## Nylatrack<sup>™</sup> PA6



## Polyamide 6

Nylatrack<sup>™</sup> PA6 is a heavy-duty track plate material designed to reduce the weight and noise of tracked vehicles such as subsea trenchers (ROVs), excavators, bulldozers and crawlers. Track plates (also known as track shoes or track pads) made from Nylatrack<sup>™</sup> PA6 weigh up to 80% less than comparable steel plates, leading to a significant reduction in ground pressure and soil compression all while maintaining excellent traction. The nylon 6 material exhibits great resistance to wear, corrosion and adhesion, making for a long service life with low cleaning effort. In addition to low rates of deformation under load, the flexible material exhibits unique bending behavior that helps to absorb vibrations from the equipment and muffle the noise of the undercarriage.

Nylatrack<sup>™</sup> plasticized nylon track plates find successful application on a wide range of on-land and subsea tracked vehicles. More than 25 standard track plate designs are available, with the additional option of customer-specified designs.

## PRODUCT DATASHEET

Oppose     Mathematication     Display and any and any and any and any and any			ISO*			ASTM*		
Opposite     Size invasion encreance (MAP. Tas 6) (2)     P			Test methods	Units	Indicative values	Test methods	Units	Indicative values
Paintmakary. Use Simil. (20 Sig.)     Index     Index <thindex< th="">     Index     Index</thindex<>	al properties (1)	Melting temperature (DSC, 10°C (50°F) / min)	ISO 11357-1/-3	°C	215	ASTM D3418	°F	
Paintmanuby Core (1) (2) (2) (2) (3) (4) (2) (4) (4) (4) (4) (4) (4) (4) (4) (4) (4		Glass transition temperature (DMA- Tan $\delta$ ) (2)		°C			°F	
Paintmanuby Core (1) (2) (2) (2) (3) (4) (2) (4) (4) (4) (4) (4) (4) (4) (4) (4) (4		Thermal conductivity at 23°C (73°F)		W/(K.m)			BTU in./(hr.ft <sup>2</sup> .°F)	
Pain makang, Us is bin (Los M, I)     ISO 527.14-2 (?)     MPa     SS     ASTM D58 (%)     PSi       Tendle strain (loo maximo). Us yield     ISO 527.14-2 (?)     MPa     SS     ASTM D58 (%)     96		Coefficient of linear thermal expansion (-40 to 150 °C) (-40 to 300°F)				ASTM E-831 (TMA)	µin./in./°F	
Paintmanuby Core (1) (2) (2) (2) (3) (4) (2) (4) (4) (4) (4) (4) (4) (4) (4) (4) (4		Coefficient of linear thermal expansion (23 to 60°C) (73°F to 140°F)		μm/(m.K)				
Pain makang, Us is bin (Los M, I)     ISO 527.14-2 (?)     MPa     SS     ASTM D58 (%)     PSi       Tendle strain (loo maximo). Us yield     ISO 527.14-2 (?)     MPa     SS     ASTM D58 (%)     96		Coefficient of linear thermal expansion (23 to 100°C) (73°F to 210°F)		μm/(m.K)				
Pain makang, Us is bin (Los M, I)     ISO 527.14-2 (?)     MPa     SS     ASTM D58 (%)     PSi       Tendle strain (loo maximo). Us yield     ISO 527.14-2 (?)     MPa     SS     ASTM D58 (%)     96		Heat Deflection Temperature: method A: 1.8 MPa (264 PSI)	ISO 75-1/-2	°C		ASTM D648	°F	
Partinitionality (L. by at parting (L. b))     Image of the parting (L. b) (L. b))     Image of the parting (L. b))	Ű.	Continuous allowable service temperature in air (20.000 hrs) (3)		°C	90		°F	
Pain makang, Us is bin (Los M, I)     ISO 527.14-2 (?)     MPa     SS     ASTM D58 (%)     PSi       Tendle strain (loo maximo). Us yield     ISO 527.14-2 (?)     MPa     SS     ASTM D58 (%)     96	Ther	Min. service temperature (4)		°C			°F	
Inside strength     ISO 527-1/2 (7)     MPa     55     ASTM D588 (8)     %       Tensile strain (elongation) at yield     ISO 527-1/2 (7)     %     >50     ASTM D588 (8)     %       Tensile strain (elongation) at yield     ISO 527-1/2 (7)     %     >50     ASTM D588 (8)     %       Shear Strength     ASTM D588 (7)     %50     ASTM D588 (8)     %5     ASTM D588 (8)     %5       Compressive strength     ASTM D732     MPa     14000     ASTM D588 (8)     %5       Compressive strength     ISO 517-1/2 (9)     MPa     14000     ASTM D588 (8)     %5       Compressive strength     ISO 179-1/1 eU     k3/m²     no break     ASTM D732     PSI       Charry impact strength     ISO 179-1/1 eU     k3/m²     no break     ASTM D700 (13)     PSI       Piesural strength     ISO 178 (12)     MPa     47     ASTM D700 (KSI     ISO 178 (12)     MPa     ASTM D700 (KSI     ISO 170 (13)     PSI       Piesural strength     ISO 178 (12)     MPa     1600     ASTM D700 (KSI     ISO 170 (13)     PSI     ISO 170 (13)		Flammability: UL 94 (3 mm (1/8 in.)) (5)			HB			HB
Image: Static (dongation) at yield     ISO 527-1/-2 (7)     94     ASTM D688 (8)     94       Tensile strain (dongation) at break     ISO 527-1/-2 (7)     94     5-50     ASTM D688 (8)     94       Tensile strain (dongation) at break     ISO 527-1/-2 (7)     94     5-50     ASTM D688 (8)     94       Sher' Sherghth     ISO 527-1/-2 (7)     94     14000     ASTM D688 (8)     95       Compressive strength     ISO 527-1/-2 (7)     94     14000     ASTM D688 (8)     95       Compressive strength     ISO 527-1/-2 (7)     MPa     14000     ASTM D688 (8)     95       Compressive strength     ISO 179-1/140     MPa     ASTM D696 (11)     951        Compressive strength - nonched     ISO 179-1/140     Kl/m <sup>3</sup> 100     ASTM D598 (31)     951        Izod Inpact inciched     ISO 179-1/140     Kl/m <sup>3</sup> 100     ASTM D598 (31)     950        Izod Inpact inciched     ISO 179-1/140     MPa     1000     ASTM D590 (NI)        Izod Inpact inciched     ISO 179 (12)     MPa     1000 <td>Flammability: Oxygen Index</td> <td>ISO 4589-1/-2</td> <td>%</td> <td></td> <td></td> <td></td> <td></td>		Flammability: Oxygen Index	ISO 4589-1/-2	%				
Tensile strain (elongation) at break     ISO 527-1/2 (7)     %     >50     ASTM D58 (8)     %       Tensile modulas of elassicity     ISO 527-1/2 (9)     MPa     1400     ASTM D58 (8)     KSI       Shear Strength     ASTM D732     MPa     -     ASTM D58 (8)     KSI       Compressive strength     ISO 527-1/2 (9)     MPa     1400     ASTM D58 (8)     KSI       Compressive strength     ISO 5064 (10)     MPa     -     ASTM D58 (8)     KSI       Compressive strength     ISO 179-1/1.8U     KJm <sup>3</sup> no break     ASTM D58 (1)     PSI     -     -       Izod Impact strength     ISO 179-1/1.8U     KJm <sup>3</sup> no break     ASTM D58 (13)     PSI     -		Tensile strength	ISO 527-1/-2 (7)	МРа	55	ASTM D638 (8)	PSI	
Rockwell Mardness (14)   ISO 203-2   I.I.I.   I.I.I.   ASTM D755   I.I.I.   ASTM D240   I.I.I.     Beckwell Mardness D (14)   ISO 868   ASTM D755   ASTM D240   IIIIIII   IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII		Tensile strain (elongation) at yield	ISO 527-1/-2 (7)	%		ASTM D638 (8)	%	
Rockwell Mardness (14)   ISO 203-2   I.I.I.   I.I.I.   ASTM D755   I.I.I.   ASTM D240   I.I.I.     Beckwell Mardness D (14)   ISO 868   ASTM D755   ASTM D240   IIIIIII   IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	9	Tensile strain (elongation) at break	ISO 527-1/-2 (7)	%	>50	ASTM D638 (8)	%	
Rockwell Mardness (14)   ISO 203-2   I.I.I.   I.I.I.   ASTM D755   I.I.I.   ASTM D240   I.I.I.     Beckwell Mardness D (14)   ISO 868   ASTM D755   ASTM D240   IIIIIII   IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	rties (	Tensile modulus of elasticity	ISO 527-1/-2 (9)	MPa	1400	ASTM D638 (8)	KSI	
Rockwell Mardness (14)   ISO 203-2   I.I.I.   I.I.I.   ASTM D755   I.I.I.   ASTM D240   I.I.I.     Beckwell Mardness D (14)   ISO 868   ASTM D755   ASTM D240   IIIIIII   IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII		Shear Strength	ASTM D732	MPa		ASTM D732	PSI	
Rockwell Mardness (14)   ISO 203-2   I.I.I.   I.I.I.   ASTM D755   I.I.I.   ASTM D240   I.I.I.     Beckwell Mardness D (14)   ISO 868   ASTM D755   ASTM D240   IIIIIII   IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	be	Compressive stress at 1 / 2 / 5 % nominal strain	ISO 604 (10)	MPa				
Rockwell Mardness (14)   ISO 203-2   I.I.I.   I.I.I.   ASTM D755   I.I.I.   ASTM D240   I.I.I.     Beckwell Mardness D (14)   ISO 868   ASTM D755   ASTM D240   IIIIIII   IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	20	Compressive strength				ASTM D695 (11)	PSI	
Rockwell Mardness (14)   ISO 203-2   I.I.I.   I.I.I.   ASTM D755   I.I.I.   ASTM D240   I.I.I.     Beckwell Mardness D (14)   ISO 868   ASTM D755   ASTM D240   IIIIIII   IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	Mechanical F	Charpy impact strength - unnotched	ISO 179-1/1eU	kJ/m²	no break			
Rockwell Mardness (14)   ISO 203-2   I.I.I.   I.I.I.   ASTM D755   I.I.I.   ASTM D240   I.I.I.     Beckwell Mardness D (14)   ISO 868   ASTM D755   ASTM D240   IIIIIII   IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII		Charpy impact strength - notched	ISO 179-1/1eA	kJ/m²	10			
Rockwell Mardness (14)   ISO 203-2   I.I.I.   I.I.I.   ASTM D755   I.I.I.   ASTM D240   I.I.I.     Beckwell Mardness D (14)   ISO 868   ASTM D755   ASTM D240   IIIIIII   IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII		Izod Impact notched				ASTM D256	ft.lb./in	
Rockwell Mardness (14)   ISO 203-2   I.I.I.   I.I.I.   ASTM D755   I.I.I.   ASTM D240   I.I.I.     Beckwell Mardness D (14)   ISO 868   ASTM D755   ASTM D240   IIIIIII   IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII		Flexural strength	ISO 178 (12)	MPa	47	ASTM D790 (13)	PSI	
Shore Hardness D (14)   ISO 868   ASTM D240   Image: Constant Constene Constene Constant Constant Constant Constene Consta		Flexural modulus of elasticity	ISO 178 (12)	MPa	1600	ASTM D790	KSI	
Bischic strength   IEC 60243-1 (15)   KV/mm   ASTM D149   Volts/mil     Volume resistivity   IEC 60243-1 (15)   KV/mm   ASTM D257   Ohm.cm     Volume resistivity   ANSI/ESD STM 11.11   Ohm   ASTM D257   Ohm.cm     Dielectric constant at 1 MHz   IEC 62631-2-1   IEC 62631-2-1   ASTM D150   ASTM D150     Dissipation factor at 1MHz   IEC 62631-2-1   IEC 62631-2-1   ASTM D150   IEC 60243-1     Specific Gravity   IEC 62631-2-1   IEC 62631-2-1   ASTM D150   IEC 60243-1     Specific Gravity   IEC 62631-2-1   IEC 62631-2-1   ASTM D150   IEC 60243-1     Vater absorption after 24h immersion in water of 23 °C (73°F)   ISO 1183-1   g/cm³   1.09   ASTM D570 (17)   %     Water absorption after 24h immersion in water of 23 °C (73°F)   ISO 62 (16)   %   ASTM D570 (17)   %   IEC 60243-11-4   IEC 62631-2-1		Rockwell M hardness (14)	ISO 2039-2			ASTM D785		
Big b		Shore Hardness D (14)	ISO 868			ASTM D2240		
Volume resistivity     IEC 62631-3:1     Ohm.cm     ASTM D257     Ohm.cm       Surface resistivity     ANSI/ESD STM 11.11     Ohm     ASTM D150     Image: ASTM D		Electric strength	IEC 60243-1 (15)	kV/mm		ASTM D149	Volts/mil	
Color   Black   Black   Black   Black   Black     Density   ISO 1183-1   g/cm <sup>3</sup> 1.09   -	es al	Volume resistivity		Ohm.cm		ASTM D257	Ohm.cm	
Color Black   Density ISO 1183-1 g/cm³ 1.09   Specific Gravity ISO 1183-1 g/cm³ 1.09   Water absorption after 24h immersion in water of 23 °C (73°F) ISO 62 (16) % ASTM D570 (17) %   Water absorption a saturation in water of 23 °C (73°F) ISO 7148-2 (18) µm/km QTM 55001 (19) In*invitutios.in/x10-04   Dynamic Coefficient of Friction (-) ISO 7148-2 (18) µm/km QTM 55007 (20) Imitiming PV at 100 FPPM (safety factor 4)   Limiting PV at 0.1 /1 m/s cylindrical sleeve bearings MPa.m/s MPa.m/s Imitiming PV at 0.1 /1 m/s cylindrical sleeve bearings MPa.m/s	erti	Surface resistivity	ANSI/ESD STM 11.11	Ohm		ANSI/ESD STM 11.11	Ohm	
Color Black   Density ISO 1183-1 g/cm³ 1.09   Specific Gravity ISO 1183-1 g/cm³ 1.09   Water absorption after 24h immersion in water of 23 °C (73°F) ISO 62 (16) % ASTM D570 (17) %   Water absorption a saturation in water of 23 °C (73°F) ISO 7148-2 (18) µm/km QTM 55001 (19) In*invitutios.in/x10-04   Dynamic Coefficient of Friction (-) ISO 7148-2 (18) µm/km QTM 55007 (20) Imitiming PV at 100 FPPM (safety factor 4)   Limiting PV at 0.1 /1 m/s cylindrical sleeve bearings MPa.m/s MPa.m/s Imitiming PV at 0.1 /1 m/s cylindrical sleeve bearings MPa.m/s	Elect Prope	Dielectric constant at 1 MHz	IEC 62631-2-1			ASTM D150		
Pensity ISO 1183-1 g/cm³ 1.09 ASTM D792 ASTM D792   Specific Gravity ISO 62 (16) % ASTM D570 (17) %   Water absorption after 24h immersion in water of 23 °C (73°F) ISO 62 (16) % ASTM D570 (17) %   Water absorption a saturation in water of 23 °C (73°F) ISO 7148-2 (18) µm/km QTM 55001 (19) In*imi%tibs.hrx10-30   Vear rate Jonamic Coefficient of Friction (-) ISO 7148-2 (18) µm/km QTM 55007 (20)    Imiting PV at 100 FPM (safety factor 4) ISO 7148-2 (18) MPa.m/s QTM 55007 (20) nt.bssim*.imi   Imiting PV at 0.1 / 1 m/s cylindrical sleeve bearings MPa.m/s MPa.m/s Imiting PV nt.bssim*.imi		Dissipation factor at 1MHz	IEC 62631-2-1			ASTM D150		
Specific Gravity ASTM D792 ASTM D792   Water absorption after 24h immersion in water of 23 °C (73°F) ISO 62 (16) % ASTM D570 (17) %   Water absorption at saturation in water of 23 °C (73°F) ISO 62 (16) % ASTM D570 (17) %   Water absorption at saturation in water of 23 °C (73°F) ISO 7148-2 (18) µm/km QTM 55010 (19) Intrimitube.hrX10-30   Upmanic Coefficient of Friction (-) ISO 7148-2 (18) ISO - QTM 55007 (20) Itabelm?.min   Limiting PV at 100 FPM (safety factor 4) ISO 7148-2 (18) MPa.m/s QTM 55007 (21) th.belm?.min	aneous	Color			Black			Black
Specific Gravity   Income of the second se		Density	ISO 1183-1	g/cm <sup>3</sup>	1.09			
Limiting PV at 100 PPM (safety racio 4) Limiting PV at 0.1 / 1 m/s cylindrical sleeve bearings MPa.m/s				-		ASTM D792		
Limiting PV at 100 PPM (safety factor 4) Limiting PV at 0.1 / 1 m/s cylindrical sleeve bearings MPa.m/s			ISO 62 (16)	%		ASTM D570 (17)	%	
Limiting PV at 100 PPM (safety racio 4) Limiting PV at 0.1 / 1 m/s cylindrical sleeve bearings MPa.m/s		Water absorption at saturation in water of 23 °C (73°F)		%		ASTM D570 (17)	%	
Limiting PV at 100 PPM (safety factor 4) Limiting PV at 0.1 / 1 m/s cylindrical sleeve bearings MPa.m/s	elle	Wear rate	ISO 7148-2 (18)	μm/km		QTM 55010 (19)	In3.min/ft.lbs.hrX10-10	
Limiting PV at 100 PPM (safety factor 4) Limiting PV at 0.1 / 1 m/s cylindrical sleeve bearings MPa.m/s	isc	Dynamic Coefficient of Friction (-)	ISO 7148-2 (18)		-	QTM 55007 (20)		
	Σ	Limiting PV at 100 FPM (safety factor 4)				QTM 55007 (21)	ft.lbs/in².min	
		Limiting PV at 0.1 / 1 m/s cylindrical sleeve bearings		MPa.m/s				
Chemical Resistance www.mcam.com/en/support/chemical-resistance-information www.mcam.com/en/support/chemical-resistance-information		Chemical Resistance	www.mcam.com/er	n/support/chemica	I-resistance-information	www.mcam.com/e	n/support/chemica	I-resistance-information

Note: 1 g/cm<sup>3</sup> = 1,000 kg/m<sup>3</sup> ; 1 MPa = 1 N/mm<sup>2</sup> ; 1 kV/mm = 1 MV/m

NYP: there is no yield point

This table, mainly to be used for comparison purposes, is a valuable help in the choice of a material. The data listed here fall within the normal range of product properties of dry material. However, they are not guaranteed and they should not be used to establish material specification limits nor used alone as the basis of design. See the remaining notes on the next page.

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## Notes, see datasheet on page 1

- 1. The figures given for these properties are for the most part derived from raw material supplier data and other publications.
- 2. Values for this property are only given here for amorphous materials and for materials that do not show a melting temperature (PBI & PI).
- 3. Temperature resistance over a period of min. 20,000 hours. After this period of time, there is a decrease in tensile strength measured at 23 °C of about 50 % as compared with the original value. The temperature value given here is thus based on the thermal-oxidative degradation which takes place and causes a reduction in properties. Note, however, that the maximum allowable service temperature depends in many cases essentially on the duration and the magnitude of the mechanical stresses to which the material is subjected.
- 4. Impact strength decreasing with decreasing temperature, the minimum allowable service temperature is practically mainly determined by the extent to which the material is subjected to impact. The value given here is based on unfavourable impact conditions and may consequently not be considered as being the absolute practical limit.
- 5. These estimated ratings, derived from raw material supplier data and other publications, are not intended to reflect hazards presented by the material under actual fire conditions. There is no 'UL File Number' available for these stock shapes.
- Most of the figures given for the mechanical properties are average values of tests run on dry test specimens machined out of rods 40-60 mm when available, else out of plate 10-20mm. All tests are done at room temperature (23°C / 73°F)
- 7. Test speed: either 5 mm/min or 50 mm/min [chosen acc. to ISO 10350-1 as a function of the ductile behaviour of the material (tough or brittle)] using type 1B tensile bars
- 8. Test speed: either 0.2"/min or 2"/min [chosen as a function of the ductile behaviour of the material (brittle or tough)] using Type 1 tensile bars
- 9. Test speed: 1 mm/min, using type 1B tensile bars
- 10. Test specimens: cylinders Ø 8 mm x 16 mm, test speed 1 mm/min
- 11. Test specimens: cylinders Ø 0.5" x 1", or square 0.5" x 1", test speed 0.05"/min
- 12. Test specimens: bars 4 mm (thickness) x 10 mm x 80 mm ; test speed: 2 mm/min ; span: 64 mm.
- 13. Test specimens: bars 0.25" (thickness) x 0.5" x 5" ; test speed: 0.11"/min ; span: 4"
- 14. Measured on 10 mm, 0.4" thick test specimens.
- 15. Electrode configuration: Æ 25 / Æ 75 mm coaxial cylinders ; in transformer oil according to IEC 60296 ; 1 mm thick test specimens.
- 16. Measured on discs Ø 50 mm x 3 mm.
- 17. Measured on 1/8" thick x 2" diameter or square
- Test procedure similar to Test Method A: "Pin-on-disk" as described in ISO 7148-2, Load 3MPa, sliding velocity= 0,33 m/s, mating plate steel Ra= 0.7-0.9 μm, tested at 23°C, 50%RH.
- Test using journal bearing system, 200 hrs, 118 ft/min, 42 PSI, steel shaft roughness 16±2 RMS micro inches with Hardness Brinell of 180-200
- 20. Test using Plastic Thrust Washer rotating against steel, 20 ft/min and 250 PSI, Stationary steel washer roughness 16±2 RMS micro inches with Rockwell C 20-24
- 21. Test using Plastic Thrust Washer rotating against steel, Step by step increase pressure, test ends when plastic begins to deform or if temperature increases, depending on the material, to a maximum which lays between 212°F (100°C) and 482°F (250°C), a 4:1 safety factor has been applied to the posted value.

This product data sheet and any data and specifications presented on our website shall provide promotional and general information about the Engineering Plastic Products (the "Products") manufactured and offered by Mitsubishi Chemical Advanced Materials and shall serve as a preliminary guide. All data and descriptions relating to the Products are of an indicative nature only. Neither this data sheet nor any data and specifications presented on our website shall create or be implied to create any legal or contractual obligation.

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