

# TECHNICAL DATA SHEET

## Nylatron Polyamide

Nylatron® is the Trade Name for a family of Cast and Extruded Nylon shapes from Quadrant EPP. These products are formulated to give superior performance in a variety of applications by adding proprietary additives to increase load, improve PV values, and give longer life in bearing and wear applications.

Nylatron is Nylon (Polyamide) based polymer with additives such as Oil, Moly, and proprietary fillers. These allow higher speeds, higher loads, or reduced slip stick properties. Nylon is one of the most widely used and versatile thermoplastic resins. Its combination of physical properties and reasonable price make it a favorite choice for numerous applications. Nylons toughness, wear resistance, tensile strength and lubricity make it a good choice for many mechanical machine parts.

\*Available MSM, WP, 4.6, MC901, GS, GSM, GSM (blue), LiG, LFG, GF30, 703XL.

### GRADES OF NYLATRON®

#### Nylatron® GSM - Cast MOS2-Filled Nylon 6

Nylatron GSM cast nylon contains finely divided particles of molybdenum disulfide 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 gray-black in color.

#### Nylatron® GSM Blue - Cast MOS2- & Oil-Filled Nylon 6

Nylatron GSM Blue nylon is the first cast nylon to combine both molybdenum disulfide 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.

It is 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.

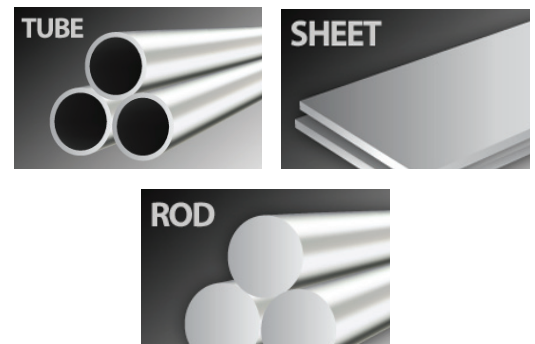
#### Benefits

- Excellent load bearing capacity
- Strength and toughness
- Superior wear resistance
- Low coefficient of friction
- Fatigue resistance
- Compression resistance
- Lightweight
- Non abrasive

#### Applications

- Bearings
- Rollers
- Wheels & wear components
- Semiconductor
- Medical
- Wear Pads
- Gears
- Nozels
- Bushings
- Guides
- Seals
- Washers
- Plugs

#### SHAPES AVAILABLE



### SEE NEXT PAGE FOR ADDITIONAL INFORMATION

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### Nylatron® GS - Extruded Nylon 6/6, MoS2 filled

Nylatron GS Nylon is a nylon and molybdenum disulphide (MoS2) composition designed to improve the mechanical, thermal and bearing properties of type 6/6 nylon while maintaining its basic electrical and chemical characteristics.

Through compounding, finely divided particles impart extra lubricity to this nylon, permitting Nylatron GS parts to operate with little or no lubrication.

The added lubricity also contributes dramatically to component service life, making Nylatron GS a very cost-efficient choice.

Nylatron GS offers greater wear resistance, lower surface friction, higher strength and greater rigidity than unfilled 6/6 with improved dimensional stability.

<b>TYPICAL PROPERTIES of EXTRUDED NYLONS</b>				
ASTM or UL test	Property	Nylon 6/6 Unfilled	Nylatron GS Moly-Filled 6/6	Nylon 6/6 30% Glass
<b>PHYSICAL</b>				
D792	Density (lb/in <sup>3</sup> ) (g/cm <sup>3</sup> )	0.042 1.15	0.042 1.16	0.049 1.35
D570	Water Absorption, 24 hrs (%) Saturation (%)	0.3 7.0	0.3 7.0	0.7 5.4
<b>MECHANICAL</b>				
D638	Tensile Strength (psi)	11,500	12,500	27,000
D638	Tensile Modulus (psi)	425,000	480,000	1,400,000
D638	Tensile Elongation at Break (%)	50	25	3
D790	Flexural Strength (psi)	15,000	17,000	39,000
D790	Flexural Modulus (psi)	450,000	460,000	1,200,000
D695	Compressive Strength (psi)	12,500	16,000	-
D695	Compressive Modulus (psi)	420,000	420,000	-
D785	Hardness, Rockwell R	M85 / R115	M85 / R115	M101
D256	IZOD Notched Impact (ft-lb/in)	0.6	0.5	2.1
<b>THERMAL</b>				
D696	Coefficient of Linear Thermal Expansion (x 10 <sup>-5</sup> in./in./°F)	5.5	4.0	1.2
D648	Heat Deflection Temp (°F / °C) at 264 psi	200 / 93	200 / 93	482 / 250
D3418	Melting Temperature (°F / °C)	500 / 260	500 / 260	491 / 255
-	Max Operating Temp (°F / °C)	210 / 99	220 / 104	230 / 110
C177	Thermal Conductivity (BTU-in/ft <sup>2</sup> -hr-°F) (x 10 <sup>-4</sup> cal/cm-sec-°C)	1.7 5.9	1.7 5.9	1.7 5.9
UL94	Flammability Rating	V-2	V-2	HB
<b>ELECTRICAL</b>				
D149	Dielectric Strength (V/mil) short time, 1/8" thick	400	350	530
D150	Dielectric Constant at 60 Hz	3.6	-	3.5
D150	Dissipation Factor at 60 Hz	0.02	-	0.02
D257	Volume Resistivity (ohm-cm) at 73°F, 50% RH	> 10 <sup>13</sup>	> 10 <sup>13</sup>	10 <sup>15</sup>

30% Glass-Reinforced Extruded Nylon 6/6

30% glass reinforced nylon 6/6 is also available for applications requiring higher compressive strength and rigidity, and improved frictional characteristics.

#### Nylatron® NSM - Cast Solid-Lubricant-Filled Nylon 6

Nylatron NSM is the premium bearing and wear nylon product available today.

Solid lubricant additives impart self-lubricating, high pressure/velocity and superior wear resistance characteristics. This wear resistance is delivered without either start-up or running lubrication making it ideal for bearings, gears and wear pads.

It is a proprietary type 6 nylon formulation produced using Quadrant EPP's MONOCAST process. Nylatron NSM was developed specifically for demanding applications where larger size parts are required. In wear applications, Nylatron NSM lasts up to 10 times longer than standard Type 6 nylon.

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**TYPICAL PROPERTIES of CAST NYLONS**

ASTM or UL test	Property	Nylon 6 MC907,901 Unfilled	Nyloil Oil-Filled	Nylatron GSM Moly- Filled	Nylatron GSM Blue Moly & Oil	Nylatron NSM Solid- Lube
<b>PHYSICAL</b>						
D792	Density (lb/in <sup>3</sup> ) (g/cm <sup>3</sup> )	0.042 1.15	0.042 1.16	0.042 1.16	0.042 1.15	0.042 1.15
D570	Water Absorption, 24 hrs (%) Saturation (%)	0.3 7.0	0.5 2.5	0.3 7.0	0.22 -	0.25 7.0
<b>MECHANICAL</b>						
D638	Tensile Strength (psi)	12,000	10,000	10,500	10,000	11,000
D638	Tensile Modulus (psi)	400,000	425,000	400,000	500,000	410,000
D638	Tensile Elongation at Break (%)	20	50	30	35	20
D790	Flexural Strength (psi)	16,000	15,000	16,000	15,000	16,000
D790	Flexural Modulus (psi)	500,000	425,000	400,000	425,000	400,000
D695	Compressive Strength (psi)	15,000	13,000	14,000	13,000	14,000
D695	Compressive Modulus (psi)	400,000	325,000	400,000	425,000	400,000
D785	Hardness, Rockwell R	R115	R110	R110	R117	R110
D256	IZOD Notched Impact (ft- lb/in)	0.4	1.6	0.5	0.9	0.5
<b>THERMAL</b>						
D696	Coefficient of Linear Thermal Expansion (x 10 <sup>-5</sup> in./in./°F)	3.5	3.5	3.5	5.9	5.0
D648	Heat Deflection Temp (°F / °C) at 264 psi	200 / 93	350 / 177	200 / 93	-	200 / 93
D3418	Melting Temperature (°F / °C)	420 / 215	450 / 232	420 / 215	420 / 215	420 / 215
-	Max Operating Temp (°F / °C)	200 / 93	230 / 110	200 / 93	200 / 93	200 / 93
C177	Thermal Conductivity (BTU-in/ft <sup>2</sup> -hr-°F) (x 10 <sup>-4</sup> cal/cm-sec-°C)	-	-	-	-	-
UL94	Flammability Rating	HB	-	HB	-	HB
<b>ELECTRICAL</b>						
D149	Dielectric Strength (V/mil) short time, 1/8" thick	500	550	400	-	400
D150	Dielectric Constant at 60 Hz	3.7	3.7	3.7	-	-
D150	Dissipation Factor at 60 Hz	-	-	-	-	-
D257	Volume Resistivity (ohm- cm) at 73°F, 50% RH	> 10 <sup>13</sup>	-	> 10 <sup>13</sup>	> 10 <sup>13</sup>	> 10 <sup>13</sup>

NYLATRON is a registered trademark of Quadrant Engineering Plastic Products.  
NYLOIL is a registered trademark of Cast Nylons, Ltd.

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