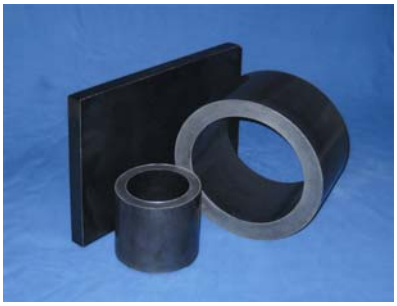
Pyramid® KDW51

Ultra-High Performance Thermoplastic Resins and Compression Molded Shapes

Pyramid® KDW51 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 Polyetheretherketone (PEEK) base resin reinforced with carbon fibers and proprietary lubricants, ***Pyramid® KDW51 i***s an ideal choice for sliding and rotational wear components used in environments with temperatures of up to 290 °F.

Benefits offered by Pyramid® KDW51:

- Outstanding Wear Resistance
- Limiting PV of 32,000
- 563°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® KDW51 is offered by Polymics in both resin pellets for injection molding or extrusion and near net shapes for machining. Resin pellets are available in quantities of 55 lbs and larger and are packaged in boxes or gaylords. To meet the wide ranging needs of machinists and fabricators, ***Pyramid® KDW51*** 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, 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
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Pyramid® KDW51
Ultra-High Performance Thermoplastic Polymer

Property	ASTM	UNITS	Resin Compound	Stock Shapes
Mechanical				
Tensile Strength @ Break	D638	psi / MPa	24,400 / 168	18,000 / 124
Tensile Modulus	D638	psi / MPa	2,300,000 /16,000	1,400,000 / 9,700
Elongation @ Break	D638	%	2.5	1.5
Flexural Strength	D790	psi / MPa	26,000 / 179	23,000 / 159
Flexural Modulus	D790	psi / MPa	2,600,000 / 18,000	1,800,000 / 12,400
Izod, Notched @1/8"	D256	ft-lb/in / J/cm	1.2 / 0.64	0.9 / 0.48
Hardness, Rockwell	D785	M Scale	M95	M95
Hardness, Shore D	D2240	Shore D	D85	D85
Limiting PV (4:1 safety factor)		ft.lbs.ft./in.^{2}min.	32,000	35,000
Coefficient of Friction (dry vs. steel)	PTM	600 ft/min, 44 lbs	0.18	0.18
Thermal				
Glass Transition Temperature - Tg	DSC	°F / °C	289 / 143	289 / 143
HDT @ 264psi / 1.8MPa	D648	°F / °C	563 / 295	563 / 295
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	0.8 / 1.6	0.8 / 1.6
Electrical				
Surface Resistivity	D257	Ohm/sq	1 x 10^7	<1 x 10^7
General				
Density	D792	lb/in^3 / g/ml	0.053 / 1.45	0.053 / 1.45
Color			Black	Black
Composition		PEEK / Carbon Fibers / Proprietary Lubricants		
Moisture Absorption @ 24hr.	D570	%	0.1	0.1
Flammability @ 1/8" (estimated)	UL 94		V-0	V-0

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

01C-SO26(1) 5/19/09

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