

# NYLATRON® Extruded Products

## Polyamides (PA)

### Main Characteristics:

- High mechanical strength, stiffness, hardness and toughness
- Good fatigue resistance
- Excellent resilience
- High mechanical damping ability
- Good sliding properties
- Excellent wear resistance
- Good electrical insulating properties
- Good resistance to high energy radiation (gamma and X rays)
- Good machinability

Within the Polyamides, commonly referred to as 'nylons', we distinguish different types. The most important ones are: PA6, PA66, PA11 and PA12.

The differences in physical properties which exist between these types are mainly determined by the composition and the structure of their molecular chains.

### NYLATRON® GS

(PA66 + MoS<sub>2</sub>)

Colour: Grey black

The addition of MoS<sub>2</sub> renders this material somewhat stiffer, harder and dimensionally more stable than ERTALON® 66SA, but results in some loss of impact strength. The nucleating effect of the Molybdenum Disulphide results in an improved crystalline structure enhancing bearing and wear properties.

# NYLATRON® GS

Nylon 66 + Molybdenum Disulphide (PA66+MoS<sub>2</sub>)

The performance of nylon 66 can be enhanced by the incorporation of a filler. NYLATRON® GS has been modified with molybdenum disulphide (MoS<sub>2</sub>), which results in a material with even better wear resistance and a lower coefficient of friction. Stiffness, tensile strength and temperature resistance are also improved.

- High impact strength
- High mechanical damping
- Good alkaline resistance (up to pH 11)
- High strength / stiffness
- Good fatigue resistance
- Low weight (1/6 vs Steel)
- Excellent wear resistance
- Continuous temperature 80°C (max 180°C)

## Common Applications:

Racks; Pinions; Gears; Bearings; Rollers; Wheels; cable sheaves; Cams; Nuts; Valve seats; Pulleys; Gaskets; Electrical insulators.

## Delivery Programme

	min	max
Rod 1m & 3m long diameter (mm)	6.0	50
Tube 1m & 3m long outer diameter (mm)	20	66
inner diameter (mm)	10	55
Coiled Strip length dependent on thickness		
width (m)	25.40	101.6
thickness (mm)	0.25	3.18
Plate 1m & 3m long		
width (mm)	610	
thickness (mm)	8.0	50

Colour: Grey black

## Technical Specification

Property	ISO Method	Units	Values
Density	1183	g/cm <sup>3</sup>	1.15
Water absorption			
• Saturation in air (23°C/50% RH)	~	%	2.30
• Saturation in water (23°C)	~	%	7.80
Tensile strength* <sup>1</sup>	527	N/mm <sup>2</sup>	92
Tensile modulus of elasticity* <sup>1</sup>	527	N/mm <sup>2</sup>	3500
Elongation at break* <sup>1</sup>	527	%	20
Impact - Charpy** <sup>1</sup>	179/1eU	kJ/m <sup>2</sup>	no break
Impact - Izod notched* <sup>1</sup>	180/2A	kJ/m <sup>2</sup>	4
Hardness	Rockwell	~	M88
	Shore D	~	~
Melt point	~	°C	255
Max allowable service temperature in air			
• for short periods	~	°C	180
• continuously for 20,000 hrs	~	°C	80
Linear thermal expansion coefficient	~	K <sup>-1</sup> x 10 <sup>-5</sup>	8.0
Thermal conductivity	~	W/(K.m)	0.29
Flammability* <sup>2</sup> (6mm thickness)	~	~	HB
Volume resistivity* <sup>1</sup>	IEC93	Ω.cm	>10 <sup>14</sup>
Dielectric strength* <sup>1</sup>	IEC243	kV/mm	26
Outside applications			
• UV resistance	~	~	A
Acids - strong (pH<3)	~	~	C
Alkalis - strong (pH>11)	~	~	B/C
Chlorinated hydrocarbons	~	~	A/B
Hot water	~	~	B

'A' - Acceptable service

'B' - Limited service

'C' - Unacceptable

\*<sup>1</sup> - Measured on dry test specimens (where applicable)

\*<sup>2</sup> - Tests completed by DSM EPP using UL test methods