

# NYLON PRODUCTS

## CASE STUDY

Sheaves on heavy-duty lifting equipment made from Nylatron® GSM cast nylon increase wire rope life, reduce weight on the boom or mast, eliminate corrosion, and improve lift and over-the-road performance. (Prior materials: Steel, Cast iron)



	Small/Screw Machine Nylon Parts (Extruded Type 6/6)	Larger or Near Net Nylon Shapes (Cast Type 6 Nylons)
For general purpose wear and structural parts  (FDA grades available)	<b>Nylon 101</b> Of all the unmodified nylons, Nylon 101 is the strongest, most rigid and has one of the highest melting points. It is commonly specified for screw machined electrical insulators and food contact parts.  It is stocked in both natural and black. Other colors are available on a custom basis. Nylon 101 natural is FDA, USDA, NSF, and 3A-Dairy compliant.	<b>MC® 901 Nylon</b> Heat stabilized nylon offering long-term thermal stability to 260°F. It is blue in color and used in a variety of bearing and structural applications such as wheels, gears, and custom parts. <b>MC® 907 Nylon</b> Unmodified type 6 nylon offering the highest strength and hardness of the nylon 6 grades. MC 907 natural is FDA, USDA and 3A-Dairy compliant. It is off-white in color and primarily used for food contact parts.
For improved load bearing capability	<b>Nylatron® GS Nylon</b> Molybdenum disulphide (MoS <sub>2</sub> ) filled nylon offering improved strength and rigidity. With a lower coefficient of linear thermal expansion than Nylon 101, Nylatron® GS parts maintain better fit and clearances, and have less tendency to seize as bearings.	<b>Nylatron® GSM Nylon</b> Nylatron GSM contains finely divided particles of molybdenum disulphide (MoS <sub>2</sub> ) to enhance its load bearing capabilities while maintaining the impact resistance inherent to nylon. It is the most commonly used grade for gears, sheaves, sprockets and custom parts. It is grey-black in color.
For best wear resistance and lowest coefficient of friction	See Ertalyte® TX, page 15	<b>Nylatron® NSM Nylon</b> Best bearing and wear nylon product available today. Proprietary type 6 nylon formulation produced using Quadrant's Monocast® process. Solid lubricant additives impart self-lubricating, high pressure/velocity and superior wear resistance characteristics. Nylatron NSM was developed specifically for demanding applications where larger size parts are required. It is ideal for bearings, gears and wear pads. <b>In wear applications, Nylatron NSM lasts up to 10 times longer than standard Type 6 nylon.</b>
For improved load capacity or For improved frictional characteristics	<b>30% Glass-reinforced Nylon 6/6</b> For applications requiring higher compressive strength and rigidity, 30% glass reinforced Nylon 6/6 is also available. It is stocked in diameters ranging from 10mm to 150mm (or .394" to 5.910" in meter lengths).	<b>Nylatron® GSM Blue Nylon</b> The first cast nylon to combine both molybdenum disulphide (MoS <sub>2</sub> ) and oil for the load capability of Nylatron GSM nylon, plus improved frictional characteristics. It excels in higher pressures, and at low speeds—up to 40 fpm. It offers 20% lower coefficient of friction, 50% greater limiting PV, and a lower “k” factor than Nylatron GSM, and the lowest “slip-stick” of any nylon product making it ideal for slide pads, thrust washers and trunion bearings. Nylatron GSM Blue should be considered for any oil-filled nylon application. It is dark blue in color.

Table 2

Wear Rate, Coefficient of Friction and Limiting PV Data					
Nylon	Wear Factor “k” (1)	Comparative Wear Rate to Nylatron® NSM	Coefficient of Friction		Limiting PV (4)
			Static (2)	Dynamic (3)	
Nylatron® NSM	12	1.0	.17–.25	.17–.23	15,000
Nylatron® GSM Blue	86	7.2	.17–.23	.17–.21	3,400
Nylatron® GSM	91	7.6	.21–.25	.19–.23	2,500
Standard Type 6 (a)	92	7.7	.21–.24	.21–.23	1,875
Nylon 6/6	72	6.0	.16–.20	.27–.31	2,700

(1) Measured on 1/2" I.D. journal at 5000 PV (118 fpm & 42.2 psi)

$K = h/PVT + 10^{-10}$   
(cu.in.min./ft.lb.hr.) where h = radial wear (in)  
P = normal pressure, (psi)  
V = sliding speed, (fpm)  
T = test duration, (hrs)

(2) Measured on thrust washer bearing under a normal load of 50 lbs. Gradually increasing torque was applied until the bearing completed at 90° rotation in about one second.

(3) Measured on thrust washer testing machine, unlubricated @ 20 fpm & 250 psi.

(4) Limiting PV (Test value—unlubricated @ 100 fpm (lb.ft/in.2 min.)

(a) Equivalent to Quadrant's MC® 901.