TriStar

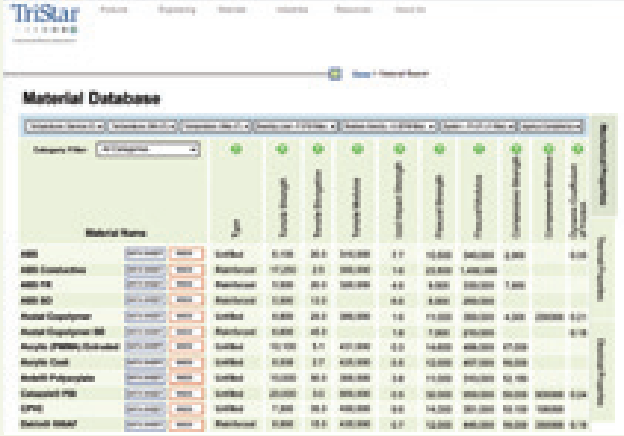
Engineered Plastic Solutions™

Ultracomp®

Engineering | Custom Fabrication | Manufacturing

Services

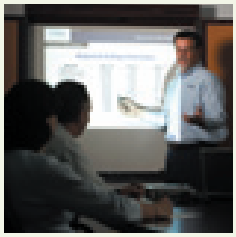
A partnership with TriStar will give you a competitive edge.



Material Data

Our Material Database offers you the ability to instantly filter and compare thousands of the most popular high performance plastics in the industry based on your specific characteristics.

Filter, compare and call our engineering team to help you choose the right material and component geometry for your application.



Educational Seminars

We offer a series of Training Seminars on a variety of subjects relative to materials, component design and applications.

Custom seminars are available for your specific industry. Contact TriStar's technical department for more information.

High Performance Materials	Pushing the Design Envelope of Plastics
Plane Bearing Technology	The Application of Self Lubricating Materials in Bearings
Composites	Materials for Extreme Bearing and Structural Applications
Fluoropolymers	Specific Overview of Fluoropolymers and Their Applications

Analytical Services

We offer a complete array of surface analysis and materials characterization solutions by providing services that help companies get the critical information they need.

Our analytical techniques include:

- FTIR
- XPS
- AFM
- Goniometry
- Durometer (shore A shore D)
- Haze, Transmittance, Clarity (mainly transparent materials)
- Tensile Pull Testing (shear and T-peel)
- Compression Testing
- Flexural Testing

Surface Modification

From enhancing cell culture trays to bonding dissimilar materials, the scientists at TriStar's Surface Modification Division (SMD) can assist you in identifying problems and recommending solutions for your toughest surface issues.

Our expert technicians apply unique, dry, and environmentally-friendly techniques to modify the surface of polymers, elastomers, and films in order to dramatically increase (or, if desired, to decrease) the bond strength of adhesives, paint, markings, or specialty coatings.

Our services include:

- Surface Treatments
- Plasma Contract Services
- Custom Adhesive and Specialty Chemicals

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Our site has been praised by engineers and purchasing agents alike. We continually strive to make this site an indispensable engineering resource for your company.

- Engineering Tools
- Ask The Expert
- Tech Talk Blog
- On-line Brochures
- Material Database
- Product Videos

With our in-house technical and scientific staff we can resolve any challenge and help you find the right engineered plastic solution.

Ultracomp®

Ultracomp® Bearing Grade Composites meet the rigorous needs of high load, low speed plane bearing applications. Ultracomp is self-lubricating, easy to machine, has exceptional resistance to vibration and impact, and an ultimate compressive strength of up to 54,400 psi. Ultracomp is produced using synthetic resins and reinforcing fibers with a series of internal lubricants. Therefore, it is an excellent choice for wet or dry, dirty or clean applications, and where loads exceed all other non-metallic bearing materials. Ultracomp excels in linear, oscillating, and rotary applications that require high load and low speed conditions. It is available in tube, sheet stock, or can be fabricated into custom bearings to your specifications.

- UC200 – Bearing Grade Polyester/Graphite Composite
  Designed for high load, high impact, slow speed, and vibratory applications. UC200 has excellent abrasion resistance, does not require lubrication, and has extremely low moisture absorption. Runs best on shafts with RC30 or higher.
- UC300 – Bearing Grade Polyester/PTFE Composite
  Similar in construction to UC200, PTFE lubricant added to resin matrix for rotary or linear applications to reduce its coefficient of friction. Runs well against stainless and aluminum.
- UC400 – Bearing Grade Polyester/MOS2 Composite
  Similar in construction to UC200 with moly lubricant for slow rotary, salt water, and dry oscillation applications.
- UC500 – Bearing Grade Blended Fiber/Graphite Composite
  Unique interwoven laminate using PTFE, polyester fibers, and graphite lubricant. Excellent material for full rotary applications where self-lubricated low friction and long wear is required.

Property	Units	UC200	UC300	UC400	UC500
Specific Gravity	g/cc	1.35	1.35	1.32	1.35
Tensile Strength	psi	17,500	17,500	9,500	17,500
Elongation	%	26	26	26	26
Compressive Strength Perpendicular to Laminate					
Yield	psi	18,500	14,000	16,000	18,000
Ultimate	psi	54,400	45,000	52,000	50,000
Modulus	psi	750,000	650,000	730,000	750,000
Impact Strength - Notched	ft-lbs/in.	>20	>20	>20	>20
Flexural Strength	psi	13,500	14,000	13,000	13,500
Operating Temperature					
Minimum	_	Cryogenic	Cryogenic	Cryogenic	Cryogenic
Maximum - Continuous	°F	266	266	335	335
Maximum - Short Term	°F	360	360	360	360
Coefficient of Friction - Dry	_	0.15	0.08	0.12	0.15
Water Absorption - 24 hour saturation	%	<0.1	<0.1	<0.1	<0.1

Stock Shapes

Benefits

- 54,400 PSI Compressive Strength
- Sheet & Tubing
- Near Zero Moisture Absorption
- Economical

Applications

- Railroad Components
- Off-Road Vehicles & Equipment
- Mining & Mineral Processing
- Timber, Pulp & Paper Handling
- Ship Rudder Bearings

Spherical Bearings

Benefits

- High Load/Vibration
- Wash Down Resistant
- Self-Lubricating
- Maintenance Free

Applications

- Spherical, Sleeve, and Flanged Bearings
- Conveyor Bearings
- Aircraft & Ground Support Equipment
- Waste Water & Slurry Bearings
- Amusement Parks

Fabricated Parts

Benefits

- Easily Machined
- Light Weight
- Multi-Surface Bearing Material
- Impact & Shock Resistant

Applications

- Machined Components
- Slide Plates/Guide Rails
- Chemical Plant/Outdoor Applications
- Hydraulic Wear Rings
- Marine Cranes

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Email us your CAD drawing to **cad@tstar.com** for an estimate.

Design Considerations

Load
All Ultracomp products have very high compressive strength and can carry a sustained static load of over 50,000 psi. However, it is important to remember that dynamic loads must consider compressive yield factors to determine the maximum operating potential. Please contact TriStar Engineering for design assistance.

Lubrication
While Ultracomp is classified as a self lubricating material the use of lubrication will, in most cases, enhance the long term performance of the bearings. Friction is reduced and thus heat buildup so wear life is extended. In high load, oscillating applications the lubricating additives in the Ultracomp are drawn to the surface and maintain a continuous source of low friction lubrication film. The use of heavy greases can cause debris to become trapped and result in a lapping effect on the bearing. TriStar recommends a light weight oil or grease if your application requires any lubrication.

Friction
Coefficient of friction is directly affected by load and speed of the application. As a rule, the coefficient of friction values of Ultracomp are between 0.08 and 0.15. The higher the working load, the lower the friction values will be. Stick slip is virtually eliminated after break in of the bearing and ongoing static and dynamic friction will be consistent from that point on. For more specific frictional values contact TriStar Engineering.

Mating Surfaces
For optimum wear and friction performance, TriStar recommends a 12-16rms surface finish on the dynamic mating surface. The static surface of the hardware should be 32 rms for improved bearing retention. Minimum hardness of the dynamic mating component should be 45RC or harder. We recommend against chrome plate as it can increase wear of the bearing. ENP, Plasma and other hard coat processes are desirable. Stainless steel can be used with Ultracomp products in certain conditions but we recommend you call TriStar Engineering to review the particulars of your application.

Installation of Ultracomp Bearings
There are several factors to take into consideration for the proper fit of Ultracomp bearing materials is dependent upon close adherence to these design factors. Please refer to Charts 1 thru 3 on page 6 for Press Fit, Close In and Running Clearance data. Ultracomp bearings can be freeze fitted or adhesively bonded in certain applications. Contact TriStar Engineering for any questions regarding fit and finish.

Speed
In most cases, the maximum sustained speed for Ultracomp is 15 sfpm. Since Ultracomp is a insulative material, frictional heat generation does not allow for high rotational speeds. In lubrication, speeds can be dramatically higher due to the heat transfer properties of the fluid. Water is an excellent lubricating media for Ultracomp as are all greases and oils. TriStar has other options available for higher speed applications so please consult our Engineering Department for further assistance.

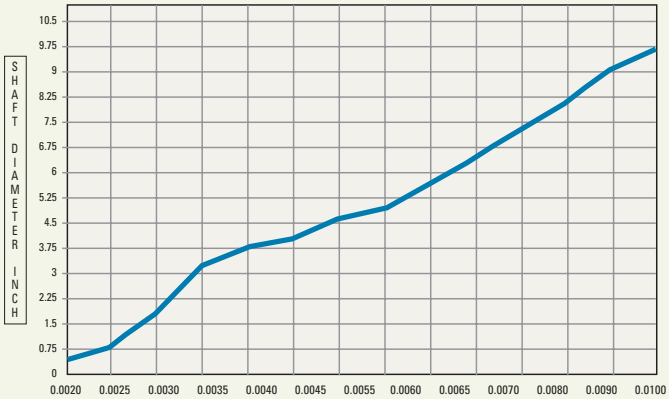
Chemical Resistance
Ultracomp products are resistant to most chemicals including acids and bases. Active solvents, however, can be a problem. Ultracomp is UV stable and is recommended for long term outdoor use. Please refer to Chart 5 for specific chemical compatibility.

Electrical and Magnetic
Ultracomp products are excellent dielectric materials and can be used in power switchgears, dielectric standoffs, thrust rings and similar gear. Ultracomp is non-magnetic and will not sustain a static charge.

Insulation Resistance – 2,000 MegaOhms
Dielectric Strength – 210 V/mil

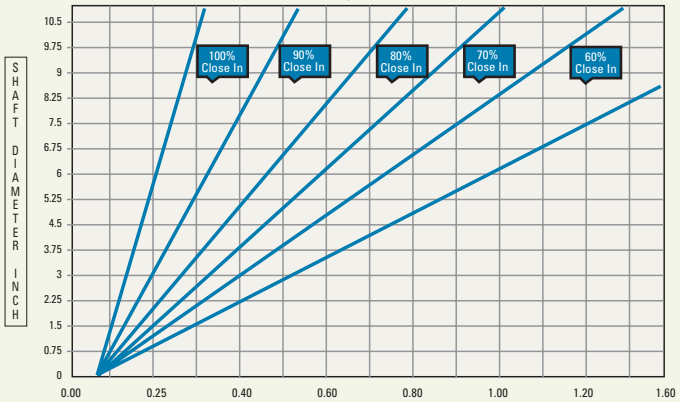
Thermal Expansion
Since Ultracomp products are insulative by nature, it is very important to consider thermal expansion values during the design process. Press fits and running clearances can be affected dramatically by thermal cycling and, when combined with frictional heat, can be the difference between success or failure of the bearing. Please refer to Chart 4 for specifics.

Press Fit Calculations
Ultracomp Products



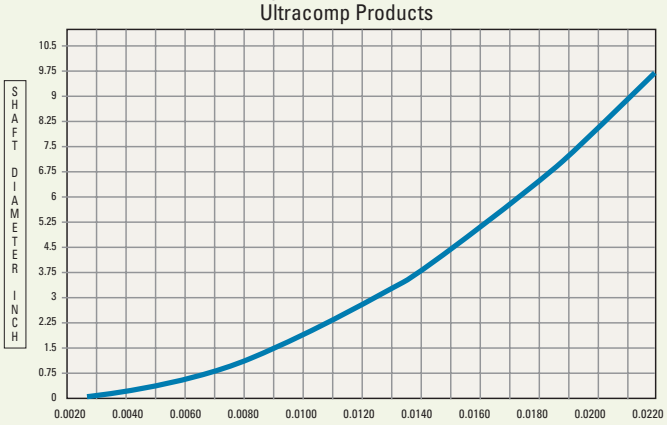
Press Fit Formula = 0.00236 (shaft dia) x 0.412"
Please consult with TriStar Engineering Staff if there are questions regarding your particular application.

Ultracomp Products



Bearing Wall Thickness
Numbers represent general assumptions on the percentage of the press fit allowance which will transfer to the bearing ID.
Please consult with TriStar Engineering Staff if there are questions regarding your particular application.

Running Clearance Calculations
Ultracomp Products



Running Clearance – Prior to Installation
Please consult with TriStar Engineering Staff if there are questions regarding your particular application.

Thermal Properties of Ultracomp Bearings

Coefficient of Thermal Expansion (in/in/°F x 10E5)	**UC200**	**UC300**	**UC400**	**UC500**
Perpindicular to Laminate	6.24	6.24	6.24	6.24
Parallel to Laminate	3.3	3.3	3.3	3.3
Maximum Operating Temperature				
(Short Term)	350	350	350	350
(Long Term)	266	266	266	266
Minimum Operating Temperature	Cryogeni	Cryogeni	Cryogeni	Cryogenic

Calulating Thermal Expansion of an Ultracomp Bearing

Formula: Bearing Wall Thickness x ΔT x CoTE

Example: 2" ID x .250" Wall BearOperating At 125°F.

Wall = .250 x 2

Ambient Temp = 68°F - Operating Temp. 125°F - Difference is 57° F

Therefore - 2 x .250 x 57 x .0000624 = 0.0018

Bore Closure Due to Thermal Expa0.0018" (Perpindicular)

Chemical Compatibility of Ultracomp

		Temp. 70ºF	Temp. 130ºF
Acetic Acid	(15%)	Satisfactory	Limited Service
Acetic Acid	(100%)	Not Recommended	Not Recommended
Acetone	(15%0	Satisfactory	Limited Service
Acetone	(100%)	Not Recommended	Not Recommended
Acrylic Acid	(2%)	Satisfactory	Satisfactory
Aluminum Chloride		Satisfactory	Satisfactory
Ammonia (Aqueous)		Not Recommended	Not Recommended
Ammonium Carbonate		Not Recommended	Not Recommended
Ammonium Chloride		Satisfactory	Satisfactory
Ammonium Citrate (Aqueous)		Satisfactory	Satisfactory
Benzene		Satisfactory	Limited Service
Bleach Liquors		Satisfactory	Limited Service
Bleach Solution (Sodium Hypochlorite)		Satisfactory	Satisfactory
Boric Acid		Satisfactory	Satisfactory
Butyl Alcohol		Satisfactory	Limited Service
Calcium Chloride		Satisfactory	Satisfactory
Carbon Tetrachloride		Satisfactory	Satisfactory
Chlorine Water (Saturation)		Satisfactory	Satisfactory
Chlorine Gas		Satisfactory	Satisfactory
Citric Acid		Satisfactory	Satisfactory
Ethylene Glycol		Satisfactory	Satisfactory
Fatty Acids		Satisfactory	Satisfactory
Ferric Chloride		Satisfactory	Satisfactory
Formic Acid		Satisfactory	Satisfactory
Hydrochloric Acid		Satisfactory	Satisfactory
Hydrofluoric Acid		Not Recommended	Not Recommended
Maelic Acid		Satisfactory	Satisfactory
MEK		Not Recommended	Not Recommended
Mineral Oil		Satisfactory	Satisfactory
Napthalene		Satisfactory	Satisfactory
Nitric Acid	(5%)	Satisfactory	Satisfactory
	(100%)	Not Recommended	Not Recommended
Oleic Acid		Satisfactory	Satisfactory
Phosphoric Acid		Satisfactory	Satisfactory
Potassium Hydroxide		Not Recommended	Not Recommended
Propylene Glycol		Satisfactory	Satisfactory
Sodium Carbonate	(25%)	Satisfactory	Satisfactory
	(100%)	Limited Service	Not Recommended
Sodium Chloride		Satisfactory	Satisfactory
Sodium Hydroxide		Not Recommended	Note Recommended
Sodium Nitrate		Satisfactory	Satisfactory
Sodium Nitrite		Satisfactory	Satisfactory
Sulphur Dioxide Gas		Satisfactory	Satisfactory
Sulphur Dioxide (Aqueous)		Satisfactory	Satisfactory
Sulphuric Acid	(50%)	Satisfactory	Satisfactory
Sulphuric Acid	(100%)	Not Recommended	Not Recommended
Tannic Acid		Satisfactory	Satisfactory
Toulene		Satisfactory	Satisfactory
Trichlorethylene		Not Recommended	Not Recommended
Turpentine		Satisfactory	Satisfactory
Urea		Satisfactory	Satisfactory

For a complete Chemical Compatibility List for Ultracomp products please contact TriStar Engineering.

Material Selection Process (MSP)

In all plastic component designs, material selection is critical. During the selection process, one should consider the following factors to ensure the best possible selection.

1 Temperature

All plastics are affected by ambient heat and have a maximum continuous service temperature. The maximum continuous service temperature is not a melting point, but is the highest temperature at which a material will retain physical integrity. *Important: Note that elevated temperatures affect material properties in a negative manner and should be carefully reviewed before use.*

2 Temperature Variation

All plastic materials have coefficients of thermal expansion. Measured in in/in/°F, plastic materials vary greatly not only from each other, but in some cases ten times that of metallic counter parts. As a result, we consider temperature variations. Components should be designed to meet required service temperature. Not doing so may result in premature failure.

3 Environmental Conditions

Always consider the following environmental conditions under which the material must operate:

- Contact with debris such as sand, grit or dust
- Contact with chemicals such as strong acids, bases and caustics
- Contact with water, constant spray or wash downs
- FDA or USDA compliance
- Thermal conductivity
- Radiation exposure
- Microwave exposure

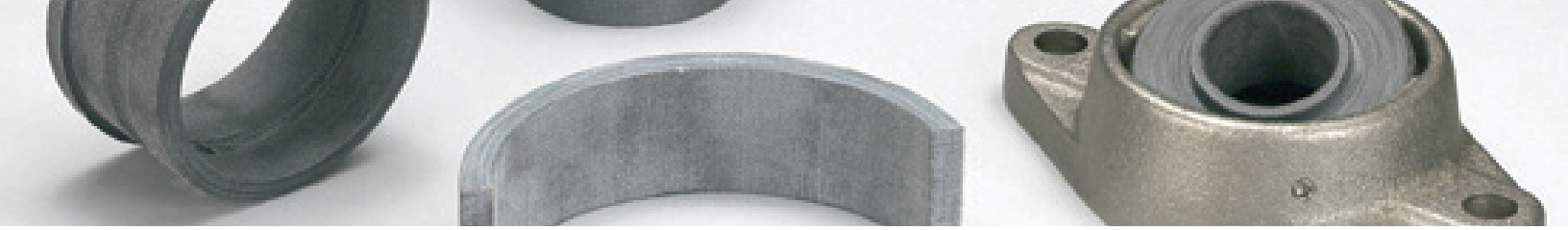
4 Other Considerations

- Size and shape availability
- Material cost/economy
- Machinability
- Standard or custom runs
- Custom compounds

tstar.com Visit our interactive on-line Material Selection Process (MSP) at tstar.com/msp

This four step process gathers all the information regarding your material and sends it directly to our engineering team so that we may assist you with your selection.

Plastic Material	Shape Availability Rod Dia	Sheet Thickness	Machinability Rating 1-10 1=Easy	Serv Temp Long/Short Degrees F	Characteristics / Attributes
ULTRACOMP UC200	Tubing	1/8 to 3	3	266/360	High Load / Impact-Vibration Resistant / Composite
ULTRACOMP UC300	Tubing	1/8 to 3	3	266/360	Lowest Friction / Chemical Resistant / High load
ULTRACOMP UC400	Tubing	1/8 to 3	3	266/360	Moly lubricant / Slow Rotary / Salt Water Applications
ULTRACOMP UC500	Tubing	1/8 to 3	3	266/360	Bearing Grade Blended Fiber / Bearing Grade Composite
ABS	3/16 to 8	1/4 to 4	1	140/210	General Purpose / Economical / Machinable / Moldable
ACETAL / DELRIN	1/8 to 12	.010 to 4	1	195	Machinable / Economical / Good Wear / FDA / USDA
ACETRON	1/4 to 6	1/4 to 2	1	180	Acetal / Machinable / Wear Resistance
ACRYLIC	1/16 to 6	1/32 to 3	5	140/200	Optically Clear / Colors / Machinable / Formable
CELAZOLE / PBI	1 to 4-3/4	3/8 to 2	8	650/1000	Highest Temp / Chemically Resistant / High PV
DELRIN AF	3/16 to 8	1/32 to 3	1	185/300	PTFE Filled Acetal / Low Friction / Brown
DELRIN 500CL	1/2 to 3	1/4 to 4	1	180/300	Chemically Lubricated Acetal / Low Friction
ERTALYTE / ERTALYTE TX*	3/16 to 8	1/4 to 4	1	210	PET I Bearing Grade* / Good Wear / FDA / White
FEP	1/16 to 6	.005 to3	3	400	Fluoropolymer / Excellent Chemical Resistance
FLUOROSINT 207* / 500	1/2 to 8-3/4	1/4 to 3	3	500	Family of Filled PTFE / High Thermal Stability / FDA*
HYDEX 4101 & 4101L*	1/2 to 6	3/8 to 4	1	220	PBT I PTFE Filled* / FDA-USDA / Low Friction / White
HYDEX FGA	1/2 to 4	3/8 to 2	1	185/300	Teflon Filled Delrin / FDA / USDA / Low Friction
HYDLAR ZF	1/4 to 5	1/4 to 2	5	230/300	Aramid Fiber Filled Nylon / Wear Resistant
KYNAR / PVDF	1/4 to 10	1/4 to 4	2	122/230	Fluoropolymer / Excellent Chemical Resistance
MICARTA C & L	1/32 to 10	1/32 to 8	8	257	Phenolic Resin / Cloth Fabric Matrix / Laminate
MICARTA G-10 & G-11*	1/32 to 5	.005 to 5	10	284/356	Epoxy I Silicone* / Woven Fiberglass Matrix / Laminate
MICARTA XXX	1/32 to 2	1/32 to 5	8	284	Phenolic Resin / Paper Matrix / Laminate
NORYL EN265	3/8 to 8	1/4 to 4	2	195/375	PPO & Styrene Alloy / Good Creep Resistance
NYLATRON	1/32 to 2	.010 to 4	1	200	Modified Nylon Type 66 / Cast Type 6 / Impact and wear
NYLON 66	1/32 to 6	.010 to 3	1	210	Economical / Good Wear / High Impact Strength
PCTFE / KEL-F	1/16 to 6	.005 to 2	3	400	Chemical Resistant / Heat Resistant / High Temp
PEEK	1/4 to 4	1/4 to 2-1/2	5	480	Autoclavable / Chemical & Steam Resistant
PFA / NEOFLON	1/16 to 3	.002 to 3	3	500	Chemical Resistant / Heat Resistant / High Temp
POLYCARBONATE	1/32 to 15	1/32 to 4	3	210/265	Good Machinability / Transparent / High Rigidity
POLYETHYLENE	1/32 to 18	.002 to 10	1	140/175	General Purpose / Economical / Chemical Resistant
POLYIMIDE / MELDIN	1 to 4-3/4	3/8 to 2	7	600	High Temp / Wear Resistance / High PV / Low Outgas
POLYPROPYLENE	1/4 to 16	.010 to 10	1	160/230	Chemically Resistant / Weldable / Economical
POLYSULFONE / UDEL	3/16 to 8	1/4 to 4	1	300/340	Autoclavable / Chemically Resistant / Heat Resistant
PVC / CPVC*	1/4 to 13-3/4	3/32 to 4	1	155	Weldable / Economical / Chemical Resistant / Hi Temp*
REXOLITE	1/16 to 9	1/32 to 6	3	212	Crosslinked Polystyrene / High Frequency Dielectric
RULON 123	3/16 to13	.010 to 2	3	550	Filled PTFE / FDA / USDA / High V / Inert / Black
RULON 142	N/A	.015 to 1/4	1	550	Slideways / Machine Ways / Expansion Supports
RULON 488	3/16 to12	.015 to 1	3	550	Filled PTFE / High V / Inert / Dryer Bearings / Green
RULON 641	3/16 to12	.015 to 1	3	550	Filled PTFE / FDA / USDA / High V / Inert / White
RULON J	3/16 to13	.010 to 4	3	550	Filled PTFE / Low Friction / Non Abrasive / Gold
RULON LR	3/16 to13	.010 to 4	5	550	Filled PTFE / Good Strength / High V / Inert / Maroon
TECHTRON / PPS	1/4 to 3	1/4 to 2	4	425	Chemical Resistant / High Temp / High Strength
TEFLON / GLASS FILLED	1/4 to 12	1/4 to 4	5	550	Filled PTFE / High V / High Temp / Chemical Resistant
TEFLON / EXT & MOLDED	1 to 38	.001 to 12	3	550	Unfilled Teflon / Inert / High Temp / Insulator / White
TEFLON/ FEP / TUBING	.034 to 12	N/A	N/A	550	Roll Covers / Spaghetti / Shrinkable / AWG Sizes
TEFZEL / ETFE	1/16 to 3-3/4	.030 to 3	3	300/350	Fluoropolymer / Excellent Chemical Resistance
TFM	1 to 12	.010 to 4	3	500	Fluoropolymer / Low Porosity / High Temperature
TORLON 4203 / 4301	3/32 to 2	3/16 to 1	5	500	High Temp / High Strength / Electrical & Bearing Grade
UHMW	1/4 to 10	.005 to 7	5	180	High Abrasion Resistance / Low Friction / FDA
UHMW / GLASS FILLED	1/2 to 4	1/16 to 2	3	180	Low Friction / Highest Abrasion Resistance
UHMW / OIL FILLED	1/4 to 8	1/8 to 2	3	180	Lowest Friction / High Abrasion Resistance
ULTEM 1000	1/32 to 8	.002 to 4	5	340	High Strength / Autoclavable / Chemical Resistance
ULTEM 2300	1/4 to 8	3/8 to 4	8	340	High Strength / Rigid / Autoclavable / Thermally Stable
VHMW	N/A	1/8 to 3/4	5	160	Good Abrasion Resistance / Low Friction / Economical



Plane Bearing Design (PBD)

In all plane bearing designs, material selection is critical. During the selection process, one should consider the following factors to ensure the best possible selection.

1 Bearing Load – P

P=LBS/(ID x LENGTH)

Measured in pounds per square inch (PSI), bearing pressure is calculated by disbursing the total load over the projected area (ID x LENGTH) of the bearing. This provides the average pressure (PSI) that the bearing must support. Note that all materials have a maximum P.

2 Relative Velocity – V

V = C x RPM

Measured in feet per minute (FPM), bearing velocity is calculated by first calculating the shaft circumference (C) in inches (C= Shaft Dia x 3.14 ÷ 12). Then by multiplying by the RPM of the shaft, this calculation gives the surface velocity in feet per minute (FPM) or V. Note that all materials have a maximum V.

3 System – PV

PV = P x V

System PV is measured in PSI x FPM, and is the product of P x V. System PV is a means of measuring the performance capabilities of a plastic material and is the result of multiplying the operating pressure by the surface velocity. *Important: Note that the maximum PV rating is not the maximum P x maximum V.*

4 Temperature

Materials used as self-lubricating plane bearings are always affected by ambient heat. All plastic materials have a maximum continuous service temperature. The maximum continuous service temperature is not a melting point, but is the highest temperature at which a material will retain enough physical integrity to allow it to continue to operate as a bearing. *Important: Note that elevated temperatures affect material properties in a negative manner and should be carefully reviewed before use.*

5 Temperature Variations

All plane-bearing materials have coefficients of thermal expansion. Measured in in/in/°F, plastic materials vary greatly not only from each other, but in some cases ten times that of their metallic counter parts. As a result, we must consider temperature variations. Bearings should be designed such that at service temperature, the bearing does not close down on the shaft. Failure to do so will result in additional frictional heat and/or total system freeze up.

6 Environmental Conditions

Always consider the following environmental conditions under which the bearing must operate:

- Contact with debris such as sand, grit or dust
- Contact with chemicals such as strong acids, bases and caustics
- Contact with water, constant spray or wash downs
- FDA or USDA compliance
- Shaft material, surface finish, and thermal conductivity

7 Hardware Conditions

Hardware Conditions are critical elements in optimizing wear life and frictional properties in bearing design.

- Shaft material
- Shaft surface finish – 12 to 16 RMS recommended
- Shaft treatments
- Housing design – finish and materials

tstar.com Visit our interactive on-line Plane Bearing Design Worksheet (PBD) at tstar.com/pbd

This seven step process gathers all the information regarding your bearing application and sends it directly to our engineering team so that we may assist you with your bearing design.

Bearing Material	Max P Static psi	Max V No Load SFM dry	Max PV P x V Dry	Serv. Temp Continuous °F	Characteristics / Attributes
ULTRACOMP UC200	54,400	15	25,000	266	High Load / Impact-Vibration Resistant / Composite Bearing
ULTRACOMP UC300	45,000	100	15,000	266	Lowest Friction / High Load / Bearing Grade Composite
ULTRACOMP UC400	52,000	15	25,000	266	Moly lubricant / Slow Rotary / Salt Water Applications
ULTRACOMP UC500	50,000	30	25,000	266	Bearing Grade Blended Fiber / Bearing Grade Composite
CJ BEARING	35,000	150	25,000	300	PTFE Nomex-Lined Glass / Epoxy Shell / High Load
FCJ BEARING	20,000	500	20,000	300	Rulon Lined Glass / Epoxy Shell / High P
15% GRAPHITE 10% TFE POLYIMIDE	4,500	750	100,000	550	High PV / High Temp / Low Friction / Chemical Resistant
15% GRAPHITE FILLED POLYIMIDE	5,000	1,000	250,000	550	High PV / High Temp / Low Friction / Chemical Resistant
15% GRAPHITE FILLED PTFE	400	100	10,000	500	Filled PTFE / Low Friction / Economical
25% CARBON FILLED PTFE	1,000	400	10,000	500	Filled PTFE / Low Friction / Conductive
25% GLASS FILLED PTFE	1,000	350	10,000	550	Filled PTFE / High V / High Temp / Chemical Resistant
BEARING GRADE PPS	1,500	400	10,000	425	High Strength / Rigidity / Excellent Chemical Resistance
CARBON FIBER / PTFE FILLED PEEK	6,000	600	10,000	480	High PV / High Temp / Chemical Resistant / Thermally Stable
CARBON FIBER FILLED PEEK	6,000	600	50,000	480	High PV / High Temp / Thermally Stable / Conductive
CELAZOLE / PBI	1,000	150	37,500	650	Highest Temp / Chemical Resistant / Polybenzamidizole
DELRIN / HOMOPOLYMER	1,000	50	2,700	180	Acetal / Economical / Good Wear / FDA / USDA
DELRIN AF	1,000	100	11,000	180	PTFE Filled Acetal / Low Friction / Brown
DELRIN CL500	1,000	50	3,000	122	Chemically Lubricated Acetal / Low Friction
ERTALYTE	1,000	100	5,000	210	PET / Economical / Good Wear / FDA / USDA
FLUOROGOLD	1,000	400	10,000	500	Filled PTFE / Lowest Friction / High V / Chemical Resistant
FLUOROLOY A	1,000	400	7,500	500	Filled PTFE / Stability / Strength / High V / Low Friction
FLUOROLOY K	1,000	400	10,000	500	Filled PTFE / Stability / Seals / High V / Chemical Resistant
FLUOROSINT 207	750	400	7,500	500	Filled PTFE / Low Friction / FDA / Thermal Stability
FLUOROSINT 500	750	400	5,000	500	Filled PTFE / Most Thermally Stable in PTFE Family
FLUOROSINT HPV	1000	400	22,000	500	Filled PTFE / Low Friction / FDA / Thermal Stability
GLASS FILLED NYLON	350	40	3,000	225	Economical / Good Wear / High Impact
GLASS FILLED UHMW	1,000	50	1,500	180	Low Friction / Highest Abrasion Resistance
HYDEX 4101	1,000	100	6,000	245	PBT / Chemical Resistant / Economical / Good Wear
HYDEX 4101L	1,000	200	15,000	245	PTFE Filled PBT / FDA / USDA / Low Friction
HYDLAR FGA	1,000	100	12,400	180	PTFE Filled Acetal / Low Friction / FDA / USDA
HYDLAR ZF	1,500	100	8,000	230	Aramid Fiber Filled Nylon / Good Wear / FDA
MELDIN / POLYIMIDE	6,600	500	250,000	550	High PV / High Temp / Chemical Resistant
MELDIN 2021 / FILLED POLYIMIDE	6,000	1,000	300,000	550	Highest PV / Very High Temp / Lowest Friction
MELDIN 2030 / FILLED POLYIMIDE	3,000	750	100,000	550	High PV / High Temp / Low Friction / Chemical Resistant
MICARTA	27,500	15	5,000	250	Thermo-set / Rigid / High Strength / Electrical Insulator
NYLATRON GSM	300	60	3,000	200	MOs Filled Nylon Type 6 / Economical / Monocast
NYLATRON GSM BLUE & MC901	350	100	3,800	260	Oil & MOs Filled Nylon Type 6 / Monocast, Good Wear
NYLATRON NS/NSM	400	100	12,000	200	Solid Lubricant Filled Nylon Type 6
NYLON 66	300	60	2,700	210	Economical / Good Wear / High Impact
NYLON ST801	300	40	3,000	200	High Strength / Good Impact Strength
OIL FILLED UHMW	800	75	1,500	180	Low Friction / High Abrasion Resistance / FDA
PTFE	50	400	1,000	550	Unfilled Teflon / High Temp / Low Heat Transfer
RULON 142	1,000	400	10,000	500	Filled PTFE / Bondable / Machine Tool Ways / High Load
RULON 488	1,000	400	10,000	500	Filled PTFE / Economical / High V / Chemical Resistant
RULON 641	1,000	400	10,000	500	Filled PTFE / FDA / USDA / High V / Chemical Resistant
RULON DC7035	1,000	400	10,000	500	Filled PTFE / Conductive / High V / Chemical Resistant
RULON J	750	400	7,500	500	Filled PTFE / Low Friction / Non Abrasive / Chemical Resistant
RULON LR	1,000	400	10,000	500	Filled PTFE / Good Strength / High V / Chemical Resistant
RULON W2	1,000	400	10,000	500	Filled PTFE / Water Applications / High V / Chemical Resistant
TORLON 4301	1,000	900	50,000	500	High Temp / High Strength / Low Friction / Graphite Filled
UHMW	800	50	1,000	180	High Abrasion Resistance / Low Friction I FDA
ULTRALINER J	10,000	400	20,000	500	Filled PTFE w / Screen Reinforcement

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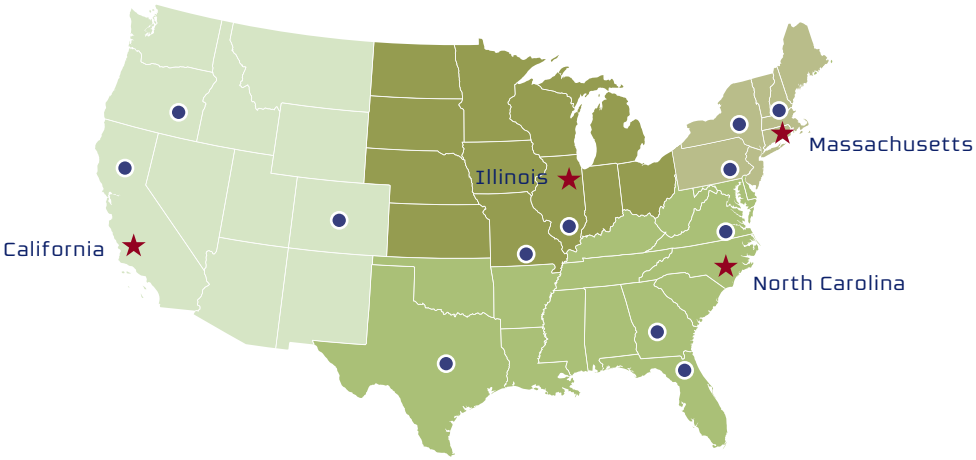

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