

## Product Information

### Typical Properties of Krytox™ General-Purpose Oils and Greases<sup>1</sup>

|                                        |          |          |         |           |         |           |           |         |
|----------------------------------------|----------|----------|---------|-----------|---------|-----------|-----------|---------|
| Oil Grades                             | 100      | 101      | 102     | 103       | 104     | 105 (H-1) | 106       | 107     |
| GPL Standard Grease Grades             | 200      | 201      | 202     | 203 (H-1) | 204     | 205 (H-1) | 206 (H-1) | 207     |
| GPL Extreme Pressure Grease Grades     | 210      | 211      | 212     | —         | 214     | 215       | 216       | 217     |
| GPL Anti-Corrosion Grease Grades       | 220      | 221      | 222     | 223 (H-1) | 224     | 225 (H-1) | 226 (H-1) | 227     |
| ISO Grade of Oil <sup>2</sup>          | 5        | 7        | 15      | 32        | 68      | 150       | 220       | 460     |
| Estimated Useful Range <sup>3</sup>    |          |          |         |           |         |           |           |         |
| °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                     |          |          |         |           |         |           |           |         |
| 20 °C (68 °F)                          | 12.4     | 17.4     | 38      | 82        | 177     | 522       | 822       | 1535    |
| 40 °C (104 °F)                         | 5.5      | 7.8      | 15      | 30        | 60      | 160       | 243       | 450     |
| 100 °C (212 °F)                        | —        | 2        | 3       | 5         | 8.4     | 18        | 25        | 42      |
| 204 °C (400 °F)                        | —        | —        | —       | —         | —       | 3.1       | 4.1       | 6       |
| 260 °C (500 °F)                        | —        | —        | —       | —         | —       | —         | 2.4       | 3.3     |
| Oil Viscosity Index                    | —        | —        | 29      | 92        | 111     | 124       | 134       | 145     |
| Oil Pour Point                         |          |          |         |           |         |           |           |         |
| °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, ASTM D2595     |          |          |         |           |         |           |           |         |
| % in 22 hr                             |          |          |         |           |         |           |           |         |
| 121 °C (250 °F)                        | 90       | 75       | 35      | 7         | 3       | 1         | <1        | —       |
| 204 °C (400 °F)                        | —        | —        | —       | —         | —       | 7         | <3        | <1      |
| Oil Separation from Grease, ASTM D6184 |          |          |         |           |         |           |           |         |
| wt loss, % in 30 hr                    |          |          |         |           |         |           |           |         |
| 99 °C (210 °F)                         | 18       | 9        | 7       | 6         | 5       | 5         | 4         | 4       |
| 204 °C (400 °F)                        | —        | —        | —       | —         | —       | —         | 12        | 12      |

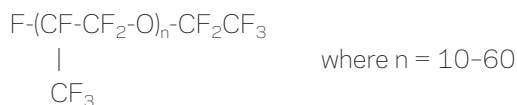
<sup>1</sup>This table gives typical properties (not specifications) based on historical production performance. Viscosity may vary within ±10%. Chemours does not make any express or implied warranty that these products will continue to have these typical properties.

<sup>2</sup>Approximate

<sup>3</sup>Based on pour point and where evaporation is approximately 10%.

H-1 incidental food contact approval has been given to products above that have (H-1) after the product name.

Krytox™ GPL 100–107 oils are clear, colorless, fluorinated synthetic oils that are non-reactive, nonflammable, safe in chemical and oxygen service, and are long-lasting. Krytox™ is a perfluoropolyether (PFPE)—also called perfluoroalkylether (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 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 Krytox™ 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 molybdenum disulfide added as an extreme pressure additive for highly loaded gears and bearings.

Krytox™ GPL 220–227 anti-corrosion greases are white greases that contain sodium nitrite. These grades provide rust protection at ambient temperatures, corrosion protection at high temperatures, and anti-wear 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 non-melting Krytox™ XHT grades are available for applications that are higher than the 325 °C (617 °F) melting point of the standard PTFE thickener.

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For product information, industry applications, technical assistance, or global distributor contacts, visit [krytox.com](http://krytox.com) or within the U.S. and Canada, call 1-844-773-CHEM/2436 or outside of the U.S., call 1-302-773-1000.

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Replaces: H-58510-7  
C-10296 (9/15)