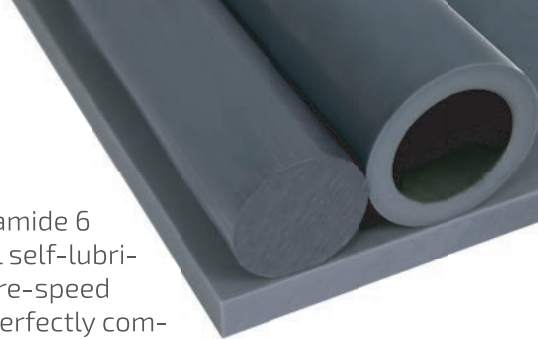




PA ●

NYLATRON® NSM

Semi-crystalline plastic, NYLATRON® NSM is a self-formulated cast polyamide 6 containing solid lubricants in the form of additives which give this material self-lubricating properties, excellent sliding properties, wear resistance and pressure-speed factor limits (about 5 times higher than conventional cast polyamides). It perfectly complements ERTALON® LFX, since it is a material especially recommended for lubrication-free applications that require high sliding speeds.



MAIN CHARACTERISTICS

- Excellent sliding properties
- Low coefficients of friction
- Self-lubricating
- High resistance to wear
- Pressure-velocity values up to 5 times higher than conventional polyamides
- Good resistance to high energy radiation (gamma rays and X-rays)
- Good electrical insulation properties
- High mechanical damping capacity
- Easy machining

APPLICATIONS

- Bushings with rotation, subjected to heavy loads
- Sliding guides
- Large parts
- Especially recommended for non-lubricated applications with high sliding speeds
- Bearings
- Rollers, wheels, wear components
- Wear pads
- Gears



CHEMICAL
RESISTANCE



ELECTRICAL
INSULATION



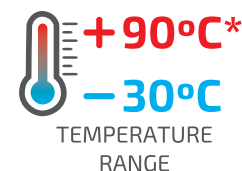
WEAR
RESISTANCE



SLIDING
PROPERTIES



IMPACT
RESISTANCE



TEMPERATURE
RANGE

*continuously (20.000H)

All figures given are indicative only, Polylanema Lda. is not liable for the use of the materials without consulting with our technical department.



PROPERTIES	TEST METHODS	UNITS	NYLATRON® NSM
COLOR		-	GREY
DENSITY	ISO 1183-1	g/cm³	1.14
WATER ABSORPTION			
AFTER 24/96H IMMERSION IN WATER OF 23°C ¹	ISO 62	mg	40/76
AFTER 24/96H IMMERSION IN WATER OF 23°C ¹	ISO 62	%	0.59/1.12
AT SATURATION IN AIR OF 23°C / 50% RH	-	%	2
AT SATURATION IN WATER OF A 23°C	-	%	6.3
THERMAL PROPERTIES ²			
MELTING TEMPERARUTE (DSC, 10°C/MIN)	ISO 11357-1/-3	°C	215
GLASS TRANSITION TEMPERATURE (DSC, 20°C/MIN) ³	ISO 11357-1/-3	°C	-
THERMAL CONDUCTIVITY A 23°C	-	W/(K.m)	0.29
COEFFICIENT OF LINEAR THERMAL EXPANSION			
AVERAGE VALUE BETWEEN 23-60°C	-	M/(m.K)	80 x 10 ⁻⁶
AVERAGE VALUE BETWEEN 23-100°C	-	M/(m.K)	95 x 10 ⁻⁶
TEMPERATURE OF DEFLECTION UNDER LOAD			
METHOD A 1.8 MPA	+ ISO 75-1/-2	°C	75
MAXIMUM ALLOABLE SERVICE TEMPERATURE IN AIR			
FOR SHORT PERIODS ⁴	-	°C	165
CONTINUOUSLY: FOR 5.000/20.000H ⁵	-	°C	105/90
MINIMUM SERVICE TEMPERATURE ⁶	-	°C	-30
FAMMABILITY ⁷			
"OXYGEN INDEX"	ISO 4589-1/-2	%	-
ACCORDING TO UL94 (3/6MM DE ESPESSURA)	-	-	HB/HB
MECHANICAL PROPERTIES AT 23°C ⁸			
TENSION TEST ⁹			
TENSILE STRESS AT YIELD/AT BREAK ¹⁰	+ ISO 527-1/-2	MPa	78/-
TENSILE STRESS AT YIELD/AT BREAK ¹⁰	++ ISO 527-1/-2	MPa	50/-
TENSILE STRENGTH ¹⁰	+ ISO 527-1/-2	MPa	80
TENSILE STRAIN AT YIELD ¹⁰	+ ISO 527-1/-2	%	5
TENSILE STRAIN AT BREAK ¹⁰	+ ISO 527-1/-2	%	25
TENSILE STRAIN AT BREAK ¹⁰	++ ISO 527-1/-2	%	>50
TENSILE MODULUS OF ELASTICITY ¹¹	+ ISO 527-1/-2	MPa	3150
TENSILE MODULUS OF ELASTICITY ¹¹	++ ISO 527-1/-2	MPa	1525
COMPRESSION TEST ¹²			
COMPRESSIVE STRESS AT 1/2/5% NOMINAL STRAIN ¹¹ +	ISO 604	MPa	31/59/87
CHARPY IMPACT STRENGTH - UNNOTCHED ¹³	+ ISO 179-1/1eU	KJ/m²	75
CHARPY IMPACT STRENGTH - NOTCHED	+ ISO 179-1/1eA	KJ/m²	3.5
BALL IDENTATION HARDNESS ⁴	+ ISO 2039-1	N/mm²	150
ROCKWELL HARDNESS ¹⁴	+ ISO 2039-2	-	M 81
ELECTRICAL PROPERTIES AT 23°C			
ELECTRIC STRENGTH ¹⁵	+ IEC 60243-1	kV/mm	25
ELECTRIC STRENGTH ¹⁵	++ IEC 60243-1	kV/mm	17
VOLUME RESISTIVITY	+ IEC 60093	Ohm.cm	> 10 ¹⁶
VOLUME RESISTIVITY	++ IEC 60093	Ohm.cm	> 10 ¹²
SURFACE RESISTIVITY	+ IEC 60093	Ohm	> 10 ¹³
SURFACE RESISTIVITY	++ IEC 60093	Ohm	> 10 ¹²
RELATIVE PERMITTIVITY ε _r : A 100HZ	+ IEC 60250	-	3.6
RELATIVE PERMITTIVITY ε _r : A 100HZ	++ IEC 60250	-	6.6
RELATIVE PERMITTIVITY ε _r : A 1MHZ	+ IEC 60250	-	3.2
RELATIVE PERMITTIVITY ε _r : A 1MHZ	++ IEC 60250	-	3.7
DIELECTRIC DISSIPATION FACTOR TAN δ : A 100HZ	+ IEC 60250	-	0.012
DIELECTRIC DISSIPATION FACTOR TAN δ : A 100HZ	++ IEC 60250	-	0.14
DIELECTRIC DISSIPATION FACTOR TAN δ : A 1MHZ	+ IEC 60250	-	0.016
DIELECTRIC DISSIPATION FACTOR TAN δ : A 1MHZ	++ IEC 60250	-	0.05
COMPARATIVE TRACKING INDEX (CTI)	+ IEC 60112	-	600
COMPARATIVE TRACKING INDEX (CTI)	++ IEC 60112	-	600

NOTE: 1 g/cm³ = 1000 kg/m³ ; 1 MPa = 1 N/mm² ; 1 KV/mm = 1 MV/m

+: values for dry material
++: values referring to material in equilibrium with the standard atmosphere 23°C / 50% rh

(1) According to method 1 of ISO 62 and measured on ø 50x3 mm discs. (2) The elements supplied for this property are for the most part supplied by the manufacturers of the raw materials. (3) The values of this property are only attributed to amorphous rather than semi-crystalline materials. (4) Only for short periods of exposure in applications where only very low loads are applied to the material. (5) Temperature that resists after a period of 5,000 / 20,000 hours. After this time, there is a decrease of about 50% in tensile strength compared to the original value. The given temperature values are based on the thermal oxidation degradation which occurs which causes a reduction of the properties. In the meantime, the maximum permissible service temperature depends in many cases essentially on the deduction and magnitude of the mechanical stresses to which the material is subject. (6) As the impact strength decreases with decreasing temperature, the minimum allowable service temperature is determined by the extent of impact to which the material is subjected. The values given are based on unfavorable impact conditions and can not therefore be considered absolute limits. (7) These assessments derive from the technical specifications of the manufacturers of the raw materials and do not allow the determination of the behavior of the materials under fire conditions. (8) Most of the figures given by the properties of the (+) materials are mean values of the tests done on species machined with ø 40-60 mm. (9) Specimen testing: Type 1b. (10) Speed test: 5 or 50 mm / min. (11) Speed test: 1m / min. (12) Testing specimens: cylinders ø 8 x 16 mm. (13) Pendulum used: 15J. (14) Test on 10 mm thick specimens. (15) Electrode configuration: cylinders ø 25 / ø 75 mm, in transformer oil according to IEC 60296.

Note that the electrical force for the extruded black material can be considerably lower than that of natural material. The possible micro porosity in the center of conserved forms in stock significantly reduces the electric force.