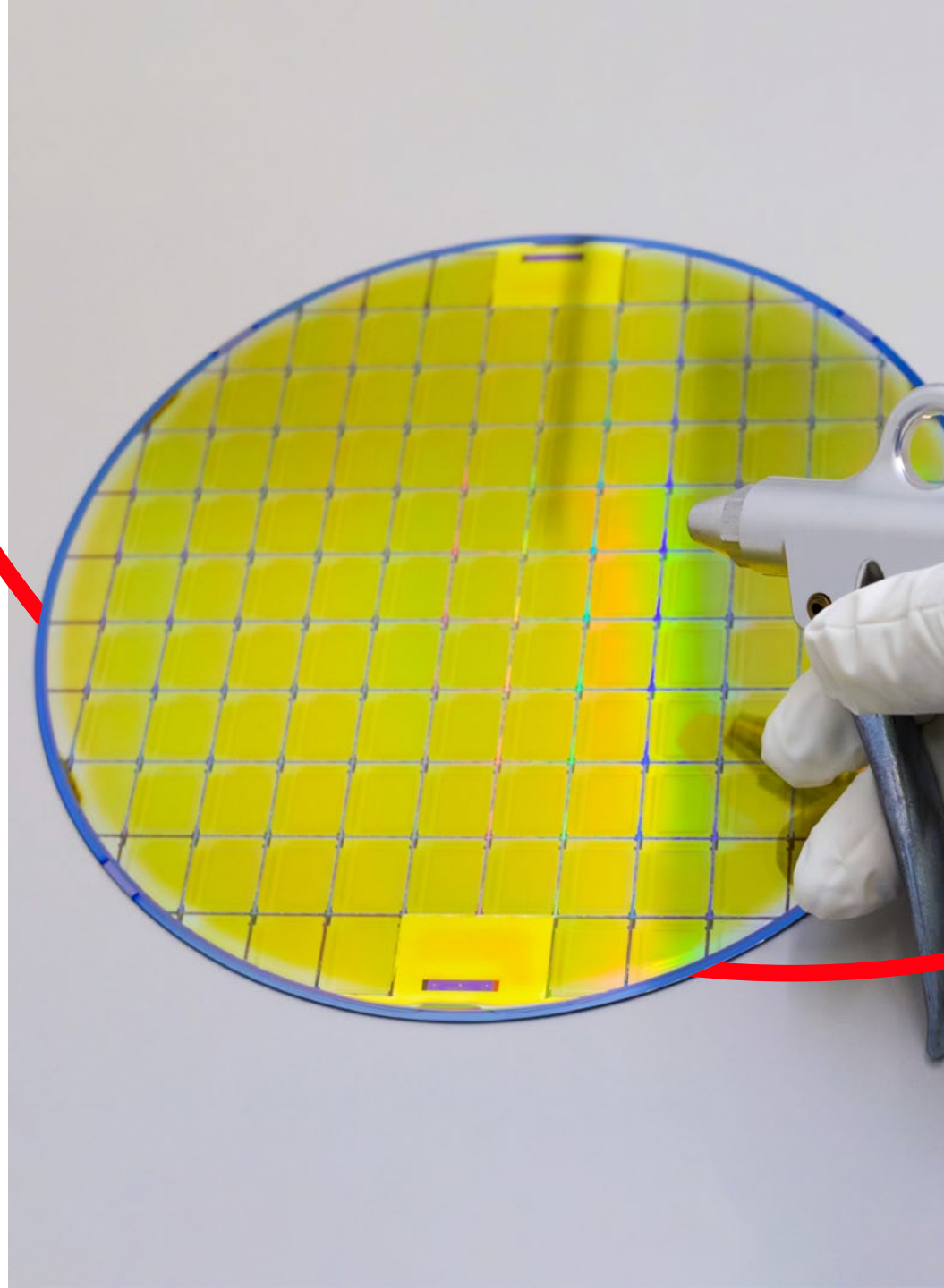




Semiconductor & Electronics

Wet process solutions

Global leader in providing ultrapure semi-finished rod, sheet, & tube solutions for every need in the semiconductor industry



Typical process tools: FEOL clean, BEOL clean, PVD, sputtering, plating tools & wet bench

Wet Process Materials	Wafer Handling & Components	Structural & Chamber
Proteus® PP		✓
Semitron® PP	✓	✓
Ertalyte® PET-P	✓	✓
Ketron® 1000 PEEK	✓	
Sultron® 1000PMP	✓	✓
Ketron® CA30 PEEK	✓	✓
Techtron® PPS	✓	✓



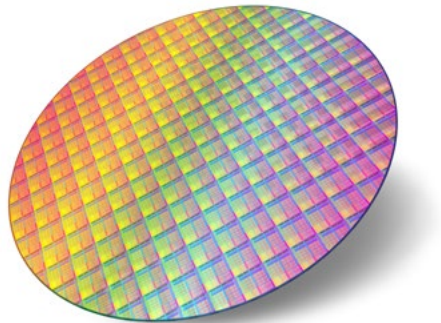
Wafer handling & component features

Key considerations

- Corrosion resistance
- Flatness
- Strength & wear
- Purity
- Chemical resistance
- Dimensional strength

Typical applications

- Spin discs & chucks
- Wafer motion gears
- Shower heads
- Wafer grabbers
- Pins & screws



Material	Relative Dimensional Stability	HDT 264 psi	Appearance	Available Shapes
Proteus® PP	+	210	Dense white	S
Semitron® PP	+++	210	White	S
Sultron® 1000PMP	++	155	Transparent	S
Ertalyte® PET-P	++++	240	Dense white	R / S / T
Techtron® PPS	+++++	250	Beige	R / S / T
Ketron® CA30 PEEK	+++++	518	Black	R / S / T
Ketron® 1000 PEEK	+++++	320	Tan	R / S / T

R Rod / S Sheet / T Tube

Functional chemical compatibility

	Sultron® 1000PMP	Semitron® PP	Ketron® 1000 PEEK	Techtron® PPS	Ketron® CA3	Ertalyte® PET-P
Strong acids	+	+	0	0	+	-
Weak acids	+	+	+	+	+	+
Strong base	+	+	+	+	+	+
Weak base	+	+	+	+	+	0
Salts	+	+	+	+	+	+
Halogens	0	0	+	0	+	0
Solvents	Aliphatic hydrocarbon	-	-	+	+	+
	Aromatic hydrocarbon	0	0	+	+	+
	Chlorinated hydrocarbon	-	-	0	+	+
	Ketones	-	+	+	+	+
	Amines	+	+	+	+	+
	Alcohols	+	+	+	+	+
	Esters	-	+	+	+	+
	Aldehydes	+	+	+	+	+
Phenoles	0	0	+	-	+	-

Tests @ 73°F | - Not Acceptable Service / 0 Limited / + Service Acceptable Service

Semitron® PP

Semitron® PP is polypropylene plate developed specifically for demanding wet process semiconductor applications that requires a high level of dimensional stability.

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

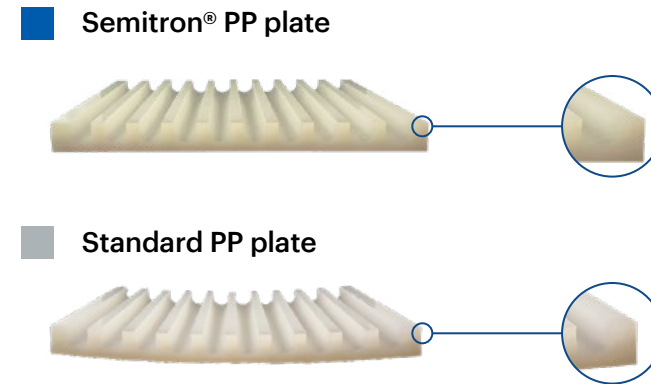
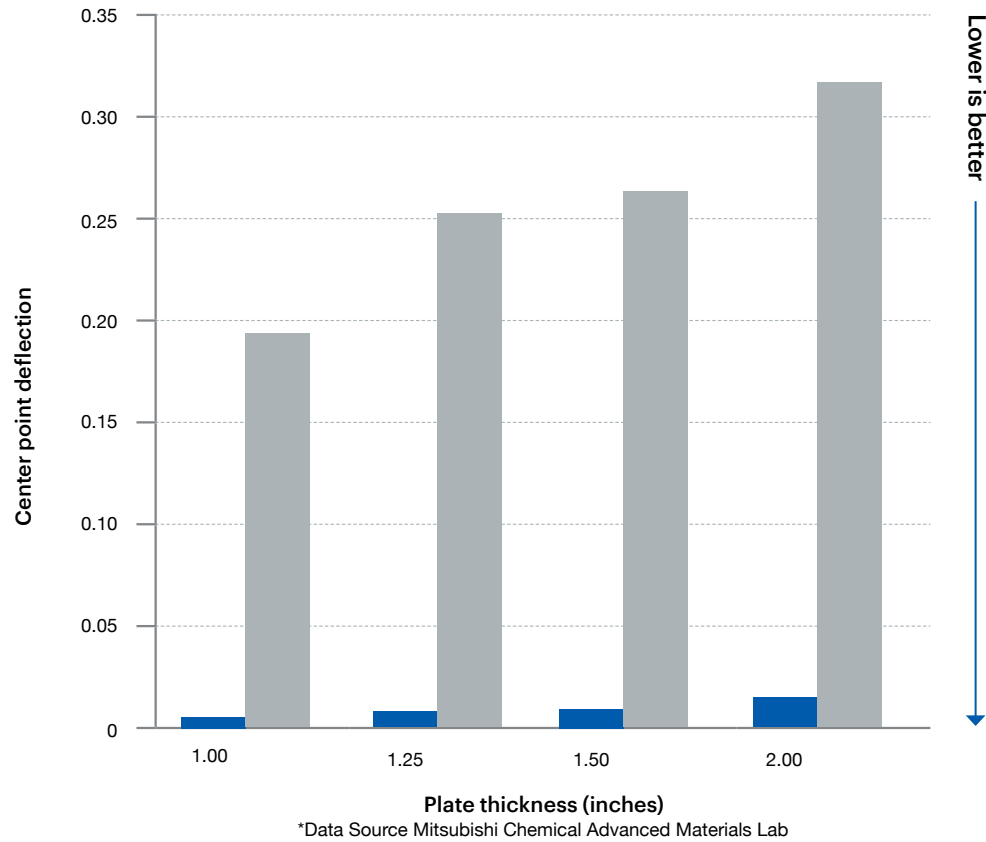
Minimal center line porosity

- Mitsubishi Chemical Advanced Materials has 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

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



Semitron® PP vs. standard PP



Material comparison guide

		Proteus® PP	Semitron® PP	Ertalyte® PET-P	Sultron® 1000PMP	Techtron® PPS	Ketron® 1000 PEEK
Mechanical properties							
Specific gravity	D792	0.91	0.92	1.41	0.83	1.35	1.35
Tensile modulus (psi)	D638	190,000	150,000	460,000	240,000	500,000	63,000
Flexural modulus (psi)	D790	195,000	185,000	490,000	195,000	575,000	600,000
Tensile elongation (%)	D638	14	8	20	50	15	40
CLTE (in./in./°F x 10-5)	E-831 (TMA)	-	6.0	3.3	6.5	2.8	2.6
Hardness rockwell	D785	-	R113	M93	R83	M95	M100
Moisture absorption 24hrs @73°F (%)	D570	0.01	0.01	0.07	0.01	0.10	0.10
Izod Notched	D256 Type "A"	1.2	1.0	0.5	0.5	0.6	0.6
Thermal properties							
Heat deflection temperature @264psi (°F)	D648	205	> 300	240	155	250	320
Continuous service temperature	-	180	180	210	300	425	480

Proteus® LF & Semitron® PP sizes available

	Thickness (in.)	Plate Size (mm)		Plate Size (in.)	
Proteus® LF	0.250	610 x 1220	1200 x 3050	24 x 48	48 x 120
	0.375	610 x 1220	1200 x 3050	24 x 48	48 x 120
	0.500	610 x 1220	1200 x 3050	24 x 48	48 x 120
	0.625	610 x 1220	1200 x 3050	24 x 48	48 x 120
	0.750	610 x 1220	1200 x 3050	24 x 48	48 x 120
	1.000	610 x 1220	1200 x 3050	24 x 48	48 x 120
	1.250	610 x 1220	1200 x 3050	24 x 48	48 x 120
Semitron® PP	1.500	610 x 1220	1200 x 3050	24 x 48	48 x 120
	2.000	610 x 1220	1200 x 3050	24 x 48	48 x 120
	2.250	610 x 1220	1200 x 3050	24 x 48	48 x 120
	2.500	610 x 1220	1200 x 3050	24 x 48	48 x 120
	3.000	610 x 1220	1200 x 3050	24 x 48	48 x 120
	4.000	610 x 1220	1200 x 3050	24 x 48	48 x 120
	5.000	610 x 1220	1200 x 3050	24 x 48	48 x 120

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