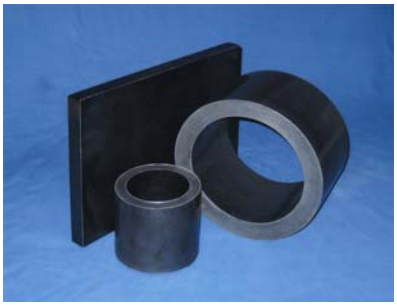
Pyramid® KD4219
Ultra-High Performance Thermoplastic Resins and Compression Molded Shapes

Pyramid® KD4219 is a highly wear resistant, semi-crystalline thermoplastic compound that offers an outstanding combination of strength, toughness, chemical resistance and superior dimensional stability. Comprised of Polyetherketoneketone (PEKK) base resin reinforced with carbon fibers and proprietary lubricants, ***Pyramid® KD4219 i***s an ideal choice for sliding and rotational wear components used in environments with temperatures of up to 500 °F.

Benefits offered by Pyramid® KD4219:

- Outstanding Wear Resistance
- Limiting PV of 32,000
- 500°F Heat Deflection Temperature Rating @ 264 psi
- Extremely High Strength and Stiffness
- Excellent Dimensional Stability
- Very Good Resistance to Chemicals and Steam
- Low Moisture Absorption
- Flammability Rated UL V-0
- Easy to Machine into complex configurations



Pyramid® KD4219 is offered by Polymics in both resin pellets for injection molding or extrusion and near net shapes for machining. Resin pellets are packaged in boxes or gaylords. To meet the wide ranging needs of machinists and fabricators, ***Pyramid® KD4219*** stock shapes are offered by Polymics in a wide array of both compression molded and injection molded shapes and sizes. Polymics' offerings include plates in sizes from 10"x10" to 12"x18" and thicknesses from 1/4" all the way to 2", rods in diameters from ¼" to 5" in lengths up to 18" long and tubular bars and discs with outer diameters up to 15". Injection molded shapes are available from existing tools in a wide variety of shapes and sizes.

Polymics, Ltd. is the world's premier developer and manufacturer of ultra-high performance engineering plastics for an infinite variety of engineered end uses. We are a technology focused company that offers a truly unique combination of expertise in product development, application engineering, and innovative polymer processing. Polymics' capabilities include the synthesis and polymerization of custom materials, material testing, resin compounding, compression molding, injection molding, centrifugal casting, and fabrication of finished components. Polymics, Ltd. has the expertise and manufacturing capabilities to provide end users with one stop "problem to finished part" solutions. Polymics, Ltd., offers it products to customers in the western hemisphere through its sales and manufacturing location in State College, PA and to customers in Asia/Pacific through its Applied Polymer Materials, Inc. subsidiary located near Taipei, Taiwan.

Polymics, Ltd.
High Performance Polymers & Compounds

Pyramid® KD4219
Ultra-High Performance Thermoplastic Polymer

Property	ASTM	UNITS	Resin Compound	Stock Shapes
Mechanical				
Tensile Strength @ Break	D638	psi / MPa	25,000 / 172	18,000 / 124
Tensile Modulus	D638	psi / MPa	1,800,000 /12,400	1,400,000 / 9,700
Elongation @ Break	D638	%	2	1.5
Flexural Strength	D790	psi / MPa	36,000 / 248	28,000 / 193
Flexural Modulus	D790	psi / MPa	1,800,000 / 12,400	1,500,000 / 10,300
Compressive Strength	D695	psi / MPa	32,000 / 220	28,000 / 193
Shear Strength	D732	psi / MPa	20,000 / 138	14,000 / 97
Izod, Notched @1/8"	D256	ft-lb/in / J/cm	1.0 / 0.53	0.8 / 0.42
Izod, Un-notched @1/8"	D256	ft-lb/in / J/cm	12 / 6.7	5 / 2.6
Hardness, Rockwell	D785	M Scale	M90	M92
Hardness, Shore D	D2240	Shore D	D83	D84
Limiting PV (4:1 safety factor)		ft.lbs.ft./in.^{2}min.	32,000	35,000
Coefficient of Friction (dry vs. steel)	PTM	Static	0.25	0.25
Coefficient of Friction (dry vs. steel)	PTM	Dynamic	0.17	0.17
Thermal				
Glass Transition Temperature - Tg	DSC	°F / °C	320 / 160	320 / 160
HDT @ 264psi / 1.8MPa	D648	°F / °C	500 / 260	500 / 260
Melting Point	DSC	°F / °C	680 / 360	680 / 360
Coef. of Linear Thermal Expansion -40°F – 300°F / 40ºC – 150ºC	TMA	µin/in-°F µm/m-°C	25 / 45	25 / 45
Thermal Conductivity	C177	BTU-in/hr-ft^2-°F / W/m-K	1.75 / 0.25	1.75 / 0.25
Electrical				
Surface Resistivity	D257	Ohm/sq	<1 x 10^8	<1 x 10^8
General				
Specific Gravity	D792		1.46	1.46
Color			Black	Black
Composition		PEKK / Carbon Fibers / Proprietary Lubricants		
Moisture Absorption @ 24hr.	D570	%	0.04	0.04
Flammability @ 1/8" (estimated)	UL 94		V-0	V-0

Unless otherwise noted, All values are at 73°F/20°C.

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