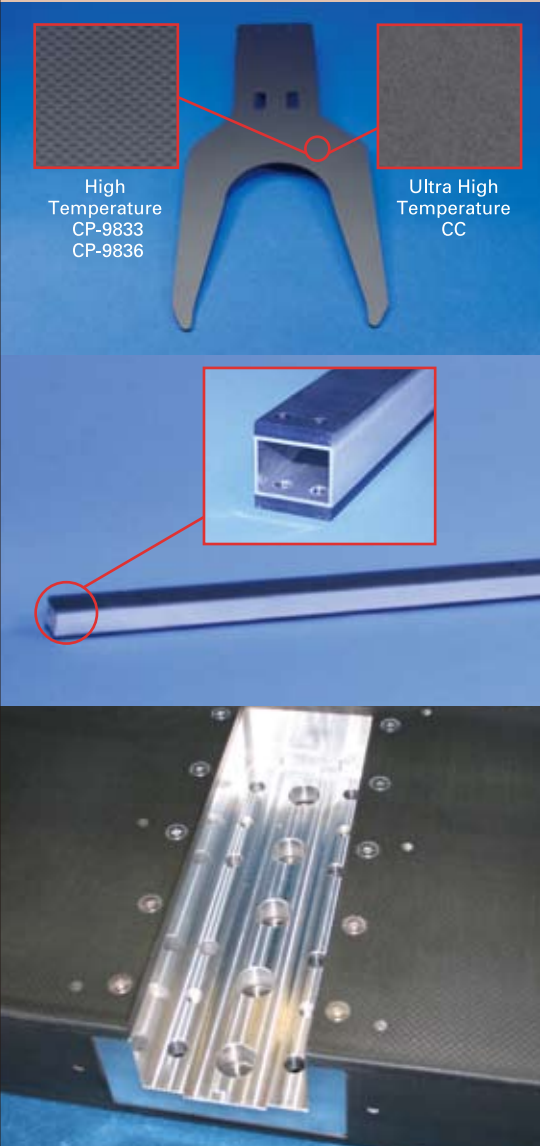


DuPont™ Vespel® Parts and Shapes

MATERIAL SOLUTION FOR END EFFECTORS

High Performance End Effectors with DuPont™ Vespel® CP-9800



Top : V-shape flat wafer handling design

Middle : Hybrid metal/Vespel® design

Bottom : End effector wrist mount

Challenges

- In the world of semiconductors and FPD, throughput is critical. More wafers or substrate panels per hour equate to lower cost of ownership
- When the equipment movement speed and size of the substrate increase, it is more difficult and more critical to maintain positional accuracy
- Major challenge is to identify proven stiff, lightweight and dampened materials for the robot arm end effectors that effectively enhance the production throughput

Solutions

Vespel® CP-9800 End Effectors

Features

- Excellent vibration dampening
- High stiffness to weight ratio (nearly 6x aluminum and 2x ceramic)
- Current commercial offerings to 200°C
- Robust mechanical strength
- High purity/low outgassing in vacuum
- Intrinsic electrical conductivity

Applications

- Wafer transport
- Flat Panel Glass transport
- PV substrate transport

Benefits

- Safe and accurate transport of valuable cargo
- Lower system weight; lower vibration for less time, lower self deflection, lower transportation cost, enabling smaller drive motors
- Reduce COO
- Support cleanroom purity

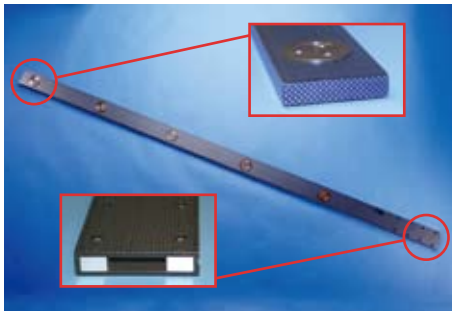
Capabilities

- Hollow 3-D end effectors - up to 4m - especially useful for flat panel glass or solar products
- Hybrid metal/Vespel® design - reduced weight and increased stiffness vs. metal alone
- Flat wafer handling designs including paddle style or V-shaped styles
- Custom, complete end effectors including pads, vacuum channels, and sensors as required



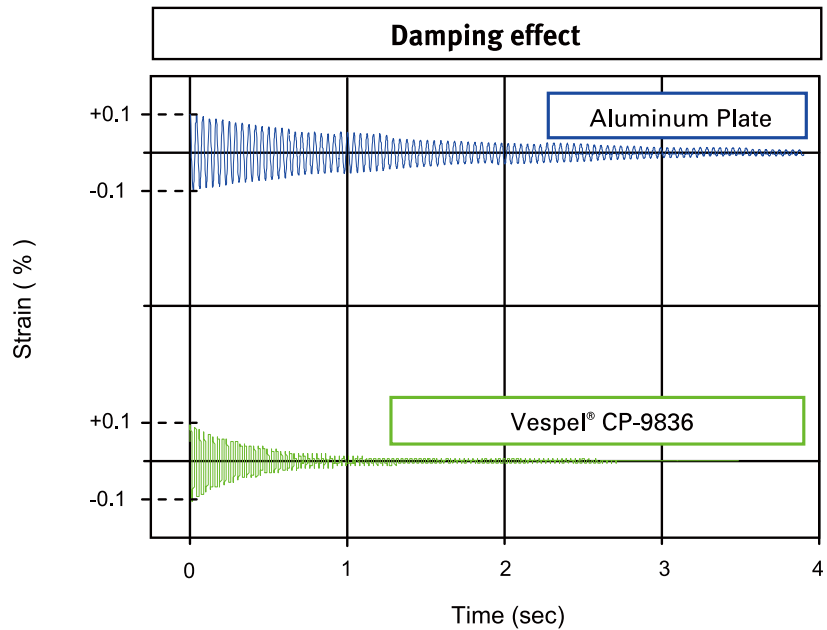
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Hollow 3-D end effector design

Improved Vibration Dampening with Vespel® CP-9800



Reduced Deflection with Vespel® CP-9800

		VESPEL® CP-9800 END EFFECTORS		ALUMINUM (Al)	CERAMIC ALUMINA (Al ₂ O ₃)
		3-D TYPE AND PADDLE TYPE	V-SHAPE TYPE		
Flexural Modulus	[Gpa]	300	250	72	400
Density	[g/cc]	1.7	1.7	2.7	4
Stiffness to weight ratio	[GPa/(g/cc)]	176	147	27	100
Tip Deflection of	Self Weight [mm]		0.83	6.01	1.6
Sample 3mm thick	Wafer Weight [mm]		0.36	1.78	0.3
	TOTAL [mm]		1.19	7.79	1.9

For more information,
visit vespel.dupont.com or call:

North America
1-800-222-VESP (8377)

Europe
32-15-441384

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