

## LNPTM LUBRICOMPTM COMPOUND DFL34EH

DFL-4034 EM HC

## **DESCRIPTION**

LNP LUBRICOMP DFL34EH compound is based on Polycarbonate (PC) resin containing 20% glass fiber, 15% PTFE. Added features of this grade include: Easy Molding, Healthcare, Wear Resistant.

GENERAL INFORMATION	
Features	Good Processability, Wear resistant, Healthcare/Formula lock
Fillers	Glass Fiber, PTFE
Polymer Types	Polycarbonate (PC)
Processing Techniques	Injection Molding

INDUSTRY	SUB INDUSTRY
Hygiene and Healthcare	Pharmaceutical Packaging and Drug Delivery, Surgical devices, General Healthcare, Patient Testing
Packaging	Industrial Packaging

## **TYPICAL PROPERTY VALUES**

Revision 20231109

MECHANICAL (¹)         MECHANICAL (¹)         ASTM DG38           Tensile Stress, brk, Type I, 5 mm/min         95         MPa         ASTM DG38           Tensile Strain, brk, Type I, 5 mm/min         7190         MPa         ASTM DG38           Tensile Modulus, 50 mm/min         7190         MPa         ASTM DF38           Flexural Stress, brk, 1.3 mm/min, 50 mm span         145         MPa         ASTM D790           Flexural Modulus, 1.3 mm/min, 50 mm span         93         MPa         OS 527           Tensile Stress, break, 5 mm/min         2.8         MPa         SO 527           Tensile Strain, break, 5 mm/min         3.1         %         SO 527           Tensile Modulus, 1 mm/min         3.1         %         SO 527           Flexural Stress         150         MPa         SO 178           Flexural Stress         150         MPa         SO 178           Flexural Modulus, 2 mm/min         400         MPa         SO 178           Flexural Stress         150         MPa         SO 178           Flexural Stress         150         MPa         SO 178           Flexural Stress         150         MPa         SO 178           Industrial Mpact         150         MPa         STM D481	PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
Tensile Strain, brk, Type I, 5 mm/min         2.7         %         ASTM D638           Tensile Modulus, 50 mm/min         7190         MPa         ASTM D638           Flexural Stress, brk, 1.3 mm/min, 50 mm span         145         MPa         ASTM D790           Flexural Modulus, 1.3 mm/min, 50 mm span         6320         MPa         ASTM D790           Tensile Stress, break, 5 mm/min         93         MPa         ISO 527           Tensile Strain, yield, 5 mm/min         2.8         %         ISO 527           Tensile Modulus, 1 mm/min         3.1         %         ISO 527           Flexural Stress         150         MPa         ISO 178           Flexural Modulus, 2 mm/min         6190         MPa         ISO 178           IMPACT ****         Impact, unnotched, 23°C         740         MPa         ASTM D4812           Izod Impact, notched, 23°C         149         J/m         ASTM D256           Multiaxial Impact         6         J         ASTM D3763           Izod Impact, unnotched 80°10°4 + 23°C         48         kl/m²         ISO 180/1U           Izod Impact, unnotched 80°10°4 + 23°C         48         kl/m²         ISO 180/1U           Izod Impact, notched 80°10°4 + 23°C         48         kl/m²         ISO 180/1U	MECHANICAL (1)			
Tensile Modulus, 50 mm/min         7190         MPa         ASTM D638           Flexural Stress, brk, 1.3 mm/min, 50 mm span         145         MPa         ASTM D790           Flexural Modulus, 1.3 mm/min, 50 mm span         6320         MPa         ASTM D790           Tensile Stress, break, 5 mm/min         93         MPa         ISO 527           Tensile Strain, yield, 5 mm/min         2.8         %         ISO 527           Tensile Strain, break, 5 mm/min         3.1         %         ISO 527           Tensile Modulus, 1 mm/min         6650         MPa         ISO 178           Flexural Stress         150         MPa         ISO 178           Flexural Modulus, 2 mm/min         6190         MPa         ASTM D4812           IMPACT (1)         IMPACT (2)         J/m         ASTM D4812           Izod Impact, unnotched, 23°C         740         J/m         ASTM D256           Multiaxial Impact         19         J         ASTM D3763           Izod Impact, unnotched, 23°C         19         J         ASTM D3763           Izod Impact, unnotched 80°10°4 + 23°C         48         kl/m²         ISO 180/10           Izod Impact, notched 80°10°4 + 23°C         31         kl/m²         ASTM D648           Ito Impact,	Tensile Stress, brk, Type I, 5 mm/min	95	MPa	ASTM D638
Flexural Stress, brk, 1.3 mm/min, 50 mm span         145         MPa         ASTM D790           Flexural Modulus, 1.3 mm/min, 50 mm span         6320         MPa         ASTM D790           Tensile Stress, break, 5 mm/min         93         MPa         SO 527           Tensile Strain, yield, 5 mm/min         2.8         %         SO 527           Tensile Strain, break, 5 mm/min         3.1         %         SO 527           Tensile Modulus, 1 mm/min         6650         MPa         SO 178           Flexural Stress         150         MPa         SO 178           Flexural Modulus, 2 mm/min         6190         MPa         SO 178           IMPACT (1)         V         J/m         ASTM D4812           Izod Impact, unnotched, 23°C         740         J/m         ASTM D256           Multiaxial Impact         6         J         J         ASTM D256           Multiaxial Impact         6         J         ASTM D3763         SO 180/10           Izod Impact, unnotched 80*10*4 +23°C         48         kJ/m²         ISO 180/10         SO 180/10           Iden Multiaxial Impact         KJ/m²         SO 180/10         SO 180/10         Male           Izod Impact, unnotched 80*10*4 +23°C         48         M/m²	Tensile Strain, brk, Type I, 5 mm/min	2.7	%	ASTM D638
Flexural Modulus, 1.3 mm/min, 50 mm span         6320         MPa         ASTM D790           Tensile Stress, break, 5 mm/min         93         MPa         ISO 527           Tensile Strain, yield, 5 mm/min         2.8         %         ISO 527           Tensile Strain, break, 5 mm/min         3.1         %         ISO 527           Tensile Modulus, 1 mm/min         6650         MPa         ISO 527           Flexural Stress         150         MPa         ISO 178           Flexural Modulus, 2 mm/min         6190         MPa         SO 178           IMPACT ************************************	Tensile Modulus, 50 mm/min	7190	MPa	ASTM D638
Tensile Stress, break, 5 mm/min         93         MPa         ISO 527           Tensile Strain, yield, 5 mm/min         2.8         %         ISO 527           Tensile Strain, break, 5 mm/min         3.1         %         ISO 527           Tensile Modulus, 1 mm/min         6650         MPa         ISO 527           Flexural Stress         150         MPa         ISO 178           Impact Inducture         150         MPa         ISO 178           Impact Inducture         150         MPa         ASTM D4812           Izod Impact, unnotched, 23°C         740         J/m         ASTM D256           Multiaxial Impact         149         J/m         ASTM D256           Multiaxial Impact         6         J         ISO 6603           Instrumented Dart Impact Total Energy, 23°C         19         J         ASTM D3763           Izod Impact, unnotched 80°10°4 + 23°C         48         k/m²         ISO 180/1U           Izod Impact, notched 80°10°4 + 23°C         13         k/m²         ISO 180/1A           THERMAL (¹)         1         ASTM D648	Flexural Stress, brk, 1.3 mm/min, 50 mm span	145	MPa	ASTM D790
Tensile Strain, yield, 5 mm/min         2.8         %         ISO 527           Tensile Strain, break, 5 mm/min         3.1         %         ISO 527           Tensile Modulus, 1 mm/min         6650         MPa         ISO 527           Flexural Stress         150         MPa         ISO 178           Flexural Modulus, 2 mm/min         6190         MPa         ISO 178           IMPACT ************************************	Flexural Modulus, 1.3 mm/min, 50 mm span	6320	MPa	ASTM D790
Tensile Strain, break, 5 mm/min         3.1         %         ISO 527           Tensile Modulus, 1 mm/min         6650         MPa         ISO 527           Flexural Stress         150         MPa         ISO 178           Impact (1)         WPa         ISO 178           Impact (1)         J/m         ASTM D4812           Izod Impact, unnotched, 23°C         740         J/m         ASTM D256           Multiaxial Impact         149         J/m         ASTM D256           Instrumented Dart Impact Total Energy, 23°C         19         J         ASTM D3763           Izod Impact, unnotched 80*10*4 + 23°C         48         kJ/m²         ISO 180/1U           Izod Impact, notched 80*10*4 + 23°C         13         kJ/m²         ISO 180/1A           THERMAL (1)         THERMAL (1)         C         ASTM D648	Tensile Stress, break, 5 mm/min	93	MPa	ISO 527
Tensile Modulus, 1 mm/min         6650         MPa         ISO 527           Flexural Stress         150         MPa         ISO 178           Flexural Modulus, 2 mm/min         6190         MPa         ISO 178           IMPACT (¹)         IMPACT (¹)         IMPACT (¹)         IMPACT (¹)         ASTM D4812           Izod Impact, unnotched, 23°C         740         J/m         ASTM D256           Multiaxial Impact         6         J         ISO 6603           Instrumented Dart Impact Total Energy, 23°C         19         J         ASTM D3763           Izod Impact, unnotched 80*10*4 +23°C         48         kJ/m²         ISO 180/1U           Izod Impact, notched 80*10*4 +23°C         48         kJ/m²         ISO 180/1A           THERMAL (¹)         L         C         ASTM D648	Tensile Strain, yield, 5 mm/min	2.8	%	ISO 527
Flexural Stress         150         MPa         ISO 178           Flexural Modulus, 2 mm/min         6190         MPa         ISO 178           IMPACT (¹)         Used Impact, unnotched, 23°C         740         J/m         ASTM D4812           Izod Impact, notched, 23°C         149         J/m         ASTM D256           Multiaxial Impact         6         J         S0 6603           Instrumented Dart Impact Total Energy, 23°C         19         J         ASTM D3763           Izod Impact, unnotched 80*10*4 + 23°C         48         kJ/m²         ISO 180/1U           Izod Impact, notched 80*10*4 + 23°C         13         kJ/m²         ISO 180/1A           THERMAL (¹)         THERMAL (¹)           HDT, 0.45 MPa, 3.2 mm, unannealed         146         °C         ASTM D648	Tensile Strain, break, 5 mm/min	3.1	%	ISO 527
Flexural Modulus, 2 mm/min         6190         MPa         ISO 178           IMPACT (¹)         ASTM D4812         IMPACT (¹)         IMPACT (¹)         IMPACT (¹)         ASTM D256         IMPACT (¹)         IMPACT (¹)	Tensile Modulus, 1 mm/min	6650	MPa	ISO 527
IMPACT (1)           Izod Impact, unnotched, 23°C         740         J/m         ASTM D4812           Izod Impact, notched, 23°C         149         J/m         ASTM D256           Multiaxial Impact         6         J         ISO 6603           Instrumented Dart Impact Total Energy, 23°C         19         J         ASTM D3763           Izod Impact, unnotched 80*10*4 +23°C         48         kJ/m²         ISO 180/1U           Izod Impact, notched 80*10*4 +23°C         13         kJ/m²         ISO 180/1A           THERMAL (1)           HDT, 0.45 MPa, 3.2 mm, unannealed         146         °C         ASTM D648	Flexural Stress	150	MPa	ISO 178
Izod Impact, unnotched, 23°C         740         J/m         ASTM D4812           Izod Impact, notched, 23°C         149         J/m         ASTM D256           Multiaxial Impact         6         J         ISO 6603           Instrumented Dart Impact Total Energy, 23°C         19         J         ASTM D3763           Izod Impact, unnotched 80*10*4 +23°C         48         kJ/m²         ISO 180/1U           Izod Impact, notched 80*10*4 +23°C         13         kJ/m²         ISO 180/1A           THERMAL (1)           HDT, 0.45 MPa, 3.2 mm, unannealed         146         °C         ASTM D648	Flexural Modulus, 2 mm/min	6190	MPa	ISO 178
Izod Impact, notched, 23°C         149         J/m         ASTM D256           Multiaxial Impact         6         J         ISO 6603           Instrumented Dart Impact Total Energy, 23°C         19         J         ASTM D3763           Izod Impact, unnotched 80*10*4 +23°C         48         kJ/m²         ISO 180/1U           Izod Impact, notched 80*10*4 +23°C         13         kJ/m²         ISO 180/1A           THERMAL (1)         **C         ASTM D648	IMPACT (1)			
Multiaxial Impact         6         J         ISO 6603           Instrumented Dart Impact Total Energy, 23°C         19         J         ASTM D3763           Izod Impact, unnotched 80°10°4 +23°C         48         kJ/m²         ISO 180/1U           Izod Impact, notched 80°10°4 +23°C         13         kJ/m²         ISO 180/1A           THERMAL (1)         **         **         ASTM D648           HDT, 0.45 MPa, 3.2 mm, unannealed         146         **C         ASTM D648	Izod Impact, unnotched, 23°C	740	J/m	ASTM D4812
Instrumented Dart Impact Total Energy, 23°C   19   J   ASTM D3763     Izod Impact, unnotched 80*10*4 + 23°C   48   kJ/m²   ISO 180/1U     Izod Impact, notched 80*10*4 + 23°C   13   kJ/m²   ISO 180/1A     THERMAL (1)     HDT, 0.45 MPa, 3.2 mm, unannealed   146   °C   ASTM D648	Izod Impact, notched, 23°C	149	J/m	ASTM D256
Izod Impact, unnotched 80*10*4 +23°C       48       kJ/m²       ISO 180/1U         Izod Impact, notched 80*10*4 +23°C       13       kJ/m²       ISO 180/1A         THERMAL (1)         HDT, 0.45 MPa, 3.2 mm, unannealed       146       °C       ASTM D648	Multiaxial Impact	6	J	ISO 6603
Izod Impact, notched 80*10*4 +23°C       13       kJ/m²       ISO 180/1A         THERMAL (1)         HDT, 0.45 MPa, 3.2 mm, unannealed       146       °C       ASTM D648	Instrumented Dart Impact Total Energy, 23°C	19	J	ASTM D3763
THERMAL (1) HDT, 0.45 MPa, 3.2 mm, unannealed 146 °C ASTM D648	Izod Impact, unnotched 80*10*4 +23°C	48	kJ/m²	ISO 180/1U
<b>HDT, 0.45 MPa, 3.2 mm, unannealed</b> 146 °C ASTM D648	Izod Impact, notched 80*10*4 +23°C	13	kJ/m²	ISO 180/1A
	THERMAL (1)			
<b>HDT, 1.82 MPa, 3.2mm, unannealed</b> 142 °C ASTM D648	HDT, 0.45 MPa, 3.2 mm, unannealed	146	°C	ASTM D648
	HDT, 1.82 MPa, 3.2mm, unannealed	142	°C	ASTM D648
<b>CTE, -30°C to 30°C, flow</b> 3.74E-05 1/°C ASTM D696	CTE, -30°C to 30°C, flow	3.74E-05	1/°C	ASTM D696



PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
CTE, -30°C to 30°C, xflow	6.3E-05	1/°C	ASTM D696
HDT/Bf, 0.45 MPa Flatw 80*10*4 sp=64mm	146	°C	ISO 75/Bf
HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm	141	°C	ISO 75/Af
PHYSICAL (1)			
Specific Gravity	1.48	-	ASTM D792
Density	1.47	g/cm³	ASTM D792
Moisture Absorption, (23°C/50% RH/24 hrs)	0.09	%	ASTM D570
Mold Shrinkage, flow, 24 hrs <sup>(2)</sup>	0.2 - 0.4	%	ASTM D955
Mold Shrinkage, xflow, 24 hrs <sup>(2)</sup>	0.3 – 0.6	%	ASTM D955
Wear Factor Washer	89	10^-10 in^5-min/ft-lb-hr	ASTM D3702 Modified: Manual
Wear Factor Ring	13	10^-10 in^5-min/ft-lb-hr	ASTM D3702 Modified: Manual
Dynamic COF	0.46	-	ASTM D3702 Modified: Manual
Static COF	0.5	-	ASTM D3702 Modified: Manual
Moisture Absorption (23°C / 50% RH)	0.13	%	ISO 62
INJECTION MOLDING (3)			
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	

- (1) 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.
- (2) 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.
- (3) 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.

## **DISCLAIMER**

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