penetration grades can be made by special order.

Special nonmelting silica thickeners are available for applications that are higher than the 325°C (617°F) melting point of the standard PTFE thickener.

For more information or technical assistance, call:
or visit us on the Web:

(800) 424-7502
<http://www.krytox.com>

Or call the Krytox® hotline in the **United States** at (800) 424-7502, E-mail: krytox@usa.dupont.com

Canada at 800-263-5924, E-mail: products@can.dupont.com

Europe, Mideast, and Africa at +32.3.543.1267, E-mail: lubricants@lux.dupont.com

Asia/Pacific—Including India at 886-2-2514-4434, E-mail: krytox.lubricants@twm.dupont.com

Mexico and Central America at 011-52-55-5722-1150, E-mail: ceac@mex.dupont.com

South America—All Countries at 55-11-4166-8601, E-mail: produtos.brasil@bra.dupont.com

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