

# PRODUCT DATA

## AURUM<sup>®</sup> PD450 Thermoplastic Polyimide Powder

TYPICAL PROPERTIES	TEST METHOD	UNITS	VALUE
<b>PHYSICAL</b>			
Specific Gravity	ASTM D-792	–	1.33
Mold Shrinkage	ASTM D-955	%	0.83
Water Absorption 24 hrs @ 73°F	ASTM D-570	%	0.34
Moisture Absorption, 24 Hrs.	73°F, 60%RH	%	0.24
<b>MECHANICAL</b>			
Tensile Strength	73°F 300°F	ASTM D-638	psi (MPa) " "
			13,370 (92) 8,400 (58)
Elongation	73°F 300°F	ASTM D-638	% "
			90 90
Flexural Strength	73°F 300°F	ASTM D-790	psi (MPa) "
			19,900 (137) 12,800 (88)
Flexural Modulus	73°F 300°F	ASTM D-790	psi (MPa) "
			426,800 (2,940) 369,900 (2,550)
Izod Impact Strength (notched)		ASTM D-256	ft lb/in (J/m)
			1.7 (90)
Compressive Strength	73°F 300°F	JIS K-7208	psi (MPa) "
			17,360 (120) 11,100 (76)
Youngs Modulus		ASTM D-882	psi (MPa)
			400,000 (2,760)
<b>THERMAL</b>			
Melt Point		DSC	°F (°C)
			730 (388)
Glass Transition Temperature		DSC	°F (°C)
			482 (250)
PD450 Melt Flow Index 752°F, 2.3 lbs.		ASTM D-1238	g/10 min
			4.5~7.5
Coefficient of Thermal Expansion (MD/TD) 73°F		ASTM D-696	10 <sup>-5</sup> /°F (10 <sup>-5</sup> /°C)
			3.0/3.0 (5.5/5.5)
Heat Deflection Temperature		ASTM D-648	°F (°C)
			460 (238)
Thermal Conductivity		ASTM C-177	Kcal/m hr °C
			0.15
Specific Heat	73°F 212°F 572°F	DSC	Cal/g °C
		"	"
		"	0.24 0.24 0.34
<b>ELECTRICAL</b>			
Dielectric Constant	1KHz 1MHz	ASTM D-150	–
		"	–
			3.2 3.1
Dissipation Factor	1KHz 1MHz	ASTM D-150	–
		"	–
			0.0009 0.0034
Surface Resistivity		ASTM D-257	Ohms
			E17~E18
Volume Resistivity		"	Ohm cm
			E17~E18
<b>FLAMMABILITY</b>			
Vertical Burn Test	0.4 mm 2.0 mm	UL-94	–
		"	–
			V-0 5VA
Oxygen Index	3.2 mm	ASTM D-2863	%
			47

### DESCRIPTION

AURUM PD450 is a high performance thermoplastic polyimide powder for precision injection molded components, extruded products, and coatings. A member of the AURUM family of advanced engineering resins, unfilled AURUM PD450 offers a unique balance of mechanical and thermal properties for superior performance in demanding automotive, business machinery, industrial equipment, aerospace, and semiconductor equipment applications. AURUM Fine exhibits outstanding resistance to chemicals and radiation, a low coefficient of thermal expansion, ultra-high purity, low outgassing in a vacuum, excellent electrical properties, and flame resistance. AURUM PD450 can be conventionally extruded into pellet form and used to produce high performance wire & cable insulation, film, thin-wall tubing, and fiber. AURUM PD450 can also be used to coat metal substrates using electrostatic spraying and other coating techniques.

### INJECTION MOLDING

After pelletizing, AURUM PD450 can be readily injection molded in most reciprocating screw injection molding machines. AURUM resin pellets should be dried prior to melt processing on trays in an air circulation oven or desiccating hopper drier under the following conditions: 8 hours at 428°F, 10 hours at 392°F, or 12 hours at 356°F. Cylinder temperature requirements generally range from 720 - 770°F. Injection pressures of 11,000 - 20,000 psi, nominal back pressures of 0 - 50 psi, medium to high injection velocity, and screw speeds of 100 - 200 rpm are utilized for AURUM injection molding. Mold temperatures range from 356 - 410°F. AURUM sprue and runner systems can be ground and mixed with virgin AURUM resin at 15% - 30% levels without significant loss of mechanical properties for enhanced economics. AURUM can be easily

(continued from front)

purged with unfilled or glass fiber reinforced polyethersulfone, polysulfone, or polyetherimide. AURUM can be injection molded with select outer-heating design hot runner systems.

### **APPLICATIONS**

AURUM PD450 injection molded components are excellent replacements for metals, ceramics, and other plastics. High performance AURUM PD450 parts include heat-resistant gears, seals, ferrules and other fasteners, coil

bobbins, semiconductor manufacturing and handling equipment components, and thermal and electrical insulators. Products produced from extruded, pelletized AURUM PD450 include thin-wall tubing, wire and cable insulation, film, monofilament, and stock shapes.

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