

**Americas: COMMERCIAL** 

## LNP\* Lubricomp\* Compound DFL36P

Also known as: LUBRICOMP DFL-4036 EP BK8-115

**Product Reorder Name: DFL36P** 

LNP\* Lubricomp\* DFL36P is a compound based on Polycarbonate containing Glass Fiber and PTFE Lubricant. Characteristics of this grade is Exceptional Processing.

## **Property**

NECHANICAL   Value   Unit   Standard	TYPICAL PROPERTIES (1)			
Tensile Strain, yld, Type I, 5 mm/min  2.2 % ASTM D 638  Tensile Strain, brk, Type I, 5 mm/min  2.8 % ASTM D 638  Tensile Strain, brk, Type I, 5 mm/min  2.8 % ASTM D 638  Tensile Modulus, 50 mm/min  9770 MPa  ASTM D 638  Flexural Stress, brk, 1.3 mm/min, 50 mm span  176 MPa  ASTM D 790  Flexural Modulus, 1.3 mm/min, 50 mm span  8920 MPa  ASTM D 790  Tensile Stress, break, 5 mm/min  112 MPa  ISO 527  Tensile Stress, break, 5 mm/min  2.1 % ISO 527  Tensile Modulus, 1 mm/min  9520 MPa  ISO 527  Tensile Modulus, 1 mm/min  9520 MPa  ISO 527  Tensile Modulus, 2 mm/min  8830 MPa  ISO 178  Flexural Stress  172 MPa  ISO 178  Flexural Modulus, 2 mm/min  8830 MPa  ISO 178  IMPACT  Value  Unit  Standard  Lod Impact, unnotched, 23°C  132 J/m  ASTM D 4812  Lod Impact, notched, 23°C  13 ISO 6603  Instrumented Impact Total Energy, 23°C  17 J ASTM D 3763  Lod Impact, unnotched 80°10°4 +23°C  13 kJ/m²  ISO 180/1U  Lod Impact, notched 80°10°4 +23°C  13 kJ/m²  ISO 180/1U  Lod Impact, notched 80°10°4 +23°C  13 kJ/m²  ISO 180/1A  THERMAL  Value  Unit  Standard  HDT, 0.45 MPa, 3.2 mm, unannealed  137 °C  ASTM D 648  HDT, 1.82 MPa, 3.2 mm, unannealed  137 °C  ASTM D 648  HDT, 1.82 MPa, 3.2 mm, unannealed  133 °C  ASTM D 696  CTE, -30°C to 30°C, filow  6.46E+011  1/°C  ASTM D 696  CTE, -30°C to 30°C, filow  6.46E+011  1/°C  ASTM D 696  CTE, -30°C to 30°C, filow  6.46E+011  1/°C  ASTM D 696  CTE, -30°C to 30°C, filow  6.46E+011  1/°C  ASTM D 696  CTE, -30°C to 30°C, filow  6.46E+01  1.56 g/cm³  ASTM D 792  Moisture Absorption, 50% RH, 24 hrs  0.07 %  ASTM D 955  Mold Shrinkage, filow, 24 hrs (5)  0.2 - 0.4 %  ASTM D 970  MASTM D 3702 Modified  Static COF  ASTM D 3702 Modified  Static COF	MECHANICAL	Value	Unit	Standard
Tensile Strain, brk, Type I, 5 mm/min  2.8 % ASTM D 638 Tensile Modulus, 50 mm/min  9770 MPa ASTM D 638 Tensile Modulus, 50 mm/min  9770 MPa ASTM D 638 Tensile Modulus, 50 mm/min  176 MPa ASTM D 790 Flexural Modulus, 1.3 mm/min, 50 mm span  8920 MPa ASTM D 790 Tensile Stress, brk, 1.3 mm/min  112 MPa ISO 527 Tensile Strain, break, 5 mm/min  112 MPa ISO 527 Tensile Strain, break, 5 mm/min  9520 MPa ISO 527 Tensile Modulus, 1 mm/min  9520 MPa ISO 527 Flexural Stress  172 MPa ISO 527 Flexural Stress  172 MPa ISO 527 Flexural Modulus, 2 mm/min  8830 MPa ISO 178 Flexural Modulus, 2 mm/min  8830 MPa ISO 178 Flexural Modulus, 2 mm/min  12cd Impact, unnotched, 23°C  689 J/m ASTM D 4812 12cd Impact, unnotched, 23°C  689 J/m ASTM D 256 Multiaxial Impact  12cd Impact, 10thed, 23°C  132 J/m ASTM D 256 Multiaxial Impact  15 J ISO 6603 Instrumented Impact Total Energy, 23°C  17 J ASTM D 3763 12cd Impact, unnotched 80°10°4 +23°C  13 kJ/m² ISO 180/1U 12cd Impact, unnotched 80°10°4 +23°C  14 kJ/m² ISO 180/1U 12cd Impact, unnotched 80°10°4 +23°C  13 kJ/m² ISO 180/1U 12cd Impact, unnotched 80°10°4 +23°C  14 KJ/m² ISO 180/1U 12cd Impact, unnotched 80°10°4 +23°C  15 ASTM D 648  HDT, 0.45 MPa, 3.2 mm, unannealed  137 °C ASTM D 648  HDT, 0.45 MPa, 3.2 mm, unannealed  133 °C ASTM D 648  CTE, -30°C to 30°C, flow  3.02E+01 1/°C ASTM D 696  CTE, -30°C to 30°C, flow  6.46E+01 1/°C ASTM D 696  HDT/Bf, 0.45 MPa Flatw 80°10°4 sp=64mm  138 °C ISO 75/Bf HDT/Af, 1.8 MPa Flatw 80°10°4 sp=64mm  138 °C ISO 75/Bf HDT/Af, 1.8 MPa Flatw 80°10°4 sp=64mm  138 °C ISO 75/Bf HDT/Af, 1.8 MPa Flatw 80°10°4 sp=64mm  138 °C ISO 75/Bf HDT/Af, 1.8 MPa Flatw 80°10°4 sp=64mm  139 °C ISO 75/Bf HDT/Af, 1.8 MPa Flatw 80°10°4 sp=64mm  130 °C ISO 75/Bf HDT/Af, 1.8 MPa Flatw 80°10°4 sp=64mm  131 °C ASTM D 696  CTE, -30°C to 30°C, flow  ASTM D 595  Mold Shrinkage, flow, 24 hrs (5)  0.2 - 0.4 % ASTM D 595  Mold Shrinkage, flow, 24 hrs (5)  0.3 - 0.5 % ASTM D 3702 Modified  Note of Factor Ring  14 10°-10 in^5-min/ft-lb-hr  ASTM D 3702 Modified  Static COF	Tensile Stress, brk, Type I, 5 mm/min	113	MPa	ASTM D 638
Tensile Modulus, 50 mm/min 9770 MPa ASTM D 638 Flexural Stress, brk, 1.3 mm/min, 50 mm span 176 MPa ASTM D 790 Flexural Modulus, 1.3 mm/min, 50 mm span 8920 MPa ASTM D 790 Tensile Stress, break, 5 mm/min 1112 MPa ISO 527 Tensile Strain, break, 5 mm/min 2.1 % ISO 527 Tensile Modulus, 1 mm/min 9520 MPa ISO 527 Tensile Modulus, 1 mm/min 9520 MPa ISO 527 Tensile Modulus, 2 mm/min 8830 MPa ISO 527 Tensile Modulus, 2 mm/min 8830 MPa ISO 178 Flexural Modulus, 2 mm/min 8830 MPa ISO 178 Flexural Modulus, 2 mm/min 8830 MPa ISO 178 IMPACT Value Unit Standard Izod Impact, unnotched, 23°C 689 J/m ASTM D 4812 Izod Impact, notched, 23°C 132 J/m ASTM D 256 Multiaxial Impact 5 J ISO 6603 Instrumented Impact Total Energy, 23°C 17 J ASTM D 3763 Izod Impact, notched 80°10′4 +23°C 42 kJ/m² ISO 180/1U Izod Impact, notched 80°10′4 +23°C 13 kJ/m² ISO 180/1U Izod Impact, notched 80°10′4 +23°C 13 kJ/m² ISO 180/1A THERMAL Value Unit Standard HDT, 0.45 MPa, 3.2 mm, unannealed 137 °C ASTM D 648 HDT, 18.2 MPa, 3.2 mm, unannealed 133 °C ASTM D 648 HDT, 18.2 MPa, 3.2 mm, unannealed 133 °C ASTM D 648 CTE, -30°C to 30°C, flow 3.02E+01 1/°C ASTM D 696 CTE, -30°C to 30°C, flow 6.46E+01 1/°C ASTM D 696 CTE, -30°C to 30°C, flow 133 °C ISO 75/8f PHYSICAL Value Unit Standard Density 1.56 g/cm³ ASTM D 792 Moisture Absorption, 50% RH, 24 hrs (5) 0.2 - 0.4 % ASTM D 955 Mold Shrinkage, flow, 24 hrs (5) 0.2 - 0.4 % ASTM D 955 Mold Shrinkage, flow, 24 hrs (5) 0.2 - 0.4 % ASTM D 955 Mold Shrinkage, flow, 24 hrs (5) 0.2 - 0.4 % ASTM D 955 Mold Shrinkage, flow, 24 hrs (5) 0.47 - ASTM D 3702 Modified Static COF 0.62 - ASTM D 3702 Modified	Tensile Strain, yld, Type I, 5 mm/min	2.2	%	ASTM D 638
Flexural Stress, brk, 1.3 mm/min, 50 mm span   176	Tensile Strain, brk, Type I, 5 mm/min	2.8	%	ASTM D 638
Flexural Modulus, 1.3 mm/min, 50 mm span   8920	Tensile Modulus, 50 mm/min	9770	MPa	ASTM D 638
Tensile Stress, break, 5 mm/min 112 MPa ISO 527 Tensile Strain, break, 5 mm/min 2.1 % ISO 527 Tensile Modulus, 1 mm/min 9520 MPa ISO 527 Tensile Modulus, 1 mm/min 9520 MPa ISO 527 Tensile Modulus, 2 mm/min 9520 MPa ISO 527 Telexural Stress 172 MPa ISO 178 Flexural Modulus, 2 mm/min 8830 MPa ISO 178 IMPACT Value Unit Standard Izod Impact, unnotched, 23°C 689 J/m ASTM D 4812 Izod Impact, unnotched, 23°C 132 J/m ASTM D 256 Multiaxial Impact 5 J ISO 6603 Instrumented Impact Total Energy, 23°C 17 J ASTM D 3763 Izod Impact, unnotched 80°10°4 +23°C 42 kJ/m² ISO 180/1U Izod Impact, unnotched 80°10°4 +23°C 13 kJ/m² ISO 180/1U Izod Impact, unnotched 80°10°4 +23°C 13 kJ/m² ISO 180/1A THERMAL Value Unit Standard HDT, 0.45 MPa, 3.2 mm, unannealed 137 °C ASTM D 648 HDT, 1.82 MPa, 3.2 mm, unannealed 133 °C ASTM D 648 CTE, -30°C to 30°C, flow 3.02E+01 1/°C ASTM D 696 CTE, -30°C to 30°C, xflow 6.46E+01 1/°C ASTM D 696 CTE, -30°C to 30°C, xflow 6.46E+01 1/°C ASTM D 696 HDT/Bf, 0.45 MPa Flatw 80°10°4 sp=64mm 138 °C ISO 75/Bf HDT/Af, 1.8 MPa Flatw 80°10°4 sp=64mm 138 °C ISO 75/Bf HDT/Af, 1.8 MPa Flatw 80°10°4 sp=64mm 138 °C ISO 75/Bf HDT/Af, 1.8 MPa Flatw 80°10°4 sp=64mm 138 °C ISO 75/Bf HDT/Af, 1.8 MPa Flatw 80°10°4 sp=64mm 138 °C ISO 75/Bf HDT/Af, 1.8 MPa Flatw 80°10°4 sp=64mm 138 °C ISO 75/Bf HDT/Af, 1.8 MPa Flatw 80°10°4 sp=64mm 138 °C ISO 75/Bf HDT/Af, 1.8 MPa Flatw 80°10°4 sp=64mm 138 °C ISO 75/Bf HDT/Af, 1.8 MPa Flatw 80°10°4 sp=64mm 138 °C ISO 75/Bf HDT/Af, 1.8 MPa Flatw 80°10°4 sp=64mm 138 °C ISO 75/Bf HDT/Af, 1.8 MPa Flatw 80°10°4 sp=64mm 138 °C ISO 75/Bf HDT/Af, 1.8 MPa Flatw 80°10°4 sp=64mm 138 °C ISO 75/Bf HDT/Af, 1.8 MPa Flatw 80°10°4 sp=64mm 138 °C ISO 75/Bf HDT/Af, 1.8 MPa Flatw 80°10°4 sp=64mm 138 °C ISO 75/Bf HDT/Af, 1.8 MPa Flatw 80°10°4 sp=64mm 138 °C ISO 75/Bf HDT/Af, 1.8 MPa Flatw 80°10°4 sp=64mm 138 °C ISO 75/Bf HDT/Af, 1.8 MPa Flatw 80°10°4 sp=64mm 138 °C ISO 75/Bf HDT/Af, 1.8 MPa Flatw 80°10°4 sp=64mm 138 °C ISO 75/Bf HDT/Af, 1.8 MPa Flatw 80°10°4 sp=64mm 138 °C ISO 75/Bf HDT/Af, 1.8 MPa Flatw 80°10°4 sp=6	Flexural Stress, brk, 1.3 mm/min, 50 mm span	176	MPa	ASTM D 790
Tensile Strain, break, 5 mm/min  2.1 % ISO 527  Tensile Modulus, 1 mm/min  9520 MPa  ISO 527  Flexural Stress  172 MPa  ISO 178  Flexural Modulus, 2 mm/min  8830 MPa  ISO 178  ISO 180  ASTM D 4812  Izod Impact, unnotched, 23°C  132 J/m  ASTM D 256  Multiaxial Impact  Instrumented Impact Total Energy, 23°C  17 J  ASTM D 3763  Izod Impact, unnotched 80°10°4 +23°C  42 kJ/m²  ISO 180/10  Izod Impact, notched 80°10°4 +23°C  13 kJ/m²  ISO 180/10  Izod Impact, notched 80°10°4 +23°C  13 kJ/m²  ISO 180/10  Izod Impact, notched 80°10°4 +23°C  13 kJ/m²  ISO 180/10  Izod Impact, notched 80°10°4 +23°C  13 kJ/m²  ISO 180/10  ISO 180/10  INTERMAL  HDT, 0.45 MPa, 3.2 mm, unannealed  137 °C  ASTM D 648  HDT, 1.82 MPa, 3.2 mm, unannealed  133 °C  ASTM D 648  CTE, -30°C to 30°C, flow  3.02E+01 1/°C  ASTM D 696  CTE, -30°C to 30°C, flow  6.46E+01 1/°C  ASTM D 696  CTE, -30°C to 30°C, xflow  6.46E+01 1/°C  ASTM D 696  HDT/B1, 0.45 MPa Flatw 80°10°4 sp=64mm  138 °C  ISO 75/B1  HDT/A1, 1.8 MPa Flatw 80°10°4 sp=64mm  138 °C  ISO 75/B1  HDT/A1, 1.8 MPa Flatw 80°10°4 sp=64mm  138 °C  ISO 75/B1  HDT/A1, 1.8 MPa Flatw 80°10°4 sp=64mm  138 °C  ISO 75/B1  HDT/A1, 1.8 MPa Flatw 80°10°4 sp=64mm  139 °C  ISO 75/B1  HDT/A1, 1.8 MPa Flatw 80°10°4 sp=64mm  139 °C  ISO 75/B1  HDT/A1, 1.8 MPa Flatw 80°10°4 sp=64mm  130 °C  ISO 75/B1  HDT/A1, 1.8 MPa Flatw 80°10°4 sp=64mm  130 °C  ISO 75/B1  HDT/A1, 1.8 MPa Flatw 80°10°4 sp=64mm  130 °C  ISO 75/B1  HDT/A1, 1.8 MPa Flatw 80°10°4 sp=64mm  130 °C  ISO 75/B1  HDT/A1, 1.8 MPa Flatw 80°10°4 sp=64mm  130 °C  ISO 75/B1  HDT/A1, 1.8 MPa Flatw 80°10°4 sp=64mm  130 °C  ISO 75/B1  HDT/A1, 1.8 MPa Flatw 80°10°4 sp=64mm  130 °C  ISO 75/B1  ISO 180/10  ISO 180/10  ISO 180/10  ISO 180/10  ISO	Flexural Modulus, 1.3 mm/min, 50 mm span	8920	MPa	ASTM D 790
Tensile Modulus, 1 mm/min	Tensile Stress, break, 5 mm/min	112	MPa	ISO 527
Flexural Stress   172	Tensile Strain, break, 5 mm/min	2.1	%	ISO 527
Flexural Modulus, 2 mm/min   8830   MPa   ISO 178   IMPACT   Value   Unit   Standard     Izod Impact, unnotched, 23°C   689   J/m   ASTM D 4812     Izod Impact, notched, 23°C   132   J/m   ASTM D 256     Multiaxial Impact   5   J   ISO 6603     Instrumented Impact Total Energy, 23°C   17   J   ASTM D 3763     Izod Impact, unnotched 80°10°4 + 23°C   42   kJ/m²   ISO 180/1U     Izod Impact, notched 80°10°4 + 23°C   42   kJ/m²   ISO 180/1U     Izod Impact, notched 80°10°4 + 23°C   13   kJ/m²   ISO 180/1A     THERMAL   Value   Unit   Standard     HDT, 0.45 MPa, 3.2 mm, unannealed   137   °C   ASTM D 648     HDT, 1.82 MPa, 3.2mm, unannealed   133   °C   ASTM D 648     CTE, -30°C to 30°C, flow   3.02E+01   1/°C   ASTM D 696     CTE, -30°C to 30°C, xflow   6.46E+01   1/°C   ASTM D 696     HDT/Bf, 0.45 MPa Flatw 80°10°4 sp=64mm   138   °C   ISO 75/Bf     HDT/Af, 1.8 MPa Flatw 80°10°4 sp=64mm   133   °C   ISO 75/Bf     HDT/Af, 1.8 MPa Flatw 80°10°4 sp=64mm   133   °C   ISO 75/Bf     HDT/Af, 1.8 MPa Flatw 80°10°4 sp=64mm   133   °C   ISO 75/Bf     HDT/Af, 1.8 MPa Flatw 80°10°4 sp=64mm   136   °C   ISO 75/Bf     HDT/Af, 1.8 MPa Flatw 80°10°4 sp=64mm   138   °C   ISO 75/Bf     HDT/Af, 1.8 MPa Flatw 80°10°4 sp=64mm   138   °C   ISO 75/Bf     HDT/Af, 1.8 MPa Flatw 80°10°4 sp=64mm   138   °C   ISO 75/Bf     HDT/Af, 1.8 MPa Flatw 80°10°4 sp=64mm   138   °C   ISO 75/Bf     HDT/Af, 1.8 MPa Flatw 80°10°4 sp=64mm   138   °C   ISO 75/Bf     HDT/Af, 1.8 MPa Flatw 80°10°4 sp=64mm   138   °C   ISO 75/Bf     HDT/Af, 1.8 MPa Flatw 80°10°4 sp=64mm   138   °C   ISO 75/Bf     HDT/Af, 1.8 MPa Flatw 80°10°4 sp=64mm   138   °C   ISO 75/Bf     HDT/Af, 1.8 MPa Flatw 80°10°4 sp=64mm   138   °C   ISO 75/Bf     HDT/Af, 1.8 MPa Flatw 80°10°4 sp=64mm   138   °C   ISO 75/Bf     HDT/Af, 1.8 MPa Flatw 80°10°4 sp=64mm   138   °C   ISO 75/Bf     HDT/Af, 1.8 MPa Flatw 80°10°4 sp=64mm   138   °C   ISO 75/Bf     HDT/Af, 1.8 MPa Flatw 80°10°4 sp=64mm   138   °C   ISO 75/Bf     HDT/Af, 1.8 MPa Flatw 80°10°4 sp=64mm   138   °C   ISO 75/Bf     HDT/Af, 1.8 MPa	Tensile Modulus, 1 mm/min	9520	MPa	ISO 527
IMPACT         Value         Unit         Standard           Izod Impact, unnotched, 23°C         689         J/m         ASTM D 4812           Izod Impact, notched, 23°C         132         J/m         ASTM D 256           Multiaxial Impact         5         J         ISO 6603           Instrumented Impact Total Energy, 23°C         17         J         ASTM D 3763           Izod Impact, unnotched 80°10°4 +23°C         42         kJ/m²         ISO 180/1U           Izod Impact, notched 80°10°4 +23°C         13         kJ/m²         ISO 180/1A           THERMAL         Value         Unit         Standard           HDT, 0.45 MPa, 3.2 mm, unannealed         137         °C         ASTM D 648           HDT, 1.82 MPa, 3.2mm, unannealed         133         °C         ASTM D 648           CTE, -30°C to 30°C, flow         3.02E+01         1/°C         ASTM D 696           CTE, -30°C to 30°C, flow         6.46E+01         1/°C         ASTM D 696           HDT/Bf, 0.45 MPa Flatw 80°10°4 sp=64mm         138         °C         ISO 75/Bf           HDT/Bf, 1.8 MPa Flatw 80°10°4 sp=64mm         133         °C         ISO 75/Af           PHYSICAL         Value         Unit         Standard           Density	Flexural Stress	172	MPa	ISO 178
Izod Impact, unnotched, 23°C   689   J/m   ASTM D 4812   Izod Impact, notched, 23°C   132   J/m   ASTM D 256   Multiaxial Impact   5   J   ISO 6603   Instrumented Impact Total Energy, 23°C   17   J   ASTM D 3763   Izod Impact, unnotched 80°10°4 + 23°C   42   kJ/m²   ISO 180/1U   Izod Impact, notched 80°10°4 + 23°C   42   kJ/m²   ISO 180/1U   Izod Impact, notched 80°10°4 + 23°C   13   kJ/m²   ISO 180/1A   THERMAL   Value   Unit   Standard   HDT, 0.45 MPa, 3.2 mm, unannealed   137   °C   ASTM D 648   HDT, 1.82 MPa, 3.2 mm, unannealed   133   °C   ASTM D 648   CTE, -30°C to 30°C, flow   3.02E+01   1/°C   ASTM D 696   CTE, -30°C to 30°C, xflow   6.46E+01   1/°C   ASTM D 696   CTE, -30°C to 30°C, xflow   6.46E+01   1/°C   ASTM D 696   HDT/Bf, 0.45 MPa Flatw 80°10°4 sp=64mm   138   °C   ISO 75/Bf   HDT/Af, 1.8 MPa Flatw 80°10°4 sp=64mm   133   °C   ISO 75/Af   PHYSICAL   Value   Unit   Standard   Density   1.56   g/cm³   ASTM D 792   Moisture Absorption, 50% RH, 24 hrs   0.07   %   ASTM D 955   Mold Shrinkage, xflow, 24 hrs (5)   0.2 - 0.4   %   ASTM D 955   Mold Shrinkage, xflow, 24 hrs (5)   0.3 - 0.5   %   ASTM D 3702 Modified   Wear Factor Washer   96   10^-10 in^5-min/ft-lb-hr   ASTM D 3702 Modified   Dynamic COF   0.47   -   ASTM D 3702 Modified   Static COF   0.47   -   ASTM D 3702 Modified   Static COF   0.47   -   ASTM D 3702 Modified   Static COF   0.62   -   ASTM D 3702 Modified   Static COF   ASTM D 3702 Modified   Static COF   0.65   -   ASTM D 3702	Flexural Modulus, 2 mm/min	8830	MPa	ISO 178
Izod Impact, notched, 23°C	IMPACT	Value	Unit	Standard
Multiaxial Impact         5         J         ISO 6603           Instrumented Impact Total Energy, 23°C         17         J         ASTM D 3763           Izod Impact, unnotched 80*10*4 +23°C         42         kJ/m²         ISO 180/1U           Izod Impact, notched 80*10*4 +23°C         13         kJ/m²         ISO 180/1A           THERMAL         Value         Unit         Standard           HDT, 0.45 MPa, 3.2 mm, unannealed         137         °C         ASTM D 648           HDT, 1.82 MPa, 3.2mm, unannealed         133         °C         ASTM D 648           CTE, -30°C to 30°C, flow         3.02E+01         1/°C         ASTM D 696           CTE, -30°C to 30°C, xflow         6.46E+01         1/°C         ASTM D 696           CTE, -30°C to 30°C, xflow         6.46E+01         1/°C         ASTM D 696           HDT/Bf, 0.45 MPa Flatw 80*10*4 sp=64mm         138         °C         ISO 75/Bf           HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm         133         °C         ISO 75/Af           PHYSICAL         Value         Unit         Standard           Density         1.56         g/cm³         ASTM D 792           Moisture Absorption, 50% RH, 24 hrs         0.07         %         ASTM D 570           Moid Shrinka	Izod Impact, unnotched, 23°C	689	J/m	ASTM D 4812
Instrumented Impact Total Energy, 23°C	Izod Impact, notched, 23°C	132	J/m	ASTM D 256
Izod Impact, unnotched 80*10*4 +23°C	Multiaxial Impact	5	J	ISO 6603
Izod Impact, notched 80*10*4 +23°C	Instrumented Impact Total Energy, 23°C	17	J	ASTM D 3763
THERMAL         Value         Unit         Standard           HDT, 0.45 MPa, 3.2 mm, unannealed         137         °C         ASTM D 648           HDT, 1.82 MPa, 3.2mm, unannealed         133         °C         ASTM D 648           CTE, -30°C to 30°C, flow         3.02E+01         1/°C         ASTM D 696           CTE, -30°C to 30°C, xflow         6.46E+01         1/°C         ASTM D 696           HDT/Bf, 0.45 MPa Flatw 80*10*4 sp=64mm         138         °C         ISO 75/Bf           HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm         133         °C         ISO 75/Af           PHYSICAL         Value         Unit         Standard           Density         1.56         g/cm³         ASTM D 792           Moisture Absorption, 50% RH, 24 hrs         0.07         %         ASTM D 570           Mold Shrinkage, flow, 24 hrs (5)         0.2 - 0.4         %         ASTM D 955           Mold Shrinkage, xflow, 24 hrs (5)         0.3 - 0.5         %         ASTM D 3702 Modified           Wear Factor Washer         96         10^-10 in^5-min/ft-lb-hr         ASTM D 3702 Modified           Wear Factor Ring         14         10^-10 in^5-min/ft-lb-hr         ASTM D 3702 Modified           Static COF         0.62         -         ASTM D 3702 Modified <td>Izod Impact, unnotched 80*10*4 +23°C</td> <td>42</td> <td>kJ/m²</td> <td>ISO 180/1U</td>	Izod Impact, unnotched 80*10*4 +23°C	42	kJ/m²	ISO 180/1U
HDT, 0.45 MPa, 3.2 mm, unannealed HDT, 1.82 MPa, 3.2mm, unannealed 133 °C ASTM D 648 CTE, -30°C to 30°C, flow 3.02E+01 1/°C ASTM D 696 CTE, -30°C to 30°C, xflow 6.46E+01 1/°C ASTM D 696 HDT/Bf, 0.45 MPa Flatw 80*10*4 sp=64mm 138 °C ISO 75/Bf HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm 133 °C ISO 75/Af PHYSICAL Value Unit Standard Density 1.56 g/cm³ ASTM D 792 Moisture Absorption, 50% RH, 24 hrs 0.07 % ASTM D 570 Mold Shrinkage, flow, 24 hrs (5) 0.2 - 0.4 % ASTM D 955 Mold Shrinkage, xflow, 24 hrs (5) 0.3 - 0.5 % ASTM D 955 Wear Factor Washer 96 10^-10 in^5-min/ft-lb-hr ASTM D 3702 Modified Wear Factor Ring Dynamic COF 0.47 - ASTM D 3702 Modified Static COF	Izod Impact, notched 80*10*4 +23°C	13	kJ/m²	ISO 180/1A
HDT, 1.82 MPa, 3.2mm, unannealed  133  °C  ASTM D 648  CTE, -30°C to 30°C, flow  3.02E+01  1/°C  ASTM D 696  CTE, -30°C to 30°C, xflow  6.46E+01  HDT/Bf, 0.45 MPa Flatw 80*10*4 sp=64mm  138  °C  ISO 75/Bf  HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm  133  °C  ISO 75/Af  PHYSICAL  Value  Unit  Standard  Density  1.56  g/cm³  ASTM D 792  Moisture Absorption, 50% RH, 24 hrs  0.07  Mold Shrinkage, flow, 24 hrs (5)  Mold Shrinkage, xflow, 24 hrs (5)  Wear Factor Washer  Wear Factor Ring  14  10^-10 in^5-min/ft-lb-hr  ASTM D 3702 Modified  Static COF  ASTM D 3702 Modified  Static COF	THERMAL	Value	Unit Standard	
CTE, -30°C to 30°C, flow         3.02E+01         1/°C         ASTM D 696           CTE, -30°C to 30°C, xflow         6.46E+01         1/°C         ASTM D 696           HDT/Bf, 0.45 MPa Flatw 80*10*4 sp=64mm         138         °C         ISO 75/Bf           HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm         133         °C         ISO 75/Af           PHYSICAL         Value         Unit         Standard           Density         1.56         g/cm³         ASTM D 792           Moisture Absorption, 50% RH, 24 hrs         0.07         %         ASTM D 570           Mold Shrinkage, flow, 24 hrs (5)         0.2 - 0.4         %         ASTM D 955           Mold Shrinkage, xflow, 24 hrs (5)         0.3 - 0.5         %         ASTM D 3702 Modified           Wear Factor Washer         96         10^-10 in^5-min/ft-lb-hr         ASTM D 3702 Modified           Wear Factor Ring         14         10^-10 in^5-min/ft-lb-hr         ASTM D 3702 Modified           Static COF         0.47         -         ASTM D 3702 Modified	HDT, 0.45 MPa, 3.2 mm, unannealed	137	°C	ASTM D 648
CTE, -30°C to 30°C, xflow       6.46E+01       1/°C       ASTM D 696         HDT/Bf, 0.45 MPa Flatw 80*10*4 sp=64mm       138       °C       ISO 75/Bf         HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm       133       °C       ISO 75/Af         PHYSICAL       Value       Unit       Standard         Density       1.56       g/cm³       ASTM D 792         Moisture Absorption, 50% RH, 24 hrs       0.07       %       ASTM D 570         Mold Shrinkage, flow, 24 hrs (5)       0.2 - 0.4       %       ASTM D 955         Mold Shrinkage, xflow, 24 hrs (5)       0.3 - 0.5       %       ASTM D 955         Wear Factor Washer       96       10^-10 in^5-min/ft-lb-hr       ASTM D 3702 Modified         Wear Factor Ring       14       10^-10 in^5-min/ft-lb-hr       ASTM D 3702 Modified         Dynamic COF       0.47       -       ASTM D 3702 Modified         Static COF       0.62       -       ASTM D 3702 Modified	HDT, 1.82 MPa, 3.2mm, unannealed	133	°C	ASTM D 648
HDT/Bf, 0.45 MPa Flatw 80*10*4 sp=64mm         138         °C         ISO 75/Bf           HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm         133         °C         ISO 75/Af           PHYSICAL         Value         Unit         Standard           Density         1.56         g/cm³         ASTM D 792           Moisture Absorption, 50% RH, 24 hrs         0.07         %         ASTM D 570           Mold Shrinkage, flow, 24 hrs (5)         0.2 - 0.4         %         ASTM D 955           Mold Shrinkage, xflow, 24 hrs (5)         0.3 - 0.5         %         ASTM D 955           Wear Factor Washer         96         10^-10 in^5-min/ft-lb-hr         ASTM D 3702 Modified           Wear Factor Ring         14         10^-10 in^5-min/ft-lb-hr         ASTM D 3702 Modified           Dynamic COF         0.47         -         ASTM D 3702 Modified           Static COF         0.62         -         ASTM D 3702 Modified	CTE, -30°C to 30°C, flow	3.02E+01	1/°C	ASTM D 696
HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm         133         °C         ISO 75/Af           PHYSICAL         Value         Unit         Standard           Density         1.56         g/cm³         ASTM D 792           Moisture Absorption, 50% RH, 24 hrs         0.07         %         ASTM D 570           Mold Shrinkage, flow, 24 hrs (5)         0.2 - 0.4         %         ASTM D 955           Mold Shrinkage, xflow, 24 hrs (5)         0.3 - 0.5         %         ASTM D 955           Wear Factor Washer         96         10^-10 in^5-min/ft-lb-hr         ASTM D 3702 Modified           Wear Factor Ring         14         10^-10 in^5-min/ft-lb-hr         ASTM D 3702 Modified           Dynamic COF         0.47         -         ASTM D 3702 Modified           Static COF         0.62         -         ASTM D 3702 Modified	CTE, -30°C to 30°C, xflow	6.46E+01	1/°C	ASTM D 696
PHYSICAL         Value         Unit         Standard           Density         1.56         g/cm³         ASTM D 792           Moisture Absorption, 50% RH, 24 hrs         0.07         %         ASTM D 570           Mold Shrinkage, flow, 24 hrs (5)         0.2 - 0.4         %         ASTM D 955           Mold Shrinkage, xflow, 24 hrs (5)         0.3 - 0.5         %         ASTM D 955           Wear Factor Washer         96         10^-10 in^5-min/ft-lb-hr         ASTM D 3702 Modified           Wear Factor Ring         14         10^-10 in^5-min/ft-lb-hr         ASTM D 3702 Modified           Dynamic COF         0.47         -         ASTM D 3702 Modified           Static COF         0.62         -         ASTM D 3702 Modified	HDT/Bf, 0.45 MPa Flatw 80*10*4 sp=64mm	138	°C	ISO 75/Bf
Density         1.56         g/cm³         ASTM D 792           Moisture Absorption, 50% RH, 24 hrs         0.07         %         ASTM D 570           Mold Shrinkage, flow, 24 hrs (5)         0.2 - 0.4         %         ASTM D 955           Mold Shrinkage, xflow, 24 hrs (5)         0.3 - 0.5         %         ASTM D 955           Wear Factor Washer         96         10^-10 in^5-min/ft-lb-hr         ASTM D 3702 Modified           Wear Factor Ring         14         10^-10 in^5-min/ft-lb-hr         ASTM D 3702 Modified           Dynamic COF         0.47         -         ASTM D 3702 Modified           Static COF         0.62         -         ASTM D 3702 Modified	HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm	133	°C	ISO 75/Af
Moisture Absorption, 50% RH, 24 hrs         0.07         %         ASTM D 570           Mold Shrinkage, flow, 24 hrs (5)         0.2 - 0.4         %         ASTM D 955           Mold Shrinkage, xflow, 24 hrs (5)         0.3 - 0.5         %         ASTM D 955           Wear Factor Washer         96         10^-10 in^5-min/ft-lb-hr         ASTM D 3702 Modified           Wear Factor Ring         14         10^-10 in^5-min/ft-lb-hr         ASTM D 3702 Modified           Dynamic COF         0.47         -         ASTM D 3702 Modified           Static COF         0.62         -         ASTM D 3702 Modified	PHYSICAL	Value	Unit	Standard
Mold Shrinkage, flow, 24 hrs (5)         0.2 - 0.4         %         ASTM D 955           Mold Shrinkage, xflow, 24 hrs (5)         0.3 - 0.5         %         ASTM D 955           Wear Factor Washer         96         10^-10 in^5-min/ft-lb-hr         ASTM D 3702 Modified           Wear Factor Ring         14         10^-10 in^5-min/ft-lb-hr         ASTM D 3702 Modified           Dynamic COF         0.47         -         ASTM D 3702 Modified           Static COF         0.62         -         ASTM D 3702 Modified	Density	1.56	g/cm³	ASTM D 792
Mold Shrinkage, xflow, 24 hrs (5)         0.3 - 0.5         %         ASTM D 955           Wear Factor Washer         96         10^-10 in^5-min/ft-lb-hr         ASTM D 3702 Modified           Wear Factor Ring         14         10^-10 in^5-min/ft-lb-hr         ASTM D 3702 Modified           Dynamic COF         0.47         -         ASTM D 3702 Modified           Static COF         0.62         -         ASTM D 3702 Modified	Moisture Absorption, 50% RH, 24 hrs	0.07	%	ASTM D 570
Wear Factor Washer         96         10^-10 in^5-min/ft-lb-hr         ASTM D 3702 Modified           Wear Factor Ring         14         10^-10 in^5-min/ft-lb-hr         ASTM D 3702 Modified           Dynamic COF         0.47         -         ASTM D 3702 Modified           Static COF         0.62         -         ASTM D 3702 Modified	Mold Shrinkage, flow, 24 hrs (5)	0.2 - 0.4	%	ASTM D 955
Wear Factor Ring         14         10^-10 in^5-min/ft-lb-hr         ASTM D 3702 Modified           Dynamic COF         0.47         -         ASTM D 3702 Modified           Static COF         0.62         -         ASTM D 3702 Modified	Mold Shrinkage, xflow, 24 hrs (5)	0.3 - 0.5	%	ASTM D 955
Dynamic COF         0.47         -         ASTM D 3702 Modified           Static COF         0.62         -         ASTM D 3702 Modified	Wear Factor Washer	96	10^-10 in^5-min/ft-lb-hr	ASTM D 3702 Modified
Static COF         0.62         -         ASTM D 3702 Modified	Wear Factor Ring	14	10^-10 in^5-min/ft-lb-hr	ASTM D 3702 Modified
	Dynamic COF	0.47	-	ASTM D 3702 Modified
Density 1.56 g/cm <sup>3</sup> ISO 1183	Static COF	0.62	-	ASTM D 3702 Modified
,	Density	1.56	g/cm³	ISO 1183
Moisture Absorption (23°C / 50% RH) 0.11 % ISO 62	Moisture Absorption (23°C / 50% RH)	0.11	%	ISO 62

## **Processing**

Parameter		
Injection Molding	Value	Unit
Drying Temperature	120	°C
Drying Time	4	hrs
Maximum Moisture Content	0.02	%
Melt Temperature	305 - 325	°C
Front - Zone 3 Temperature	320 - 330	°C
Middle - Zone 2 Temperature	310 - 320	°C
Rear - Zone 1 Temperature	295 - 305	°C
Mold Temperature	80 - 110	°C
Back Pressure	0.2 - 0.3	MPa
Screw Speed	30 - 60	rpm

Source GMD, last updated:2009/07/02

THESE PROPERTY VALUES ARE NOT INTENDED FOR SPECIFICATION PURPOSES.

## PLEASE CHECK WITH YOUR (LOCAL SALES OFFICE) FOR AVAILABILITY IN YOUR REGION

- (1) Typical values only. Variations within normal tolerances are possible for various colors. All values are measured after at least 48 hours storage at 23°C/50% relative humidity. All properties, except the melt volume and melt flow rates, are measured on injection molded samples. All samples tested under ISO test standards are prepared according to ISO 294.
- (2) Only typical data for selection purposes. Not to be used for part or tool design.
- (3) This rating is not intended to reflect hazards presented by this or any other material under actual fire conditions.
- (4) Internal measurements according to UL standards.
- (5) Measurements made from laboratory test coupon. Actual shrinkage may vary outside of range due to differences in processing conditions, equipment, part geometry and tool design. It is recommended that mold shrinkage studies be performed with surrogate or legacy tooling prior to cutting tools for new molded article.

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