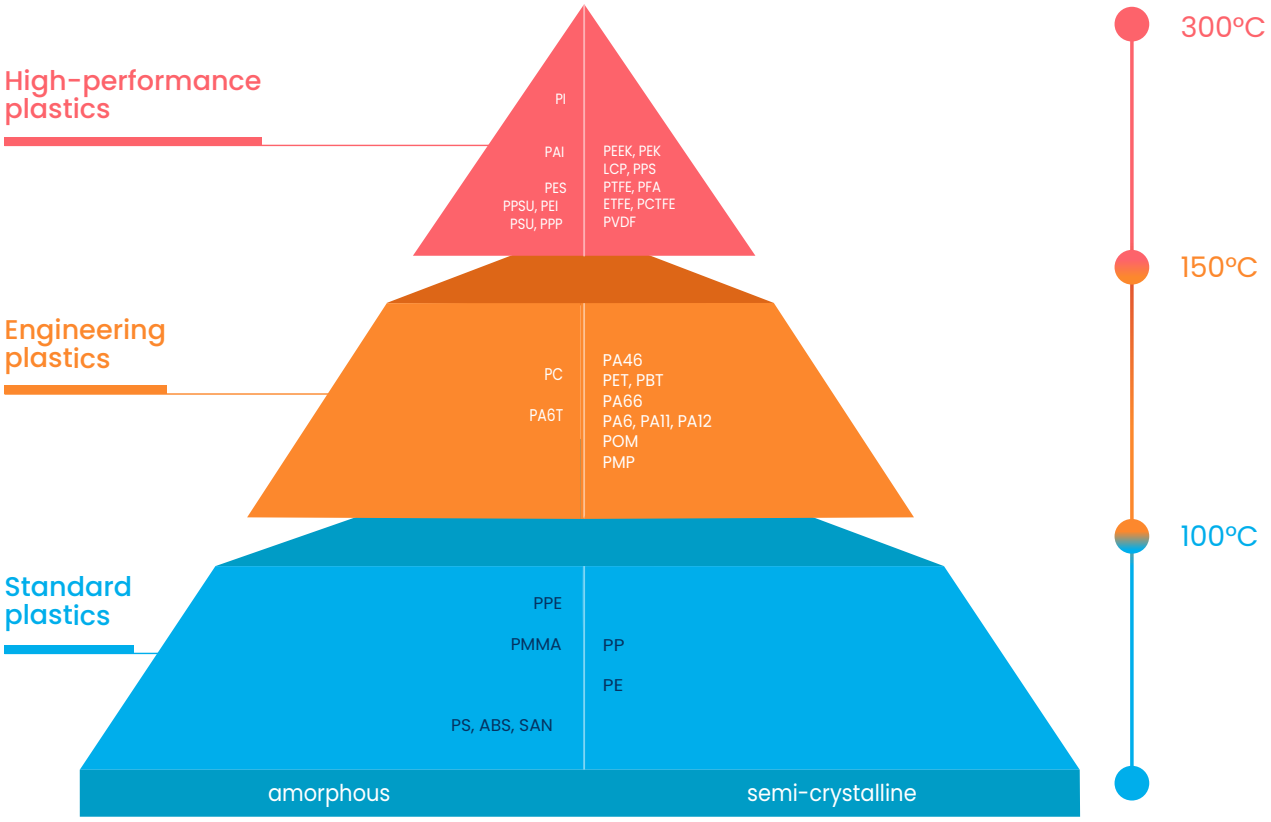
ENGINEERING PLASTIC SCREWS, NUTS & COMPONENTS

LINK-UPON

CONTENTS

INTRODUCTION AND APPLICATION OF ENGINEERING PLASTICS

Long-term service temperature of engineering plastics.



Engineering plastics, polymer materials with synthetic resin as main composite, generally refer to plastics used as mechanical engineering. Engineering plastics can be formed into variety of parts and components through process of melting, compression, and injection. Characteristics of engineering plastics are light weight, resistance to wear & corrosion, electrical insulation, transparency, and vibration absorption. Its properties can also be enhanced by adding reinforcing materials or additives making them anti-UV, anti-static, conductive, high-strength, heat resistance, chemical solvents resistance and other functions.

INTRODUCTION AND APPLICATION OF ENGINEERING PLASTICS

Material Selection

Material	Long-term use temperature	Various materials are available for selection according to different environments and temperature requirements.
PEEK	240°C	PEEK is a semi-crystalline engineering plastic, suitable for applications that used in high temperature, chemical solvent process. PEEK material is tough, rigid, creep-resistant, light-resistant, and multi-ray resistant. Screws, nuts, and various spare parts made of this material are widely used in semiconductor equipment, aerospace vehicle industry, automotive electronics and motor industry, oil/gas extraction equipment and even medical equipment or food production equipment.
PPS	200°C	PPS is a thermoplastic special engineering plastic, featuring high temperature resistance, corrosion resistance and high mechanical strength. In addition, it has electrical properties and dimensional stability which allows PPS-made parts suitable for electronic and electrical parts, auto parts, and chemical machinery parts.
PVDF	150°C	PVDF is a thermoplastic fluoropolymer with excellent chemical resistance, weather resistance, high temperature resistance, electrical insulation, lubrication, and wear resistance; it is suitable for various environments of acid-base solvent, semiconductor manufacturing processes, wet chemical processes, and equipment parts in the chemical industry.
PP	90°C	PP features excellent stretch ability, chemical resistance, hydrolysis resistance, electrical properties, and is suitable for use in various chemical environments, food production equipment and pharmaceutical machinery parts.
PPGF	120°C	PPGF is PP with glass fiber added to increase strength, has excellent chemical resistance, high purity, low water absorption and good electrical insulation properties and high temperature resistance.
PPS+GF	240°C	PPS added with glass fiber to reinforce strength and temperature resistance and has corrosion resistance and high mechanical properties, most importantly PPS's properties get no degradation after long-term use in high temperature environments. In addition, it has electrical properties and dimensional stability, and is suitable for applications such as electronic and electrical parts, auto parts, and chemical machinery parts.
RENY	105°C	High-temperature resistant nylon are added with glass fiber to increase strength, excellent oil resistance and high-temperature resistance, and parts made by RENY are widely used in automobiles, machinery, precision mechanical parts, electrical and electronic equipment, as well as civil engineering and construction materials.

INTRODUCTION AND APPLICATION OF ENGINEERING PLASTICS

Material Selection

Material	Long-term use temperature	Various materials are available for selection according to different environments and temperature requirements.
PVC	60°C	PVC is resistant to acid and alkali, has excellent electrical insulation, high mechanical strength, and good weather resistance. PVC is often used in mechanical components in contact with chemical solvents or outdoor equipment parts such as building materials, packaging, medicine, wires, and cables.
TPI	-269~280°C	TPI has excellent high-temperature resistant, wear resistance and friction performance under high pressure and high-speed scraping. Low gas performance under high vacuum state, excellent chemical resistance and mechanical properties, extraordinary dimensional stability, and low electrical conductivity.
PTFE	-190~260°C	PTFE is one of the fluorine-based resins, which is resistant to most chemicals and solvents. Due to excellent electrical properties, non-stick and lubricity, it is widely used in high temperature, chemical, electrical, mechanical and aviation fields.
PCTFE	-200~200°C	PCTFE is a fluoropolymer, low/high temperature resistant, chemical resistant, low permeability, and weather resistant. Widely used in semiconductor process equipment parts.
PEEK+GF	260°C	PEEK engineering plastics can withstand high temperature up to 260°C, and are suitable for thermal performance, chemical performance, and flame resistance (V-0); adding glass fiber improves its rigidity and higher temperature resistance.
PFA	-200°~260°C	PFA has low/high temperature resistance, chemical resistance, weather resistance, and excellent mechanical strength. It is widely used in pharmaceutical equipment or semiconductor wet process equipment related parts.
NYLON	70°C	Nylon has heat resistance, high hardness, wear resistance, and low friction coefficient; it is suitable for parts in mechanical engineering, food technology, electronics aviation, aerospace technology, and automotive industry.

Plastic Bolts and Nuts, プラスチックねじ , 塑膠螺絲

In many industries technical plastics play a vital role in improving the efficiency and competitiveness of customer applications. Link Upon offers a broad range of screws in different material selection for many industries.

Features

- Excellent chemical resistance to acids, alkalis, greases and solvents, hydrogen peroxide, demineralized water, hot steam.
- High thermo-mechanical strength.
- Low outgassing.
- Good wear resistance.
- Good plasma resistance.
- Continue use temperature:
  PEEK 240, TPI 260, PPS 200, RENY 105,
  PVDF 150, PP 90, PPGF 120, PVC 60
- Low weight：1/4 to 1/8 weight of metal:
  such as PP/0.9, PC/1.2, PEEK/1.3, PVDF/1.8 vs. iron/7.8, SUS/7.7.

Link Upon provides technical supports and solutions, from material selection to high-performance plastics injection, machining, extrusion and assembly...etc., total production process of customization service.

METRIC SCREWS & FASTENERS

A complete range of plastic screws, bolts, nuts, sizes from M1.4 to M16. Complete styles of screw heads are suitable for various equipment design requirements. Various materials are available for selection according to different environments and temperature, such as PEEK, PPS, PVDF, PP, RENY, PVC, NYLON, PTFE, PEI, TPI, PPGF, PEEK+GF.

Metric Specification

SPEC.	Hexagon Head 	Hex Socket Cap 	Hex Socket Cap Knurled 	Slotted Hexagon Head 	Cross Recessed Pan Head 	Cross Recessed Flat Head 	Slotted Flat Head 
1.4X3						V	
1.4X4						V	
1.4X6						V	
1.6X3						V	
2X4					V	V	
2X5					V		
2X6					V	V	
2X8					V		
2.5X10			V				
2.5X12		V	V		V		
2.5X20			V				
3X3		V	V	V	V		
3X4		V	V	V	V		
3X5		V	V	V	V	V	
3X6	V	V	V	V	V	V	
3X7.5						V	
3X8		V	V	V	V	V	
3X10		V	V	V	V	V	V
3X12		V	V	V	V		
3X15	V	V	V	V	V		
3X16		V	V	V	V		
3X20		V	V	V	V		
4X4	V	V	V	V	V		
4X5	V	V	V	V	V		
4X6	V	V	V	V	V		
4X8	V	V	V	V	V	V	
4X10	V	V	V	V	V	V	
4X12	V	V	V	V	V	V	
4X13	V	V	V	V	V		
4X15	V	V	V	V	V	V	
4X18	V	V	V	V	V		
4X20	V	V	V	V	V	V	
4X21	V	V	V	V	V		
4X25	V	V	V	V	V	V	
4X30	V	V	V	V	V	V	
5X5	V	V	V	V	V		
5X6	V	V	V	V	V		
5X8	V	V	V	V	V		
5X10	V	V	V	V	V	V	
5X12	V	V	V	V	V	V	
5X15	V	V	V	V	V	V	
5X16	V	V	V	V	V		
5X18	V	V	V	V	V		
5X20	V	V	V	V	V	V	

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Metric Specification

SPEC.	Hexagon Head 	Hex Socket Cap 	Hex Socket Cap Knurled 	Slotted Hexagon Head 	Cross Recessed Pan Head 	Cross Recessed Flat Head 	Slotted Flat Head 
5X25	V	V	V	V	V	V	
5X27	V	V	V	V	V		
5X30	V	V	V	V	V	V	
5X35	V	V	V	V	V		
6X4	V	V	V	V	V		
6X5	V	V	V	V	V		
6X6	V	V	V	V	V		
6X8	V	V	V	V	V		
6X10	V	V	V	V	V	V	
6X12	V	V	V	V	V		
6X15	V	V	V	V	V	V	
6X16	V	V	V	V	V		
6X18	V	V	V	V	V	V	
6X20	V	V	V	V	V	V	
6X22	V	V	V	V	V		
6X25	V	V	V	V	V	V	
6X27.5	V	V	V	V	V		
6X30	V	V	V	V	V	V	
6X35	V	V	V	V	V		
6X40	V	V	V	V	V		
6X45	V		V	V			
6X50	V	V	V	V	V		
6X55	V		V	V			
8X10	V	V	V	V	V		
8X15	V	V	V	V	V		
8X16	V	V	V	V	V		
8X20	V	V	V	V	V	V	
8X25	V	V	V	V	V		
8X30	V	V	V	V	V		
8X35	V	V	V	V	V		
8X40	V	V	V	V	V		
8X45	V	V	V	V	V		
8X50	V	V	V	V	V		
8X65	V	V	V	V	V		
10X15	V	V	V	V			
10X20	V	V	V	V			
10X30	V	V	V	V			
10X40	V	V	V	V			
10X60	V						
12X40	V						
12X50	V						
12X70	V						
12X80	V						
12X100	V						
16X40	V						

INCH SCREWS & FASTENERS

A complete range of plastic screws, bolts, nuts. Complete styles of screw heads are suitable for various equipment design requirements. Various materials are available for selection according to different environments and temperature, such as PEEK, PPS, PVDF, PP, RENY, PVC, NYLON, PTFE, PEI, TPI, PPGF, PEEK+GF.

Inch Specification

SPEC.	Length	Hexagon Head	Hex Socket Cap	Hex Socket Cap knurled	Slotted Hexagon Head	Cross Recessed Pan Head	Slotted Pan Head	Cross Recessed Flat Head	Slotted Flat Head
#0-80UNF	1/8"							V	
#2-56UNC	3/16"					V			
	1/4"					V			
	5/16"					V			
	3/8"					V			
#4-40UNC	1/8"							V	
	3/16"			V		V	V		
	1/4"			V		V	V		V
	5/16"			V		V	V	V	V
	3/8"		V	V		V	V	V	V
	7/16"							V	
	1/2"			V		V	V		V
	5/8"			V		V	V		V
	3/4"			V		V	V		V
	7/8"			V		V	V		V
	1"			V		V	V		V
#6-32UNC	1/4"			V		V	V		V
	5/16"			V		V	V		
	7/16"			V		V	V		V
	3/8"			V		V	V		V
	1/2"			V		V	V		V
	5/8"	V	V	V	V	V	V		V
	3/4"			V		V	V		V
	7/8"			V		V	V		V
	1"			V		V	V		V
#8-32UNC	1/4"		V	V		V	V		V
	5/16"		V	V		V	V		V
	3/8"	V	V	V	V	V	V		V
	1/2"	V	V	V	V	V	V		V
	5/8"	V	V	V	V	V	V		V
	3/4"	V	V		V	V			V
	7/8"		V	V		V	V		V
	1"		V	V		V	V		V
	1-1/4"		V	V		V	V		
#8-36UNF	3/8"	V	V		V	V			
	1/2"	V	V		V	V			
	5/8"	V	V		V	V			
	3/4"	V	V		V	V			
#10-24UNC	3/8"	V	V		V	V			
	1/2"	V	V		V	V			
	5/8"	V	V		V	V			
	3/4"	V	V		V	V			
	7/8"			V		V	V		
	1"	V	V		V	V			

INCH SCREWS & FASTENERS

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Inch Specification

SPEC.	Length	Hexagon Head	Hex Socket Cap	Hex Socket Cap knurled	Slotted Hexagon Head	Cross Recessed Pan Head	Slotted Pan Head	Cross Recessed Flat Head	Slotted Flat Head
#10-32UNF	3/8"	V	V	V	V	V	V		V
	1/2"	V	V		V	V			V
	5/8"	V	V	V	V	V	V		V
	3/4"	V	V		V	V			V
	7/8"			V		V	V		V
	1"	V	V		V	V			V
1/4-20UNC	3/8"			V					
	5/8"			V					
	1/2"	V	V		V	V			
	3/4"	V	V	V	V	V			
	7/8"			V					
	1"	V	V	V	V	V			
	1-1/4"	V	V	V	V	V			
	1-1/2"	V	V		V	V			
1/4-28UNF	3/4"	V	V		V	V			
	1"	V	V		V	V			
	1-1/2"	V	V		V	V			
5/16-18UNC	1"	V	V						
	1-1/2"	V	V	V					
5/16-24UNF	1"	V	V						
	1-1/2"	V	V						
3/8-16UNC	1"	V	V						
	1-1/2"	V	V						
3/8-24UNF	1"	V	V						
	1-1/2"	V	V						

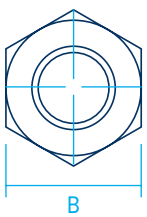
Nuts, Metric System

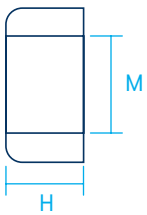
SPEC.	W*H	Thread Pitch
Metric	BxH (mm)	Pitch (mm)
M3	5.5×2.4	0.5
M4	7×3.2	0.7
M5	8×4	0.8
M6	10×5	1
M8	13×6.5	1.25
M10	17×8	1.5
M12	19×10	1.75

Nuts, Inch System

SPEC.	W*H	Thread Pitch
Inch	BxH (mm)	Pitch (mm)
#4-40UNC	6.35x2.49	40 *
#6-32UNC	7.92x2.90	32 *
#8-32UNC	8.74x3.30	32 *

*Threads per inch





Hexagon Set Screws

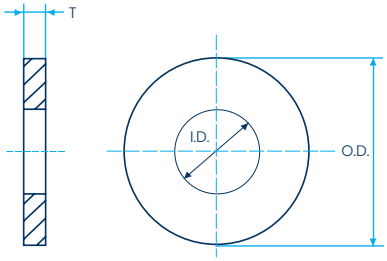
Metric	Length (mm)
M3	4
	5
M4	8
M5	6
	8
	10
	20
M6	4
	5
	6
	8
	10
	12

WASHERS

Washer is used between connecting part and nut, as a spacer to protect surface of the connecting part from being worn by the nut, and to reduce loosening or separation due to vibration caused during operation. Various materials are available for selection according to different environments and temperature requirements.

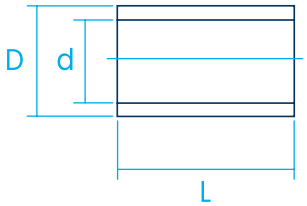
Specification

SPEC.	Outer diameter	Inner diameter	Thickness
Metric	O.D. (mm)	I.D. (mm)	T (mm)
M3	7.00	3.20	0.50
M4	9.00	4.30	0.80
M5	10.00	5.30	1.00
M6	12.50	6.40	1.60
M8	17.00	8.40	1.60
M10	21.00	10.50	2.00
M12	24.00	13.00	2.50



BUSHINGS

Plastic bushings are used outside of mechanical parts to protect metal counterparts or abrasive parts from wear due to long-term rotation. Different materials can be selected according to various requirements such as self-lubricating, wear-resistant, high-strength, etc.



Specification

d (I.D./mm)	D (O.D./mm)	L (Length/mm)
1.5	4	2.1
1.5	4	4.2
1.5	4	4.4
2	5	4.8
3	6	5
4	7	6
5	8	6
6	9	8
7	11	8
8	12	8
9	13	10
10	14	10
15	20	30
17	23	15
20	40	50.5
22	28	20
30	36	30
35.2	50.5	50
50.2	70.5	50
65.2	85.5	70
80.2	100	80

FLANGES

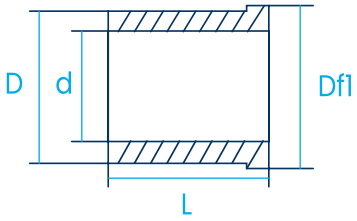
Plastic flange is suitable for rotation in an oil-free environment, and the plastic-made flange has a long service life, which can reduce frequency of parts replacement.

Specification

d (I.D./mm)	D (O.D./mm)	Df1 (Flange/mm)	L (Length/mm)
4	6	12	8.8
5	8	10	5.5
5	10	14	9
5.1	10	13	5.9
9.7	16	20	18
10	16	20.7	18
12.7	15	17.5	8
15.7	19.3	23	11
20	23	30	16.5
20	23	30	21.5
20	26	32	20

Advantages

- Wear resistant
- Corrosion resistant
- Impact resistant
- High tensile strength
- High flexural strength
- Conductive and antistatic available



Material Selection

- **NYLON (Long-term use temperature 70°C)**
  Nylon plastic has heat resistance, high hardness, wear resistance, and low friction coefficient; it is suitable for parts in mechanical engineering, food technology, electronics aviation, aerospace technology, and automotive industry.

- **PTFE (Long-term use temperature-190°C~260°C)**
  PTFE is one of the fluorine-based resins, which is resistant to most chemicals and solvents. Due to excellent electrical properties, non-stick and lubricity, it is widely used in high temperature, chemical, electrical, mechanical and aviation fields.

- **PEEK (Long-term use temperature 240°C)**
  PEEK is a semi-crystalline engineering plastic, suitable for applications that used in high temperature, chemical solvent process. PEEK material is tough, rigid, creep-resistant, light-resistant, and multi-ray resistant.

- **UPE (Long-term use temperature -150°C~90°C)**
  Ultra high molecular weight polyethylene (UPE) has high wear resistance and toughness, and is chemically stable, self-lubricating and wear-resistant, and is often used for sliding or rotating parts.

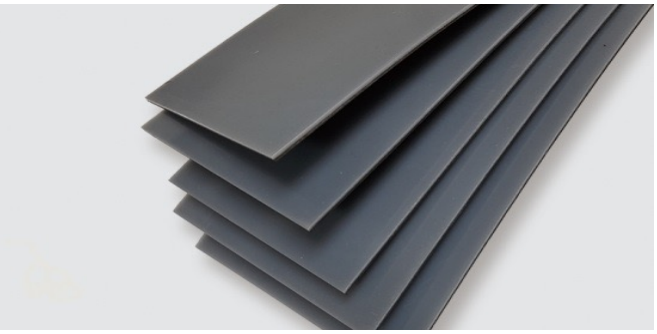
- **TPI Self-lubricating (Long-term use temperature -269°C~280°C)**
  TPI has excellent high-temperature resistant, wear resistance and friction performance under high pressure and high-speed scraping. Low gas performance under high vacuum state, excellent chemical resistance and mechanical properties, extraordinary dimensional stability, and low electrical conductivity.

- **POM (Long-term use temperature 100°C)**
  Also known as plastic steel with high rigidity, low friction, and dimensional stability. Resistant to most chemical solvents (non-acidic) and oils.

UHMW-PE LAMINATED SHEETS / FILMS / TAPE

New Light UPE represents innovative laminated sheets, films, tapes, and industrial products made of ultra-high molecular weight polyethylene (UHMW-PE). It has a low friction coefficient similar to PTFE, less wear than PTFE, and low particle generation that enables the products has better durability. besides that, it also has good chemical resistance and electrical properties that makes it suitable for component used in food and pharmaceutical equipment.

UHMW-PE Laminated Sheet



UPE Laminated sheet is comprised of layers of ultra-high molecular weight polyethylene (NL-W) and synthetic rubber. This sheet is a new product developed for lining, using UPE / UHMW-PE as a base, and adhesived with synthetic rubber that prevents UHMW-PE sheet from damaged.

Specification

Model no.	NL Material	Color of Rubber	Grade
WR	W	Black	Standard
WR(B)	AS(B)	Black	Antistastic

Thick.(t) mm	Width (W)	Length (L)
2,3,4,5,6	900	1800
7,8,9,10,11	900	900
	450	450

Features

- Solution for installation that is difficult to be adhesived.
- Bending becomes easier by using this laminated sheet, no fasteners required for assembly.
- Simplification of assemble structure, especially for the one using the UPE laminated sheet as inner lining.

UHMW-PE Film / Tape

UHMW-PE film / tape is made of ultra-high molecular weight polyethylene that mainly applied in industrial machineries. It has better durability due to its low friction coefficient is similar to PTFE, lesser abrasion than PTFE, and low particle generation. UPE film / tape also has good chemical resistance and electrical properties that allows improvement of better mechanical strength for applied equipment.

Specification

Model no.	Feature	Color	Thickness (mm)	Length/Roll (m)	Width (mm)(Roll)
#13W	Standard	Milky white	0.13	20, 50, 450	300…(1)
#13AS	Antistastic	Black	0.13	20, 50, 450	300…(1)
#25W	Standard	Milky white	0.25	20, 50, 220	300…(1)
#25AS	Antistastic	Black	0.25	20, 50, 220	300…(1)
#40W	Standard	Milky white	0.4	20, 140	300…(1)
#40AS	Antistastic	Black	0.4	20, 140	300…(1)
#50W	Standard	Milky white	0.5	20, 100	300…(1)
#50AS	Antistastic	Black	0.5	20, 100	300…(1)
ML501	Standard	Milky white	0.05	100	400…(1)
ML301	Standard	Milky white	0.03	100	400…(1)

UHMW-PE FIBER YARNS / PEEK FIBER YARNS

Yarns made of engineering plastics can have many special uses due to the inability of plastics. Yarns made from UPE can be woven into cut-resistant gloves, high-strength ropes and ballistic-resistant fabrics. Has better UV, chemical and cut resistance. Yarn made from PEEK has heat resistance, chemical resistance, high strength and toughness. Therefore, PEEK monofilament or multifilament can be used in filtration systems, medical equipment, tennis racket lines, musical instrument strings, etc. PEEK yarn has insulation and weather resistance and can be used in cable coverings, wire harnesses, 3D printed wire boxes, etc. for vehicles, aircraft, and automobiles.

UHMW-PE Yarns

UHMW-PE Fiber / Yarn / Filament Specification : 50D ~ 1200D

SPEC.	Breaking Strength	Rupture Modulus	Elongation at break
Unit	g/D	g/D	%
50D	≧ 36	≧ 1200	≦ 3.5
100D	≧ 35	≧ 1200	≦ 3.5
200D	≧ 35	≧ 1200	≦ 3.5
400D	≧ 33	≧ 1200	≦ 3.5

Yarns made of ultra-high molecular weight polyethylene performs higher cutting resistance than ordinary polyethylene. Compared with other thermoplastics, UPE is the plastic that has highest impact strength, because of its special intermolecular chain structure. UPE has high strength, excellent UV resistance, good chemical and cutting resistance and UPE-made-yarn is often used to make cut-resistant gloves, high-strength ropes and bulletproof fabrics.

PEEK Yarns

PEEK Fiber / Filament / Monofilament / Multifilament Specification

Monofilament diameter	Multifilament dtex (g / 10000m)
0.07mm~2.0mm	150dtex~1230dtex
0.10 mm	230 dtex
0.20 mm	275 dtex
0.25 mm	550 dtex
0.30 mm	1230 dtex
0.40 mm	
0.50 mm	

Yarn made of PEEK is with heat resistance, chemical resistance, high strength and toughness. With these characteristics PEEK monofilament or multifilament can be used in filtration systems, medical equipment, tennis racket lines, musical instrument strings, etc. In addition PEEK yarn is insulation and resistant to weathering that allows it to be applications in cable coverings and wire harnesses for vehicles, aircrafts & automobiles, and filament for 3D printing.

MACHINING SERVICE

Service for CNC milling, CNC lathes, turning and milling complex machining of metals and variety kinds of engineering plastics, assembly and combination of different plastic-made parts. A professional and complete system of integration from materials, designs, toolings, injection, machining to advanced equipment of inspection is set for providing best services to customers. More than that services for fixture design, lathe / milling machining, product coating, painting, and anti-loosening are available upon request.

Turning and milling complex machining

Machining of customized components by using plate, bar or injected stock shapes.

Assembly Service

CNC machining processing of engineering plastic parts from plates, sheets, rods and injected stock shapes.

Stamping / Punching Service

Stamping / Punching process of engineering plastic components from plates, sheets and injected stock shapes.

Painting, Coating, & Patching Services

Painting, coating, patching services for various engineering plastic parts.

- Anti-loose coating (patching)
- Insulation coating
- Antistatic coating
- Conductive coating

INDUSTRIAL APPLICATIONS OF ENGINEERING PLASTIC PARTS

Machining of customized components by using plate, bar or injected stock shapes. Milling and turning processing for various metals or engineering plastic materials include PEEK, PBI, TPI, PI, PAI, PEI, PES, LCP, PPS, PPS+GF, POM, PA6, PA66, PTFE, PVDF, PS, PP, PVDF, PCTFE, PFA and many more.

PIN used in Oven for TFT-LCD

Stock shape of Plating ring

Plastic balls

Valves

Vacuum chuck

Spray nozzles of Robot

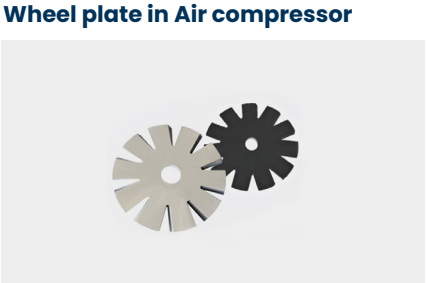
Gears

IC Test Kit

CMP ring

Rollers

Wheel plate in Air compressor



ENGINEERING PLASTIC PLATES, RODS, TUBES

Engineering plastic sheets, rods, pipes or injected semi-products are used as base materials for various parts and components. Various engineering plastic materials: PEEK, PBI, TPI, PI, PAI, PEI, PES, LCP, PPS, PPS+GF, POM, PA6, PA66, PTFE, PVDF, PS, PP, etc.

PEEK Plate/Rod/Tube	PEEK unreinforced grade, glass fiber reinforced grade, carbon fiber wear-resistant grade, self-lubricating grade, antistatic grade.
PET Plate/Rod	PET natural color, black, wear-resistant grade, light gray.
PA66, PA66 Glass Fiber Reinforcement	PA66+30% glass fiber, Black PA66+50% glass fiber, Black.
PA6 Plate/Rod	PA6 unreinforced grade, PA6+GF reinforced high-impact resistance, PA6 wear resistance grade, PA6 low friction grade, PA6 high heat resistance grade, PA6 UV resistance, PA6 flame retardant grade.
POM Plate/Rod	POM pure material grade, antistatic grade.

CHEMICAL WET PROCESS COMPONENTS

- PCB wet process conveying/transmission components
- Display/Panel Wet Process Equipment components
- Semiconductor wet process equipment components
- Thin-film solar cell chemical coating and electroplating process equipment components

Relying on chemical resistance, heat resistance, and insulation of engineering plastics, engineering plastic sheets, rods, tubes, or injected stock shapes are used for machining of various components. Lathes/milling machining provides best solution for customized parts and components applied in wet process equipment.
Various engineering plastic materials include PEEK, PBI, TPI, PI, PAI, PEI, PES, LCP, PPS, PPS+GF, POM, PA6, PA66, PTFE, PVDF, PS, PP, etc.

BALL BEARINGS

The benefits of high-performance plastic PEEK ball bearings are high lubricity, abrasion resistance, chemical corrosion resistance and high temperature resistance, and reduce the friction loss of metal parts. They are widely used in various machinery with rotation functions.

Specification

Type	d (I.D./mm)	D (O.D./mm)	B (Thick./mm)
6000	10	26	8
6001	12	28	8
6002	15	32	9
6003	17	35	10
6004	20	42	12
6005	25	47	12
6200	10	30	9
6201	12	32	10
6202	15	35	11
6203	17	40	12
6204	20	47	14
6205	25	52	15

Unit: mm

Material Selection

Inner/Outer Ring & Holding	Detail
PEEK (Long-term use temperature 240℃)	PEEK is a semi-crystalline engineering plastic, suitable for applications that used in high temperature, chemical solvent process. PEEK material is tough, rigid, creep-resistant, light-resistant, and multi-ray resistant.
PTFE (Long-term use temperature -190~260℃)	PTFE is one of the fluorine-based resins, which is resistant to most chemicals and solvents. Due to excellent electrical properties, non-stick and lubricity, it is widely used in high temperature, chemical, electrical, mechanical and aviation fields.
Ball Material: Zirconia	

HEXAGON THREADED SPACER NUTS

Engineering plastic spacer nut with characteristics like lightweight, high-temp. resistance, chemical resistance, high strength allows applications in automotor industry, building industry, machinery, and electronics industry, etc.

Material Selection

PEEK (Long-term use temperature 240℃)	PEEK is a semi-crystalline engineering plastic, suitable for applications that used in high temperature, chemical solvent process. PEEK material is tough, rigid, creep-resistant, light-resistant, and multi-ray resistant. Screws, nuts, and various spare parts made of this material are widely used in semiconductor equipment, aerospace vehicle industry, automotive electronics and motor industry, oil/gas extraction equipment and even medical equipment or food production equipment.
PPS (Long-term use temperature 200℃)	PPS is a thermoplastic special engineering plastic, featuring high temperature resistance, corrosion resistance and high mechanical strength. In addition, it has electrical properties and dimensional stability which allows PPS-made parts suitable for electronic and electrical parts, auto parts, and chemical machinery parts.
RENY (Long-term use temperature 105℃)	High-temperature resistant nylon engineering plastics are added with glass fiber to increase strength, excellent oil resistance and high-temperature resistance, and parts made by RENY are widely used in automobiles, machinery, precision mechanical parts, electrical and electronic equipment, as well as civil engineering and construction materials.

GEARS

Engineering plastic gears have excellent mechanical properties, wear resistance, vibration reduction, and chemical resistance, and are suitable for special needs in mechanical operation processes. For example, photochemical grinding and etching equipment, wet process conveyors, chemical feed pumps, pumps in medical equipment, and various lightweight appealing machinery.

Advantages

- Low maintenance
- Less friction, reduced energy consumption
- Weight reduction lowers energy consumption
- Low noise
- Vibration dampening
- Corrosion-proof (chemical resistance)
- Low manufacturing cost

Application

- Photochemical etching equipment
- Wet process conveyer
- Chemical feed pump
- Pumps in medical devices
- Lightweight mechnicals
- Equipment in harsh chemical process

Material Selection

PTFE (Long-term use temperature -190~260℃)	PTFE is one of the fluorine-based resins, which is resistant to most chemicals and solvents. Due to excellent electrical properties, non-stick and lubricity, it is widely used in high temperature, chemical, electrical, mechanical and aviation fields.
PVDF (Long-term use temperature 150℃)	VDF is a thermoplastic fluoropolymer with excellent chemical resistance, weather resistance, high temperature resistance, electrical insulation, lubrication, and wear resistance; it is suitable for various environments of acid-base solvent, semiconductor manufacturing processes, wet chemical processes, and equipment parts in the chemical industry.
POM (Long-term use temperature 100℃)	Also known as plastic steel with high rigidity, low friction, and dimensional stability. Resistant to most chemical solvents (non-acidic) and oils.
UPE (Long-term use temperature -150℃~90℃)	Ultra high molecular weight polyethylene (UPE) has high wear resistance and toughness, and is chemically stable, self-lubricating and wear-resistant, and is often used for sliding or rotating parts.

- The specification, size and shape can be customized.

BALL PLUNGERS

Material / Specification

Material for Body	Ball	Material for Spring	SPEC.
POM	POM	SWP	M6x13mm
POM	POM	SUS304	M8x15mm
POM	SUS304	SUS304	M10x16mm

Engineering plastic Ball Plunger are generally used in applications that require positioning and fixing, indexing, quick disconnect and ejection, positive locking, locking, etc. In addition to the vertical direction, the lateral load can also cause the ball to sink, which is suitable for the positioning of the sliding mechanism. For example: mold positioning, ejection workpiece drilling, hole positioning, fixture limit, switch safety valve.

Application

- Die (Mold) Positioning
- Pushing out workpiece
- Drilled hole positioning jigs
- Limit switchs
- Relieve valves

BALL ROLLERS

PEEK ball rollers are assembled in the conveying system, and the spherical balls rotate 360 degrees to improve transportation efficiency and prevent conveyed object - glass panel from being scratched during the conveying process. Made of PEEK material, resistant to acid and alkali solvents, suitable for high temperature environments, with low wear rate and high strength.

Material Selection

Threaded Body	Ball
PEEK	PEEK
PI	PI
POM	PEEK
POM	POM
SUS	PEEK

- The specification, size and shape can be customized.

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