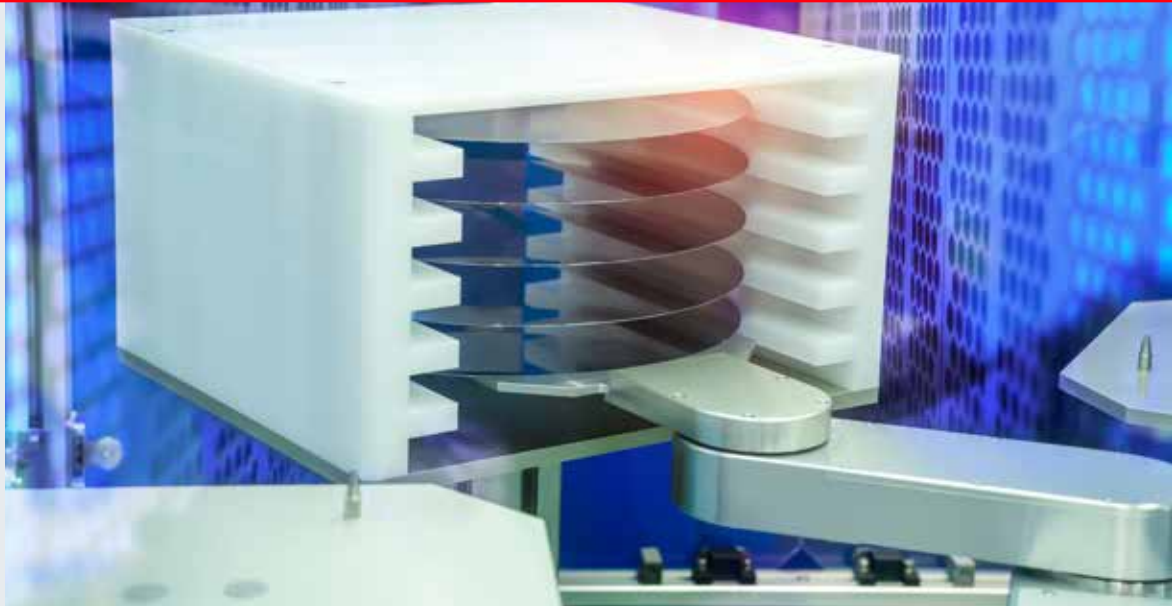


# Semitron<sup>®</sup> PP



## Key benefits

- Minimizes center line porosity common with thicker plates (2" & up)
- Delivers Ultra-Clean plate to minimize risk of surface contaminants
- Lowers overall cost by delivering lower stress plate

## Minimal center line porosity

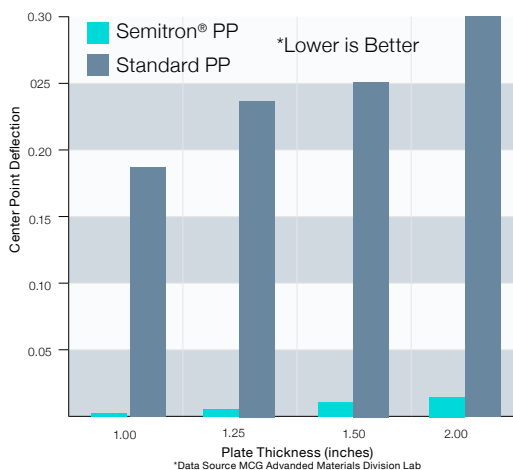
- We have developed proprietary processing methods to minimize the high stress & center line porosity that is common with standard polypropylene
- The plates, ranging from 2" to 5" thickness are manufactured to the highest standards for use in the Semiconductor Wet Process industry

## Polypropylene created specifically for the Semiconductor Industry

### Competitive advantage

Semitron<sup>®</sup> PP is polypropylene plate developed specifically for demanding Wet Process Semiconductor applications that requires a high level of dimensional stability.

### Material comparison



### Semitron<sup>®</sup> PP



### Standard PP Plate



### Semitron<sup>®</sup> PP vs standard PP

Lower internal stress allows for accelerated fabrication cycles through faster speeds & feeds as well as reducing or eliminating the need to anneal.

**Semitron® PP**

Semitron® Homopolymer Polypropylene PP Natural shapes have been developed specifically for demanding wet process semiconductor and electronics applications that require a high level of superior dimensional stability. In addition to these key benefits, this grade in particular offers low internal stress properties, improved machinability and weldability, excellent chemical and corrosion resistance, and minimal center line porosity. All in all, Semitron® Homopolymer PP components accelerate fabrication cycles by reducing or eliminating the need to anneal, and are often a favored solution for wafer motion gears, spin disks, wafer grabbers, pin, and screw applications.

	ISO*			ASTM*			
	Test methods	Units	Indicative values	Test methods	Units	Indicative values	
Thermal Properties (1)	Melting temperature (DSC, 10°C (50°F) / min)	ISO 11357-1/-3	°C	-	ASTM D3418	°F	324
	Glass transition temperature (DMA, tan delta)	DMA	°C	-	DMA	°F	-
	Thermal conductivity at 23°C (73°F)	-	W/(K.m)	-	-	BTU in./in.°F	-
	Coefficient of linear thermal expansion (-40 to 150 °C) (-40 to 300°F)	-	-	-	ASTM E-831 (TMA)	µin./in./°F	75
	Coefficient of linear thermal expansion (23 to 100°C) (73°F to 210°F)	-	µm/(m.K)	-	-	-	-
	Heat Deflection Temperature: method A: 1.8 MPa (264 PSI)	ISO 75-1/-2	°C	-	ASTM D648	°F	180
	Continuous allowable service temperature in air (20.000 hrs) (3)	-	°C	-	-	°F	180
	Min. service temperature (4)	-	°C	-	-	°F	-
	Flammability: UL 94 (3 mm (1/8 in.)) (5)	-	-	HB	-	-	HB
	Flammability: Oxygen Index	ISO 4589-1/-2	%	-	-	-	-
Mechanical Properties (6)	Tensile strength	ISO 527-1/-2 (7)	MPa	-	ASTM D638 (8)	PSI	4,800
	Tensile strain (elongation) at yield	ISO 527-1/-2 (7)	%	-	ASTM D638 (8)	%	-
	Tensile strain (elongation) at break	ISO 527-1/-2 (7)	%	-	ASTM D638 (8)	%	20
	Tensile modulus of elasticity	ISO 527-1/-2 (9)	MPa	-	ASTM D638 (8)	KSI	300
	Shear Strength	ASTM D732	MPa	-	ASTM D732	PSI	-
	Compressive stress at 1 / 2 / 5 % nominal strain	ISO 604 (10)	MPa	-	-	-	-
	Compressive strength	-	-	-	ASTM D695 (11)	PSI	8,000
	Charpy impact strength - unnotched	ISO 179-1/1eU	kJ/m²	-	-	-	-
	Charpy impact strength - notched	ISO 179-1/1eA	kJ/m²	-	-	-	-
	Charpy impact strength - double 14° notched	ISO 21304-2	kJ/m²	-	-	-	-
	Izod Impact notched	-	-	-	-	-	-
	Flexural strength	ISO 178 (12)	MPa	-	ASTM D256	ft.lb./in	1.20
	Flexural modulus of elasticity	ISO 178 (12)	MPa	-	ASTM D790 (13)	PSI	7,000
Relative volume loss during wear test "sand-slurry": TIVAR® 1000=100	ISO 15527	-	-	ASTM D790	KSI	300	
Shore hardness D (14)	ISO 868	-	-	ASTM D2240	-	78	
Electrical Properties	Electric strength	IEC 60243-1 (15)	kV/mm	-	ASTM D149	Volts/mil	-
	Volume resistivity	IEC 62631-3-1	Ohm.cm	-	IEC 60093	Ohm.cm	-
	Surface resistivity	ANSI/ESD STM 11.11	Ohm/sq.	-	ANSI/ESD STM 11.11	Ohm/sq.	10E12
	Dielectric constant at 1 MHz	IEC 62631-2-1	-	-	ASTM D150	-	-
	Dissipation factor at 1 MHz	IEC 62631-2-1	-	-	ASTM D150	-	-
Miscellaneous	Colour	-	-	White	-	-	White
	Density	ISO 1183-1	g/cm³	-	-	-	-
	Specific Gravity	-	-	-	ASTM D792	-	0.91
	Water absorption after 24h immersion in water of 23°C (73°F)	ISO 62 (16)	%	-	ASTM D570 (17)	%	-
	Water absorption at saturation in water of 23 °C (73°F)	-	%	-	ASTM D570 (17)	%	-
	Wear rate	ISO 7148-2 (18)	µm/km	-	QTM 55010 (19)	in³.min/ft.lbs.hr.x10 <sup>-10</sup>	-
	Dynamic Coefficient of Friction (-)	ISO 7148-2 (18)	-	-	QTM 55007 (20)	-	0.25
	Limiting PV at 100 FPM	-	-	-	QTM 55007 (21)	ft.lbs/in².min	-
	Limiting PV at 0.1 / 1 m/s cylindrical sleeve bearings	-	Mpa.m/s	- / -	-	-	-
	Chemical Resistance	<a href="https://www.mcam.com/en/support/chemical-resistance-information/">https://www.mcam.com/en/support/chemical-resistance-information/</a>			<a href="https://www.mcam.com/en/support/chemical-resistance-information/">https://www.mcam.com/en/support/chemical-resistance-information/</a>		

Note: 1 g/cm³ = 1,000 kg/m³; 1 MPa = 1 N/mm²; 1 kV/mm = 1 MV/m

NYP: there is no yield point

\*This table, mainly to be used for comparison purposes, is a valuable help in the choice of a material. The data listed here fall within the normal range of product properties of dry material. However, they are not guaranteed and they should not be used to establish material specification limits nor used alone as the basis of design. This product data sheet and any data and specifications presented on our website shall provide promotional and general information about the Engineering Plastic Products (the "Products") manufactured and offered by Mitsubishi Chemical Advanced Materials and shall serve as a preliminary guide. All data and descriptions relating to the Products are of an indicative nature only. Neither this data sheet nor any data and specifications presented on our website shall create or be implied to create any legal or contractual obligation.

All statements, technical information, recommendations, and advice are for informational purposes only and are not intended and should not be construed as a warranty of any type or term of sale. The reader, however, is cautioned that Mitsubishi Chemical Advanced Materials does not guarantee the accuracy or completeness of this information and it is the customer's responsibility to test and assess the suitability of the products of Mitsubishi Chemical Advanced Materials in any given application or for use in a finished device.

Semitron® is a registered trademark of Mitsubishi Chemical Advanced Materials.

Design and content created by Mitsubishi Chemical Advanced Materials and protected by copyright law. Copyright © 2022 Mitsubishi Chemical Advanced Materials. All rights reserved.

Mitsubishi Chemical Advanced Materials NV  
 Galgenveldstraat 12  
 8700 Tiel, Belgium  
 T +32[0] 51 42 35 11, F +32[0] 51 42 33 10

contact@mcam.com  
 mcam.com

