



SEMICONDUCTOR

PLASTIC SOLUTIONS

Plastic Experts

Piedmont Plastics® is your premier wholesale distributor of performance plastic materials for the semiconductor industry. We offer a range of plastic products specifically engineered to withstand critical environments.

Our Materials

With numerous locations across North America, Piedmont Plastics always has what you need in stock. Some of our popular materials for wafer handling and wet process applications include:

Wafer Handling

- PEEK
- PET
- PPS
- Polypropylene
- Fluoropolymers (PTFE, PCTFE, PFA)

Wet Process Systems

- Polypropylene
- PVC and CPVC
- Fluoropolymers (PVDF, ECTFE, PFA)



Typical Applications

Our materials are incredibly versatile, making them suitable for a wide range of applications in wafer manufacturing. Some of these applications include:

Wafer Handling

- Spin Discs
- Wafer Chucks
- Wafer Grabbers
- Shower Heads
- Wafer Motion Gears

Wet Process Systems

- Chamber Walls
- Chamber Linings
- Tanks & Bezels
- Wet Bench Structures



The Piedmont Difference

Customer service is fundamental at Piedmont Plastics. This commitment to you means you can rely on us for:

- Custom-Cut Services
- Fabrication Support
- Local and Nationwide Stocking
- On-Time Shipping
- Industry Expertise
- Quality Management Systems
- And More!



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Piedmont Plastics®

Wafer Handling

Typically involve precision machined parts used to move or secure the wafer, or that are near the wafer during chamber processing. These materials usually function near room temperature and are selected based on:

Chemical or pH resistance, dimensional stability/ tight tolerance machining capability, and purity.

Material	Chemical & pH Resistance	Dimensional Stability	Machine Fine Features	Flame (Factory Mutual)	Wear Properties	Cost
PP	Medium	Low	Low	Available	High	\$
POM-C	Minimal	Low	Low	Available	High	\$\$
PET	Better in Acid than POM-C	Medium-High	Medium	No	Superior	\$\$+
PVDF	High Up to pH 11	Medium	Medium	Yes	Medium	\$\$\$
ECTFE	High pH 1-14	Medium	Medium	Yes	Medium	\$\$\$+
PTFE	Completely Inert	Lowest	Low	Yes	Medium	\$\$\$
PEEK	Excellent	High	Excellent	No	High	\$\$\$\$

Wet Process Applications

Involve products that make up the structural components of the equipment or bench. These materials typically function near room temperature and are selected based on:

FM4910 or a suitable flammability rating, chemical resistance, purity, flatness/weldability, and consistency of color.

Material	Chemical & pH Resistance	Dimensional Stability	Purity	Flame (Factory Mutual)	Weld Retention	Cost
FR-PP	Weak acid & Base @ RT	Low	Poor Leaching	Yes	Low	\$
CPVC	Weak acid & Base OK	Low	Low Moderate	Yes	Medium	\$\$
PVDF	High Up to pH 11	Very Good Heat - 175°C	Excellent	Yes	High	\$\$\$
ECTFE	pH 1-14	Better Heat - 240°C	Excellent	Yes	High	\$\$\$+
PFA	Inert	Best Heat - 305°C	Best	Yes	High	\$\$\$\$\$\$\$\$

Chemical Resistance in Wet Process

	LDPE	HDPE	PP	PVC	PC	Acrylic	PTFE	PFA	PET	PEEK	PPS
Acids Dilute	A	A	A	A	A	B	A	A	A	A	A
Acids Concentrated	A	A	A	A	D	D	A	A	C	C	C
Alcohols	A	A	A	A	B	D	A	A	A	A	A
Aldehydes	B	B	A	D	C	B	A	A	B	A	A
Bases	A	A	A	A	D	C	A	A	D	A	A
Esters	B	B	B	D	D	D	A	A	A	A	A
Aliphatic Hydrocarbons	C	B	B	A	D	B	A	A	A	A	A
Aromatic Hydrocarbons	C	B	C	D	D	D	A	A	A	A	A
Halogenated Hydrocarbons	D	C	C	D	D	D	A	A	C	A	A
Ketones	B	B	B	D	D	D	A	A	A	A	A

KEY: A = Excellent Over Time, B = Good Short Term, C = Limited Brief Contact, D = Poor Unstable on Contact