



POLYSTEEL
(AN ENGINEERING PLASTIC)

ULTRA HIGH MOLECULAR WEIGHT
POLY ETHYLENE



Thinking of Finding Solutions to
Recurring Problems Related to
Wear, Corrosion, Noise and
Frequent Replacement of Parts?

POLYSTEEL IS THE ANSWER.
FOR UNINTERRUPTED PRODUCTION,
RELY ON POLYSTEEL

Applications

Paper Industry, Asbestos Industry, Textile Industry, Machine Construction, Mining & Exploration Industry, Food industry, Electro Plating, Electrical Industry, Refrigeration etc.

BHILWARA POLYMERS is a leading manufacturer of UHMWPE products in Indian and international markets since 1983. Bhilwara Polymers brings on board its many years of technical knowhow of UHMWPE manufacturing to provide tailored solutions catering specific engineering requirements, making it the ultimate solution for recurring problems related to wear, corrosion, noise and frequent replacement of parts.



Bhilwara Polymers is a reputed progressive company specialized in the manufacturing of

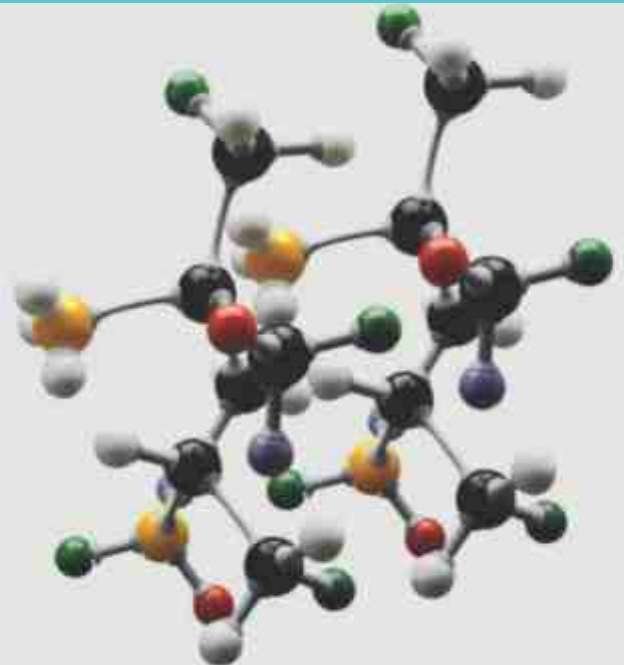
ULTRA HIGH MOLECULAR WEIGHT POLY ETHYLENE

under our brand name



POLYSTEEL
(AN ENGINEERING PLASTIC)

Since 1983



UHMWPE is a new generation Engineering Plastic which is prepared with the help of Ziegler Catalysts.

POLYSTEEL UHMWPE is manufactured by compression moulding under the guidance of highly technically qualified personnel.

POLYSTEEL UHMWPE has a molecular weight range in excess five million which are approximately ten times higher than that of High Molecular Weight HDPE.



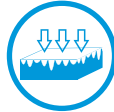
//OUR TARGET IS TO PRODUCE **ULTIMATE** SOLUTIONS

We offer a highly homogeneous and non-welded single block material in following sizes :

5600mm long	x	515mm wide	x	10mm to 130 mm thick
3300mm long	x	520mm wide	x	10mm to 130 mm thick
1000mm long	x	1000mm wide	x	10mm to 200mm thick
2000mm long	x	1000mm wide	x	10mm to 50mm thick

We can offer any machine part, linear and any other components as per drawings from our fully equipped workshop with expert engineers.

//OUTSTANDING PROPERTIES TO



- Abrasion Resistance
- High Energy Absorption
- Meets F.D.A Requirements
- Impact Resistance
- Self-lubricating
- Zero Water Absorption
- Chemical Resistance
- Low Coefficient of Friction
- Excellent Temperature Property

//POLYSTEEL PROPERTIES

Property	Typical Values	ASTM Test Method
<ul style="list-style-type: none"> Mechanical Density, g/cm ³ Tensile strength at yield, MPa (Ksi) Tensile strength at break, MPa (Ksi) Elongation at break, % Young's modulus, GPa (10 ⁶ Psi) At 23°C (73°F) At -269°C (-450°F) izod impact strength, kj/m (ft – lbf/in.) notch At 23°C (73°F) At -40°C (-40°F) Hardness, Shore D Abrasion resistance Water absorption, % Relative solution viscosity, dL/G	0.926-0.934 21(3.1) 48(7.0) 350 0.69(0.10) 2.97(0.43) 1.60(30) 1.1(21) 62-66 100 Nil 2.3-3.5	D792 D638 D638 D638 D638 D638 D256(a) D256(a) D2240 Sand Slurry D570 D4020
<ul style="list-style-type: none"> Thermal Crystalline melting range, powder, °C (°F) Coefficient of liner expansion, 10 ⁻⁴ /K At 20 to 100°C (68 to 212°F) At -200 to -100°C (-330 to -150°F)	138-142(280-289) 2 0.5	Polarizing-Microscope D696 D696
<ul style="list-style-type: none"> Electrical Volume resistivity, m Dielectric strength, kv/cm (v/mil) Dielectric constant Dissipation factor, X 10 ⁻⁴ At 50Hz At 1KHz At 0.1MHz	>5x10 ¹⁴ 900(2300) 2.30 1.9 0.5 2.5	D257 D149 D150 D150

- NOTE: Properties may vary depending on various factors.

// POLYSTEEL PROPERTIES

// COMPARISON OF DYNAMIC COEFFICIENT OF FRICTION ON POLISHED STEEL

Property	Polysteel	Nylon 6/6	Nylon 6	PTFE	Delrin®	Nylatron GS®
Dry	0.10 – 0.22	0.15 – 0.40	0.15 – 0.40	0.04 – 0.25	0.15 – 0.35	0.12 – 0.20
Water	0.05 – 0.10	0.14 – 0.19	0.14 – 0.19	0.04 – 0.08	0.10 – 0.20	0.10 – 0.20
Oil	0.05 – 0.08	0.02 – 0.11	0.02 – 0.11	0.04 – 0.05	0.05 – 0.10	0.08 – 0.10

// STATIC AND KINETIC COEFFICIENT OF FRICTION

Material	Static	Kinetic
Mildsteel Vs. Mildsteel	0.30 – 0.40	0.25 – 0.35
Mildsteel Vs. UHMW PE	0.15 – 0.20	0.12 – 0.20
UHMW PE Vs. UHMW PE	0.20 – 0.30	0.20 – 0.30

Test method = ASTM D 1894

// NOTCHED IMPACT STRENGTH VALUES*

Material	Impact Strength mj / mm ²
POLYSTEEL	>140
HM HDPE	40
HDPE	13
PTFE	19
PP	15
POM	12
NYLON-6	10

* As per modified DIN 53453

// CHEMICAL RESISTANCE OF POLYSTEEL IN COMPARISON WITH PP, POM, PTFE AND PA

Chemical	POLY STEEL	PP	POM	PTFE	PA
Water	+	+	+	+	-
Acid	+	+	-	+	-
Lye	+	+	+	+	+
Hydrochloric Acid	+	+	+	+	+
Halogens	-	-	-	+	-
Oxidizing Comb.	-	-	-	+	-
Oils / Fats	+	+	+	+	+
Alcohols	+	+	+	+	(+)
Ester	+	(+)	(+)	+	+
Organic Acid	+	(+)	(+)	+	(+)
Aromatics	(+)	-	(+)	+	(+)

// ABRASIVE RESISTANCE SAND SLURRY TEST

Material	Rating	Material	Rating
Polysteel	15	TFE / glass fiber	113
Nylon	31	Normal MWPE	125
High MWPE	44	Phosphor bronze	193
TFE	72	Yellow brass	409
Stainless Steel	84	Phenolic laminate	571
Polypropylene	87	Hickory wood	967
Polycarbonate	96	Hi Carbon Steel	100
Polyacetal	110		

Each material listed above was rotated 24 hours @ 1750 r.p.m.
 Carbon Steel = Abrasive rating of 100
 The weight loss for each material is relative to 100
 The lower the figure, the better the Abrasive Resistance
 50-50 sand / water slurry.

+ Resistant, (+) Limited Resistance, - Not Resistance

//POLYSTEEL GRADES

- VIRGIN WHITE UHMW PE – as specified in this brochure.
- CERAMIC FILLED UHMW PE – This grade is specially developed for Paper Industry by Reinforcing High Quality Micronised, Surface Quoted Ceramic Fillers and Additives to Improve Dimensional Stability, Hardness and Wear Resistance. It Improves Synthetic Wire Life even in High Speeds. It is Recommended in Paper Industry for use as Suction Box Covers, Foil Blades, Forming Boards, Centicleaner Nozzles.
- GRAPHITE FILLED UHMW PE – This grade is developed by Alloying Special Grade of Graphite and other Additives to Improve Sliding Surface.
- Other Grades includes U.V. Stabilised and Anti-static.

// POLYSTEEL GRADEWISE PROPERTIES

Properties	Unit	Virgin	Cera Green	G-Black
Density	g/cm ³	0.934	0.975	0.97
Hardness	Shore 'D'	65	72	67
Coefficient of dynamic friction	-	0.10	0.10	0.08
Abrasion loss by sand slurry test	Mg.	100	90	85

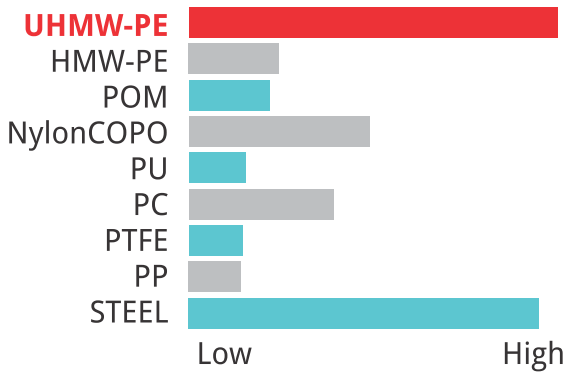
// PRODUCTS PAPER INDUSTRY MACHINE COMPONENTS



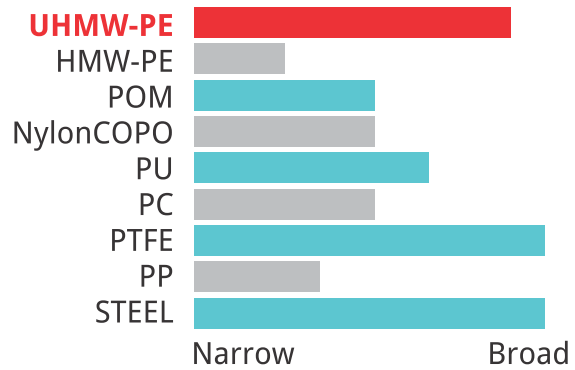
//QUICK REFERENCE FACTS

COMPARISON OF UHMW POLYMER TO OTHER MATERIALS

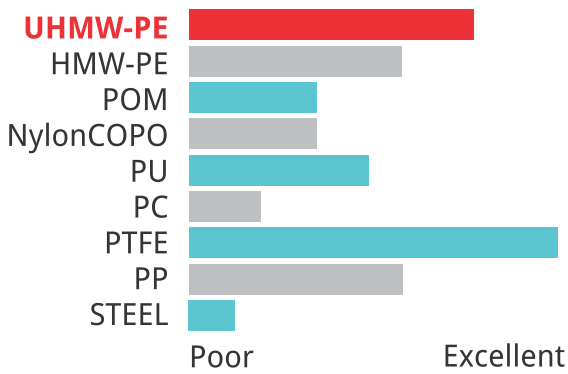
IMPACT RESISTANCE



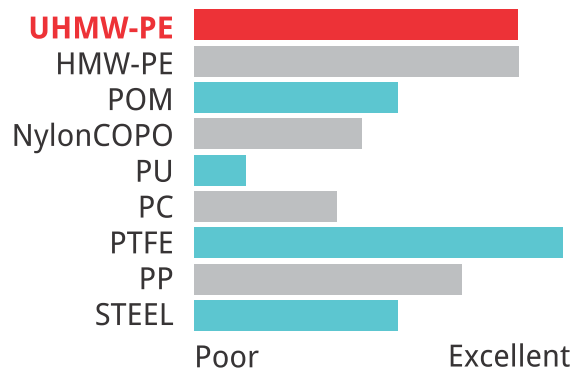
OPERATING TEMPERATURE RANGE



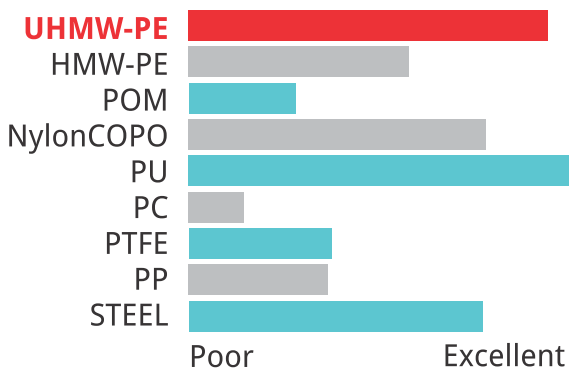
CHEMICAL RESISTANCE



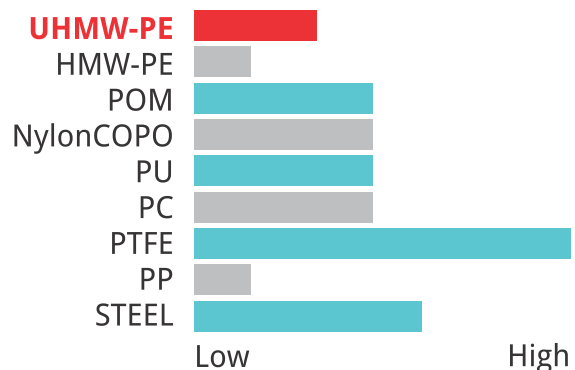
COEFFICIENT OF FRICTION



ABRASION RESISTANCE



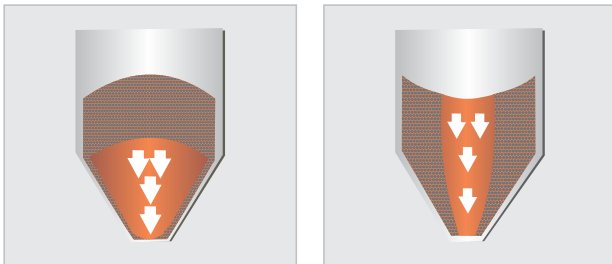
COST PER CUBIC INCH



//LINER

“ High Wear Resistant Plastics for Uninterrupted, Trouble Free Material Flow and New Solutions to Problems ”

The Problem



Bulk material tends to compact, rathole and arch due to its characteristics resulting in:

- Production Stoppage
- Wasted Hours
- Compromised Safety
- Business Standstill

The Solution



Polysteel Liner properties ensures flow of cohesive, non-free-flowing bulk materials:

- Low Surface Friction
- Zero Water Absorption
- Chemical Resistant
- Improved Surface Glide

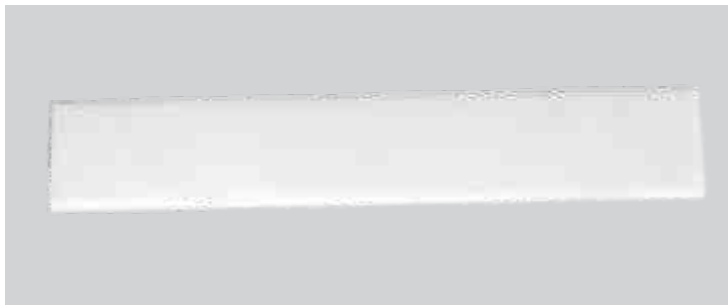
UHMWPE Liners are Easily Mechanically Fastened to Substrates of Steel, Stainless Steel, Gunite and Wood. Engineers worldwide highly recommend Polysteel Liners, besides we are committed to formulate and test our products to assure finest performance in the segment internationally.

“ The Bhilwara Polymers team will provide the optimum solutions for your specific applications by using application data and studying your equipments and environment. ”



// DOCTOR BLADES

“ Doctor Blades plays important role in Paper Manufacturing Processes. These Doctor Blades are required at different stages of Paper production. ”



POLYSTEEL Doctor Blade.
Paper manufacturing - WIRE PART



Epoxy Doctor Blade
Paper manufacturing - Press Section



P.B. Doctor Blade
Paper manufacturing - Dryer Section



// PRODUCTS



//APPLICATIONS

POLYSTEEL HAS NUMEROUS APPLICATIONS IN VARIOUS INDUSTRIES

Paper Industry

In wet end as Suction Box Covers Forming Boards Hydrofoils, Vacuum Foils, Sealing Strips, Deflectors, Centricleaner Nozzels, Support Tables etc. In felt and dryer sections as Doctor Blades, Yule Box Covers, Felt Conditioners, Scrapers, Tops etc. In Pulp Manufacturing as Wear Plates and Bearings for Washing Drums. Many other applications includes Gears, Pinion, Sleeves, Studs, Bushings Chain Guides etc.

Asbestos Cement Pipe & Sheet Ind.

In wet end as Suction Box Covers, Strips, Guide Rollers, Suction Box Plates, Bushes, Rollers etc.

Food Industry

Conveyor units and Guide, Reversing Rollers for Bottle Filling and Labeling Machines, Screw Conveyors for Pulps and Fruit Purees.

Electrical – Industry

Insulating Components for High and Very High Frequencies, Multi-Polar Contacts for Plugs and Cable Clamps.

Textile Industry

Pickers or Similar Components Subject to High Stress, such as Scutching Blades, Lug Straps, Picking Bowls, Picking Caps, Shuttle Keys etc. Experience has shown that these pickers last at least four to five times as compared to pickers from other high-grade materials.

Refrigeration

Gaskets, Sleeves, Valves, Packing for Pumps, these parts have been used successfully with Liquid Hydrogen (-253°C) and Liquid Helium (-269°C).

Mining & Exploration Industry

Coverings for Conveying Machinery (Chutes Vibrators), Air Separators, Flotation Chambers and Coal Bunkers. Components for Filtration Unit.

Machine Construction

Gear Wheels, Runners, Rope Guide Rollers, Valves, Slides (for Strongly Corrosive Media), Guide Bars, Non-abrasive Strips, Wipers, Rollers and Cam Grooves for Conveyor Belts. Components for Pumps, Gaskets, Punch Plates in the Leather and Plastic Industries. Suction Bands and Boxes for the Paper Industries. Reflecting Plates for Sand Blasting Plants, Grinding and Polishing Wheels after Incorporating Suitable Fillers. Safety and Spark-proof Tool as well as handles for a great variety of implements.

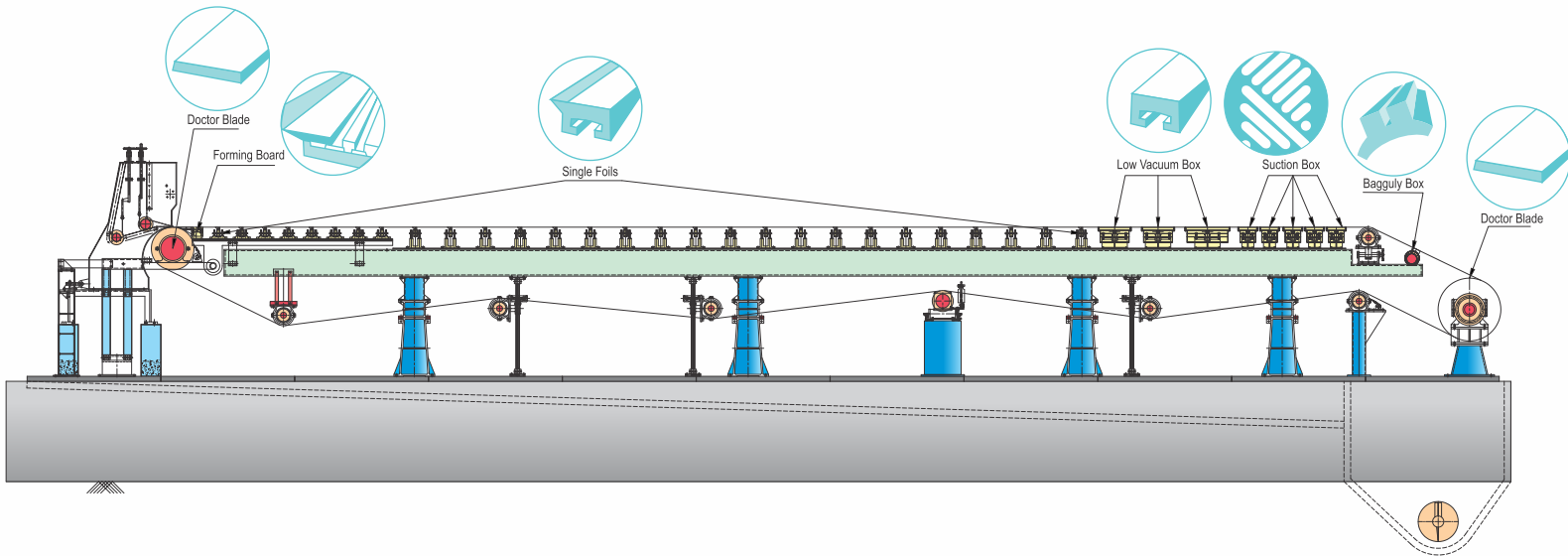
Electro – Plating

Rollers, Fittings, Gear Wheels, Bushings and other Pieces of Apparatus.

Other Applications

Shares on Snow Ploughs for Concrete and Asphalt Roads, Skids for Gliders.

//UHMWPE APPLICATIONS



for more information
please visit
www.polysteel.in

Information contained in this brochure is the result of testing the properties of UHMW under controlled conditions. Operating conditions may vary according to specific applications. We suggest that sample sections of UHMW polymer be tested and evaluated under anticipated conditions. Engineering data sheets available for special formulated POLYSTEEL.

Marketed by :

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