

## LNPTM LUBRILOYTM COMPOUND RX99650

PDX-R-99650

## **DESCRIPTION**

LNP LUBRILOY RX99650 compound is based on Nylon 6/6 resin containing proprietary lubricant. Added features of this grade include: Wear Resistant.

GENERAL INFORMATION	RAL INFORMATION				
Features	Wear resistant, No PFAS intentionally added				
Fillers	Unreinforced				
Polymer Types	Polyamide 66 (Nylon 66)				
Processing Techniques	Injection Molding				

INDUSTRY	SUB INDUSTRY
Automotive	Automotive Under the Hood, Automotive Exteriors

## **TYPICAL PROPERTY VALUES**

Revision 20231109

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
MECHANICAL (1)			
Tensile Stress, yield	59	MPa	ASTM D638
Tensile Stress, break	53	MPa	ASTM D638
Tensile Strain, yield	5	%	ASTM D638
Tensile Strain, break	31	%	ASTM D638
Tensile Modulus, 50 mm/min	2220	MPa	ASTM D638
Flexural Stress	80	MPa	ASTM D790
Flexural Modulus	2080	MPa	ASTM D790
Tensile Stress, yield	55	MPa	ISO 527
Tensile Stress, break	54	MPa	ISO 527
Tensile Strain, yield	16	%	ISO 527
Tensile Strain, break	64	%	ISO 527
Tensile Modulus, 1 mm/min	2160	MPa	ISO 527
Flexural Stress	74	MPa	ISO 178
Flexural Modulus	2000	MPa	ISO 178
IMPACT (1)			
Izod Impact, unnotched, 23°C	NB	J/m	ASTM D4812
Izod Impact, notched, 23°C	427	J/m	ASTM D256
Instrumented Dart Impact Energy @ peak, 23°C	76	J	ASTM D3763
Multiaxial Impact	65	J	ISO 6603
Izod Impact, unnotched 80*10*4 +23°C	137	kJ/m²	ISO 180/1U
Izod Impact, notched 80*10*4 +23°C	19	kJ/m²	ISO 180/1A
THERMAL (1)			
HDT, 0.45 MPa, 3.2 mm, unannealed	206	°C	ASTM D648
HDT, 1.82 MPa, 3.2mm, unannealed	63	°C	ASTM D648
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Density1.1g/cm³ASTM D792Moisture Absorption, (23°C/50% RH/24 hrs)0.73%ASTM D570Mold Shrinkage, flow, 24 hrs (2)2.4 - 2.6%ASTM D955Mold Shrinkage, flow, 24 hrs (2)2.4 - 2.6%ASTM D955Mold Shrinkage, flow, 24 hrs (2)2.43 - 2.6%ISO 294Mold Shrinkage, xflow, 24 hrs (2)2.43 - 2.6%ISO 294Wear Factor Washer810^-10 in^5-min/ft-lb-hrASTM D3702 Modified: ManualDynamic COF0.31-ASTM D3702 Modified: ManualStatic COF0.18-ASTM D3702 Modified: ManualDensity1.1g/cm³ISO 1183Moisture Absorption (23°C / 50% RH)1.12%ISO 62				
CTE, 40°C to 40°C, tifow         1,2604         1,0°C         ASTM E831           CTE, 40°C to 40°C, filow         1,216-04         1,0°C         SO 11359-2           CTE, 40°C to 40°C, filow         1,360-04         1,0°C         SO 11359-2           CTE, 40°C to 40°C, filow         1,386-04         1,0°C         SO 1359-2           HDTJBf, 0.45 MPa Flatw 80°10°4 sp=64mm         88         °C         SO 75/M           PHYSICAL 1°         U         SC 75/M         SO 75/M           Molisty Albary 10         0.73         %         ASTM D792         C           Mold Shrinkage, flow, 24 hrs <sup>(2)</sup> 2.4 – 2.6         %         ASTM D955         C           Mold Shrinkage, flow, 24 hrs <sup>(2)</sup> 2.43 – 2.6         %         SO 294         C           Wear Factor Washer         3         1.0 – 1.0 in/5 mi/ft-lb-rb         ASTM D3702 Modified: Manual District Manual District Manual Particul	PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
CTE, 40°C to 40°C, flow         1.21E04         1°C         ISO 11359-2           CTE, 40°C to 40°C, xflow         1.13E04         1°C         ISO 11359-2           HDT/βf, 0.45 MPa Flatw 80°10°4 sp=64mm         188         °C         ISO 75/βf           HDT/AI, 1.8 MPa Flatw 80°10°4 sp=64mm         67         °C         ISO 75/βf           HDT/AI, 1.8 MPa Flatw 80°10°4 sp=64mm         67         °C         ISO 75/βf           HDT/AI, 1.8 MPa Flatw 80°10°4 sp=64mm         67         °C         ISO 75/βf           HDT/AI, 1.8 MPa Flatw 80°10°4 sp=64mm         67         °C         ISO 75/βf           HDT/AI, 1.8 MPa Flatw 80°10°4 sp=64mm         67         °C         ISO 75/βf           HDT/AI, 1.8 MPa Flatw 80°10°4 sp=64mm         67         °C         STM D792           BOLS State 10         1.1         9/C³         ASTM D792         CAD           Molstyre Absorption, (23°C/50% RH/24 hrs)         2.4-2.6         %         ASTM D955         CAD           Mold Shrinkage, xflow, 24 hrs <sup>(2)</sup> 2.43-2.6         %         100-10 in/S-min/ft-lb-m         ASTM D3702 Modified: Manual           Mold Shrinkage, xflow, 24 hrs <sup>(2)</sup> 0.18         10-10 in/S-min/ft-lb-m         ASTM D3702 Modified: Manual           Static CoF         0.18         9         C	CTE, -40°C to 40°C, flow	1.21E-04	1/°C	ASTM E831
CTE, 40°C to 40°C, xflow         1.13E-04         1°C         ISD 1355-2           HDT/Bf, 0.45 MPa Flatw 80°10°4 sp=64mm         188         °C         ISO 75/Bf           HDT/AI, 1.8 MPa Flatw 80°10°4 sp=64mm         67         °C         ISO 75/Bf           PHYSICAL <sup>(1)</sup> U         C         ISO 75/AI           Density         1.1         g/cm²         ASTM D792           Moisture Absorption, (23°C/50% RH/24 hrs)         0.73         %         ASTM D795           Moid Shrinkage, flow, 24 hrs <sup>(2)</sup> 2.4 - 2.6         %         ASTM D955           Mold Shrinkage, xflow, 24 hrs <sup>(2)</sup> 2.4 - 2.6         %         ASTM D955           Mold Shrinkage, xflow, 24 hrs <sup>(2)</sup> 2.43 - 2.6         %         SO 294           Wear Factor Washer         8         10 - 10 in AS-min/ft-lb-lm         ASTM D3702 Modified: Manual           Value Factor Washer         1.1         g/cm³         ASTM D3702 Modified: Manual           Static COF         0.31         -         ASTM D3702 Modified: Manual           Boesity         1.1         g/cm³         ISO 1183           Moisture Absorption (23°C / 50% RH)         1.2         g         SO 183           Instruction MOLDING (3)         C         C           Weigh	CTE, -40°C to 40°C, xflow	1.12E-04	1/°C	ASTM E831
HDT/Bf, 0.45 MPa Flatw 80*10*4 sp=64mm 188 °C C S SO 75 /Bf HDT/M, 1.8 MPa Flatw 80*10*4 sp=64mm 67 °C S SO 75 /Af PHYSICAL (1)  PHYSICAL (1)  Density 1.1 S S S S S S S S S S S S S S S S S S	CTE, -40°C to 40°C, flow	1.21E-04	1/°C	ISO 11359-2
HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm 67 °C SO 55/A/  PHYSICAL (**)  Density 1.1 (200	CTE, -40°C to 40°C, xflow	1.13E-04	1/°C	ISO 11359-2
PHYSICAL (¹)           Density         1.1         g/cm³         ASTM D792           Moisture Absorption, (23°C/50% RH/24 hrs)         0.73         %         ASTM D955           Mold Shrinkage, flow, 24 hrs (²)         2.4 – 2.6         %         ASTM D955           Mold Shrinkage, flow, 24 hrs (²)         2.43 – 2.6         %         ASTM D955           Mold Shrinkage, flow, 24 hrs (²)         2.43 – 2.6         %         ISO 294           Mold Shrinkage, xflow, 24 hrs (²)         2.43 – 2.6         %         ISO 294           Mold Shrinkage, xflow, 24 hrs (²)         2.43 – 2.6         %         ISO 294           Wear Factor Washer         8         10^-10 in^AS-min/fell-br         ASTM D3702 Modified: Manual           Dynamic COF         0.18         -         ASTM D3702 Modified: Manual           Bositure Absorption (23°C / 50% RH)         1.1         g/cm³         ISO 1183           Moisture Absorption (23°C / 50% RH)         1.1         g/cm³         ISO 1183           Moisture Absorption (23°C / 50% RH)         8         P         C           Injury Imperature         8         C         C           Drying Time         4         Hrs         C           Melt Temperature         20         C	HDT/Bf, 0.45 MPa Flatw 80*10*4 sp=64mm	188	°C	ISO 75/Bf
Density1.1g/cm³ASTM D792Moisture Absorption, (2°C/50%RH/24 hrs)0.73%ASTM D570Mold Shrinkage, flow, 24 hrs (2)2.4 - 2.6%ASTM D955Mold Shrinkage, xflow, 24 hrs (2)2.4 - 2.6%ASTM D955Mold Shrinkage, xflow, 24 hrs (2)2.4 - 2.6%ASTM D955Mold Shrinkage, xflow, 24 hrs (2)2.4 - 2.6%Sto 2.94Mold Shrinkage, xflow, 24 hrs (2)2.4 - 2.6%Sto 2.94Mold Shrinkage, xflow, 24 hrs (2)2.4 - 2.6%ASTM D3702 Modified: ManualDynamic COF0.31- 2.0ASTM D3702 Modified: ManualStatic COF0.18- 2.0ASTM D3702 Modified: ManualDensity1.1g/cm³ISO 183Moisture Absorption (23°C / 50%RH)1.2g/cm³ISO 183INECTION MOLDING (3)**Suprign Temperature8CPurying Temperature4HsMaximum Moisture Content0.15 - 0.25%Melt Temperature28 - 3.05CFront - Zone 3 Temperature28 - 3.05CMiddle - Zone 2 Temperature28 - 2.95CMoid Temperature28 - 2.95CMold Temperature28 - 2.95 </td <th>HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm</th> <td>67</td> <td>°C</td> <td>ISO 75/Af</td>	HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm	67	°C	ISO 75/Af
Moisture Absorption, (23°C/50% RH/24 hrs)  Mold Shrinkage, flow, 24 hrs <sup>(2)</sup> Mold Shrinkage, flow, 2	PHYSICAL (1)			
Mold Shrinkage, flow, 24 hrs (2)2.4 - 2.6%ATM D955Mold Shrinkage, flow, 24 hrs (2)2.4 - 2.6%SC 294Mold Shrinkage, flow, 24 hrs (2)2.43 - 2.6%SC 294Mold Shrinkage, xflow, 24 hrs (2)2.43 - 2.6%SC 294Wear Factor Washer810~10 in/5-min/ft-lb-irATM D3702 Modified: ManualDynamic COF0.31ATM D3702 Modified: ManualBestite COF0.18ATM D3702 Modified: ManualMoisture Absorption (23°C / 50% RH)1.2yDying Temperature80CDrying Time4HrsMaximum Moisture Content9.15 - 0.25*Melt Temperature295 - 305CMiddle - Zone 2 Temperature295 - 305CMiddle - Zone 2 Temperature265 - 275CMold Temperature95 - 110CMold Temperature95 - 110CBack Pressure95 - 203MPa	Density	1.1	g/cm³	ASTM D792
Mold Shrinkage, Aflow, 24 hrs (2)2.4–2.6%ASTM D955Mold Shrinkage, Hlow, 24 hrs (2)2.43–2.6%So 294Mold Shrinkage, Aflow, 24 hrs (2)2.43–2.6%So 294Wear Factor Washer810~10 in/S-min/ft-lb-hrATM D3702 Modified: ManualDynamic COF0.31-ATM D3702 Modified: ManualStatic COF0.18-ATM D3702 Modified: ManualDesity1.1y310.1Moisture Absorption (23°C / 50% RH)1.12%30.5Dying Temperature80°C**Drying Time4Hrs**Maximum Moisture Content0.15–0.25%**Melt Temperature295–305°C**Front-Zone 3 Temperature295–305°C**Middle-Zone 2 Temperature280–295°C**Middle-Zone 2 Temperature265–275°C**Mold Temperature95–110°C**Mold Temperature0.2–0.3MPa	Moisture Absorption, (23°C/50% RH/24 hrs)	0.73	%	ASTM D570
Mold Shrinkage, flow, 24 hrs (2)2.43 – 2.6%ISO 294Mold Shrinkage, xflow, 24 hrs (2)2.43 – 2.6%ISO 294Wear Factor Washer810^1 0 in^5 min/ft-lb-hrASTM D3702 Modified: ManualDynamic COF0.31-ASTM D3702 Modified: ManualStatic COF0.18-ASTM D3702 Modified: ManualDensity1.1g/cm³ISO 1183Moisture Absorption (23°C / 50% RH)1.12ySDrying Temperature80CSDrying Time4HrsSMaximum Moisture Content1.50 – 2.5%CMet Temperature280 – 305CCFront - Zone 3 Temperature295 – 305CCMiddle - Zone 2 Temperature280 – 295CCRear - Zone 1 Temperature265 – 275CCMold Temperature95 – 110CCBack Pressure402 – 0.3MPa	Mold Shrinkage, flow, 24 hrs <sup>(2)</sup>	2.4 – 2.6	%	ASTM D955
Mold Shrinkage, xflow, 24 hrs <sup>(2)</sup> Wear Factor Washer  8 8 10^10 in^5 - min/ft-lb-hr ASTM D3702 Modified: Manual  Popamic COF 0,31 0,18 0,18 0,18 0,19 0,19 0,19 0,19 0,19 0,19 0,19 0,19	Mold Shrinkage, xflow, 24 hrs <sup>(2)</sup>	2.4 – 2.6	%	ASTM D955
Wear Factor Washer810^10 in^5-min/ft-lb-hrASTM D3702 Modified: ManualDynamic COF0.31-ASTM D3702 Modified: ManualStatic COF0.18-ASTM D3702 Modified: ManualDensity1.1g/cm³ISO 1183Moisture Absorption (23°C / 50% RH)1.12%ISO 62INJECTION MOLDING (3)Drying Temperature80C-Drying Time4Hrs-Maximum Moisture Content0.15 - 0.25%-Melt Temperature280 - 305C-Front - Zone 3 Temperature295 - 305C-Middle - Zone 2 Temperature295 - 305C-Rear-Zone 1 Temperature265 - 275C-Mold Temperature95 - 110CBack Pressure0.2 - 0.3MPa	Mold Shrinkage, flow, 24 hrs <sup>(2)</sup>	2.43 – 2.6	%	ISO 294
Dynamic COF0.31-ASTM D3702 Modified: ManualStatic COF0.18-ASTM D3702 Modified: ManualDensity1.1g/cm³ISO 1183Moisture Absorption (23°C / 50% RH)1.2%ISO 62INJECTION MOLDING (3)Drying Temperature80°C-Drying Time4Hrs-Maximum Moisture Content0.15 - 0.25%-Melt Temperature280 - 305°C-Front - Zone 3 Temperature280 - 305°C-Middle - Zone 2 Temperature280 - 295°C-Rear - Zone 1 Temperature265 - 275°C-Mold Temperature95 - 110°CBack Pressure0.2 - 0.3MPa	Mold Shrinkage, xflow, 24 hrs <sup>(2)</sup>	2.43 – 2.6	%	ISO 294
Static COF0.18-ASTM D3702 Modified: ManualDensity1.1g/cm³ISO 1183Moisture Absorption (23°C / 50% RH)1.12%So 62INJECTION MOLDING (3)Drying Temperature80°CDrying Time4HrsMaximum Moisture Content0.15 - 0.25%Melt Temperature280 - 305°CFront - Zone 3 Temperature295 - 305°CMiddle - Zone 2 Temperature280 - 295°CMear - Zone 1 Temperature265 - 275°CMold Temperature95 - 110°CBack Pressure0.2 - 0.3MPa	Wear Factor Washer	8	10^-10 in^5-min/ft-lb-hr	ASTM D3702 Modified: Manual
Density1.1g/cm³ISO 1183Moisture Absorption (23°C / 50% RH)1.12%ISO 62INJECTION MOLDING (3)Drying Temperature80°C**Drying Time4Hrs**Maximum Moisture Content0.15 - 0.25%**Melt Temperature280 - 305°C**Front - Zone 3 Temperature295 - 305°C**Middle - Zone 2 Temperature280 - 295°C**Rear - Zone 1 Temperature265 - 275°C**Mold Temperature95 - 110°C**Back Pressure0.2 - 0.3MPa**	Dynamic COF	0.31		ASTM D3702 Modified: Manual
Moisture Absorption (23°C / 50% RH)  Injection MolDing (3)  Drying Temperature  Boson  Maximum Moisture Content  Melt Temperature  Boson  Boso	Static COF	0.18	-	ASTM D3702 Modified: Manual
INJECTION MOLDING (3)  Drying Temperature 80 °C  Drying Time 4 Hrs  Maximum Moisture Content 280 - 305 °C  Melt Temperature 280 - 305 °C  Front - Zone 3 Temperature 280 - 295 °C  Middle - Zone 2 Temperature 265 - 275 °C  Rear - Zone 1 Temperature 365 - 275 °C  Mold Temperature 375 - 275 °C  Mold Temperature 3	Density	1.1	g/cm³	ISO 1183
Drying Temperature         80         °C           Drying Time         4         Hrs           Maximum Moisture Content         0.15 – 0.25         %           Melt Temperature         280 – 305         °C           Front - Zone 3 Temperature         295 – 305         °C           Middle - Zone 2 Temperature         280 – 295         °C           Rear - Zone 1 Temperature         265 – 275         °C           Mold Temperature         95 – 110         °C           Back Pressure         0.2 – 0.3         MPa	Moisture Absorption (23°C / 50% RH)	1.12	%	ISO 62
Drying Time         4         Hrs           Maximum Moisture Content         0.15 – 0.25         %           Melt Temperature         280 – 305         °C           Front - Zone 3 Temperature         295 – 305         °C           Middle - Zone 2 Temperature         280 – 295         °C           Rear - Zone 1 Temperature         265 – 275         °C           Mold Temperature         95 – 110         °C           Back Pressure         0.2 – 0.3         MPa	INJECTION MOLDING (3)			
Maximum Moisture Content         0.15 - 0.25         %           Melt Temperature         280 - 305         °C           Front - Zone 3 Temperature         295 - 305         °C           Middle - Zone 2 Temperature         280 - 295         °C           Rear - Zone 1 Temperature         265 - 275         °C           Mold Temperature         95 - 110         °C           Back Pressure         0.2 - 0.3         MPa	Drying Temperature	80	°C	
Melt Temperature         280 – 305         °C           Front - Zone 3 Temperature         295 – 305         °C           Middle - Zone 2 Temperature         280 – 295         °C           Rear - Zone 1 Temperature         265 – 275         °C           Mold Temperature         95 – 110         °C           Back Pressure         0.2 – 0.3         MPa	Drying Time	4	Hrs	
Front - Zone 3 Temperature         295 – 305         °C           Middle - Zone 2 Temperature         280 – 295         °C           Rear - Zone 1 Temperature         265 – 275         °C           Mold Temperature         95 – 110         °C           Back Pressure         0.2 – 0.3         MPa	Maximum Moisture Content	0.15 – 0.25	%	
Middle - Zone 2 Temperature         280 – 295         °C           Rear - Zone 1 Temperature         265 – 275         °C           Mold Temperature         95 – 110         °C           Back Pressure         0.2 – 0.3         MPa	Melt Temperature	280 – 305	°C	
Rear - Zone 1 Temperature         265 - 275         °C           Mold Temperature         95 - 110         °C           Back Pressure         0.2 - 0.3         MPa	Front - Zone 3 Temperature	295 – 305	°C	
Mold Temperature         95 – 110         °C           Back Pressure         0.2 – 0.3         MPa	Middle - Zone 2 Temperature	280 – 295	°C	
Back Pressure 0.2 – 0.3 MPa	Rear - Zone 1 Temperature	265 – 275	°C	
	Mold Temperature	95 – 110	°C	
<b>Screw Speed</b> 30 – 60 rpm	Back Pressure	0.2 – 0.3	MPa	
	Screw Speed	30 - 60	rpm	

<sup>(1)</sup> The information stated on Technical Datasheets should be used as indicative only for material selection purposes and not be utilized as specification or used for part or tool design.

## **DISCLAIMER**

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<sup>(2)</sup> 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.

<sup>(3)</sup> Injection Molding parameters are only mentioned as general guidelines. These may not apply or may need adjustment in specific situations such as low shot sizes, large part molding, thin wall molding and gas-assist molding.