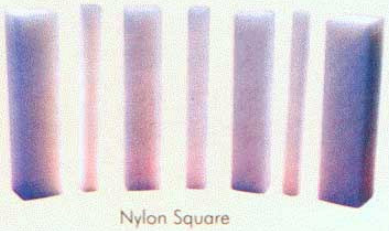
BHARAT ASBESTOS & RUBBER Co

137 Narayan Dhuru Street, Ground floor, Mumbai – 400 003
Tel – 23421765 / 23436898 / 23112055 / 23457055 Fax – 23422445
E.mail – barc@vsnl.com Web Add – www.barc.co.in

Nylon Gear

INTRODUCTION

We are the pioneers in the manufacturing and marketing of extruded **Nylon, Polyproylene, Delrin & PTFE** products under the brand name of **NYLON** . These products have found wide acceptance in India as well as overseas.



Nylon Square

MACHINABILITY

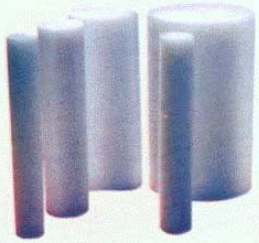
NYLON profiles have excellent machinability. It is easy cutting and does not require expertise other than that required for machining of other soft metals and ordinary nylon. NYLON can be turned, drilled, taped, threaded, reamed, milled, plained and blanked standard metal working machines such as lathe, milling machine, grinders, drills etc.

Nylon Black MOS_2 Rod

SPECIFIC ENGINEERING ADVANTAGES

NYLON products replaces metals even for critical engineering applications on account of outstanding following characteristics :

- Light in Weight.
- Self Lubricating.
- Economy with longer service life.
- Stress free and high abrasion resistance.
- Tough with high tensile and compressive strength.
- Runs quitely requires no maintenance.
- Shock resistance.
- Chemical resistance.
- Good dimensional stability.
- Excellent machinability.
- High temperature resistance.



Nylon Rod

Nylon Sleeper Pad (Universal Coupling) for Steel Rolling Mill

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NYLON
NYLON RODS, SQUARE & PROFILES

NYLON Roads & Profiles are characterised by a combination of high strength, toughness and abrasion resistance. Other advantages are low weight, non corrosive, low co-efficient of friction, true self lubricating effect, vibration and noice damping etc. Parts fabricated out of **NYLON** repiaces metal parts such as BUSHES, BEARINGS, SLIDE PLATES, GEARS, GEAR RACKS, WEAR PLATES, WASHERS, GASKETS, SEALS, SLEEPER PADS FOR ROLLING MILLS, LINERS, WHEELS, SLEEVES, PULLYS, ROAPWAY TYRES, ROLLERS ETC. which were originally fabricated out of Phosphor-Bronze, Gun metal, Brass, White metal, Steel and other expensive metals.

NYLON
EXTRUDED NYLON - 6

Suitable for General Purpose

- Off white colours.
- **NYLON MOS$_2$:**

Extruded Nylon - 6 with controlled quantity of MOS_2 (Molybdenumdisulphide) to enhance sliding (wear) and self lubrication properties. Better outdoor performance achived (UV radiation) in Black Colours.

NYLON

PROPERTIES OF NYLON GRADE-6

PROPERTY	CONDITION	TEST METHOD	UNIT	NYLON-6
Specific Gravity	Dry	ASTM D 792	-----	1.12- 1.14
Water absorption, 24 Hours	Dry	ASTM D 570	%	3.5
Saturation	Dry	ASTM D 570	%	8.5- 10.0
Tensile Strength	Dry	ASTM D 638	kg/cm2	800
	Moisture*	ASTM D 638	kg/cm2	500
Elongation at Break	Dry	ASTM D 638	%	30-100
	Moisture*	ASTM D 638	%	200-300
Modulus of Elasticity	Dry	ASTM D 638	kg/cm2	23000
	Moisture*	ASTM D 638	kg/cm2	6000-13000
Notched Impact Strength	Dry	DIN 53453	ki/m2	2.5 - 3.0
	Moisture*	DIN 53453	ki/m2	5.7
Impact Strength	Dry	DIN 53453	ki/m2	No Break
Shore Hardness	Dry	DIN 53505	Scale - D	65
	Moisture*	DIN 53453	Scale - D	
Co-efficient of friction (Nylon/Steel)				
No Lubrication	-	-	-	0.3 -0.4
Initial Lubrication	-	-	-	0.05 -0.1
Melting Point	Dry	ASTM D 569	°C	210-216
Flammability	Dry	ASTM D 635		Self - Ext
Heat Divrtortion Temperature				
66 Rsi	Dry	ASTM D 648	°C	145 -160
264 Rsi	Dry	ASTM D 648	°C	65
Maxmimum Service Tempreture				
Continuous	Dry	-	°C	90
Intermittent	Dry	-	°C	130
at low Temperture	Dry	-	°C	40
Cofficient of Thermalexpansion	Dry	ASTM D 696	10-6/°C	100-120
Dielectrie Strength	Moistture*	DIN 53481	Kv/mm	
Volume Resistivity	Moistture*	DIN 53482	Ohm/cm	
Surface Resistivity	Moistture*	DIN 53482	Ohm	
Dielectric Constant 105 Hz	Moistture*	DIN 53483	-	
Dissipation Factor 105 Hz	Moistture*	DIN 53483	-	
Resistance to Tracking	Moistture*	DIN 53480	-	

Nylon is resistant to common Solvents, Esters, Hydro Carbons, Ketones, Alkalies etc.
However it is attacked by strong Acids, Mineral Acids, Phenols etc.
* Conditional at 23°C at 50% RH, Saturation.
Above mentioned values are measured at 23 °C
Since practical operating conditions do not always correspond to the conditions of testing method - most values should be considered as an indication only and not as a basis for calculations. Allowance must be made for real operating conditions. All information is given in good faith without warranty.

NYLON

PROPERTIES OF POLYPROPYLENE EXTRUDED RODS

PROPERTY	A.S.T.M. TEST METHOD	POLYPROPYLENE
Melting Point	-	176
Specific Gravity Gms/CC	D-792	902-940
Specific Volume Cu-inch / lb	D-792	29.31
Tensile strength P.S.I.	D-638	4,300-5,500
Elongation %	D-638	200-700
Compressive Strength P.S.I.	D-695	8,500-10,000
Flaxural Strength P.S.I.	D-790	6,000-8000
Impact Strength (IZOD) P.S.I.	D-256	6-6-0
Hardness Rockwell	D-785	R-80-R.110
Thermal Conductivity -10 Cal/Sec/Sq.cm / 1°c/cm	C-177	
Specific Heat Cal °c/gm	-	46
Resistance to Heat (Cons)°f	-	250-320
Volume resistivity (ohms/cm)	D-257	10^{16}
Refractive Index nd	D-542	149
Transmitance %	D-1003	55-90
Haze %	D-1003	1-3.5
Arc-resistance Sec,	D-495	185
Water Absorption 24 hr 15%	D-570	01-03
Burning Rate Inch/min.	D-635	-
Machining Qualities	-	Good
Effect of night	-	Black for complete protection
Effect of weak Acid	D-543	None
Effect of Strong Acid	D-543	Attacked slowly by Zinc Acids
Effect of Weak Alkalies	D-543	None
Effect of strong Alkalies	D-543	Very Resistant
Effect of organic solvents	D-543	Resistant below 80 °c

NYLON
EXTRUDED POLYPROPYLENE RODS & SQUARES

Polypropylene copolymers have outstanding chemical resistance and show the highest resistance of all thermoplastics to organic chemicals. High density polyproylene has some similarity with Polyproylene copolymers in respect of chemical resistance , although here again Polypropylene copolymers posseses the additional advantages of being usable at higher operating temperatures. Both the polymers have similar solubility parameters and tend to swell by the same solvent. In both the cases the absence of any possible interaction between the crystalline polymer and the liquid prevents solution of the polymers in any liquid at room temperature. Polypropylene copolymer also possess an extremely high resistance to inorganic environments. It is not attacked by aqueous solution of inorganic salts not by most mineral acids and bases, even when in concentrated form, though it is liable to be attecked by oxidising agents e.g. 100% fuming Nitric acid and Sulphuric acid or the halogens.

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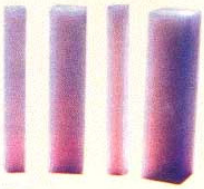
NYLON

EXTRUDED DELRIN P* RODS & SQUARES

Delrin-P offers more freedom in application engineering, excellent thermal stability, the high crystalline structure of **Delrin-P** acetalhomopolymer offers an outstanding combination of physical properties :

- Best combination of stiffness and toughness.
- Outstanding fatigue resistance.
- Outstanding resistance against automotive fuels, lubricants, solvents and many neutral chemicals.
- Excellent dimensional stability.
- Very good electrical insulating properties.
- Loco friction.
- Wide end use range down to very low temperature.

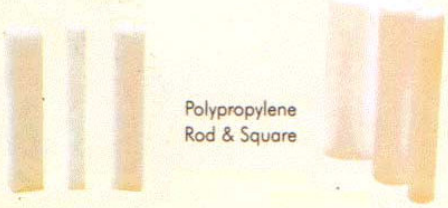
Black Delrin Rod



Delrin Square

Delrin Gear

Delrin Rod



Polypropylene Rod & Square

NYLON

PROPERTIES OF DELRIN P EXTRUDED RODS

	PROPERTY		TEST METHOD ISO	500 P
MECHANICAL	Tensile strength yeild	23°C	R527	70
		70°C		50
		100°C		36
		120°C		26
	Tesile stress at break	23°C	R527	66
	Elongation at yield	23°C	R527	15
		70°C		14
		100°C		11
		120°C		11
	Elongation at Break	23°C	R527	35
		70°C		85
		100°C		>250
		120°C		>250
	Elortic modulusion tension[2]	23°C	R527	3,2
		70°C		1,4
		1000°C		1,0
		120°C		0,6
	Modulus of elasticity in flexure	23°C	178	2,8
		70°C		1,3
		100°C		0,8
		120°C		0,6
	Notched Izod impact strength	23°C	180	7
		-40°C		6
	Notched Charpy impact strength	23°C	179	14
		-40°C		14
THERMAL	Deflection temperature under load[3]	1.8 MPA	75	105
	Melting Point, by DSC		3146 Method C2	175
	Vicat softening Point		306 A50	174
	Coefficient of linear Thermal expansion	-40°C to 30°C	(ASTM D696)	10,4
		30°C to 60°C		12,2
		60°C to 105°C		13,7
		105°C to 1500°C		14,9
ELECTRICAL	Volume resistivity		IEC 93	$1x10^{15}$
	Surface resistivity		IEC 93	$2x10^{14}$
	Dielectric constant 50% RH		IEC 250	3,7
	Dielectric strength Short time 2,3mm		IEC 243	32
	Dissiption factor 50%RH, 10^6Hz		1EC 250	0,005
	Arc resistance		(ASTM D495)	200 no tracking
MISCELLANEOUS	Density		1183	1,42
	Melt Flow Index		1133	15
	Flammability		UL94	HB
	Water absorption		62	
	-24 hours immersion			0,32
	- Equilibrium at 50% RH			0,28
	- Equilibrium immersion			1,40
	Rockwell hardness		2039 (R+M)	M92 R120
	Shrinkage, flow direction. 3,2mm			1,9 to 2,2

Chemical resistance : All resins have outstanding resistance to neutral chemicals, including a wide variety of solvent.

These values are for natural colour (NC-010) resins only. Colourants or additives of any king may alter some or all of these properties. The data listed here fall within the normal range of product properties, but they should not be used to establish specification limits nor used alone as the basis of design.

* We do not recommeng using Delrin P in strong acids or bases out side the pH range of 4-9, or under constant exposure to pressurised water or vapour.