II-VI M CUBED

COGENTUM™

THE CLEAR MATERIAL CHOICE FOR ADVANCED MACHINE DESIGN

ENABLING TECHNOLOGY FOR HIGH THROUGHPUT SYSTEMS

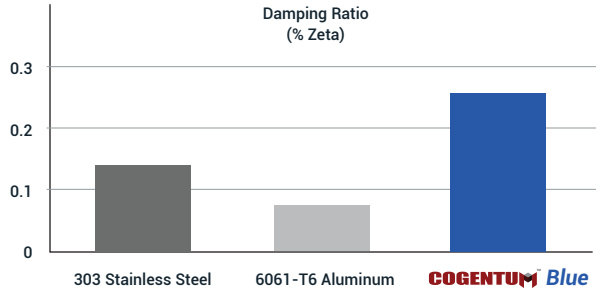
Manufacturers of advanced back end semiconductor processing equipment are focused on providing their customers with innovative, high performance and cost effective solutions to maintain leading edge and competitive market positions. Throughput is a critical aspect of advanced machine design, enabling technically advanced systems and an attractive return on investment (ROI).
The **COGENTUM**™ Product line of advanced materials provides designers with the flexibility to optimize the mission critical components that are key to maximizing throughput for advanced machine performance.

SPECIFIC STIFFNESS

Specific stiffness Is a figure of merit calculated by dividing a material's elastic modulus by its density. A component's mass or weight enables fast motion and acceleration while stiffness is needed for accuracy of the motion. Materials with low density in combination with high stiffness have a higher specific stiffness that enables superior component design flexibility for high throughput systems.

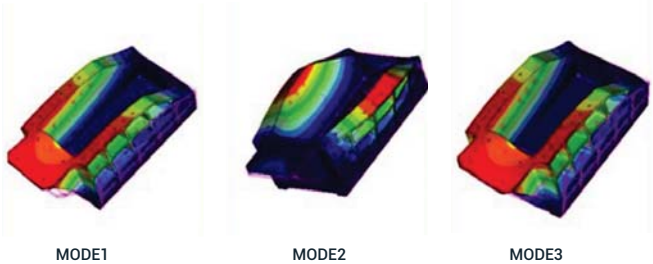
DAMPING

Damping is a material characteristic that indicates a material's ability to dampen induced vibrations. The damping ratio (% zeta) is a factor used by designers for high throughput motion systems. The higher the damping ratio, the shorter the "settle and move" cycle resulting in high throughput for advanced machine designs.



RESONANT OR NATURAL FREQUENCY

Resonant or natural frequency is a measure of vibration modes as expressed in hertz (hz). For advanced machine design, structures or components designed with high specific stiffness materials will exhibit high resonant frequency values that enable high throughput.



II-VI M CUBED

M Cubed Technologies, Inc.
31 Pecks Lane, Suite 8
Newtown, CT 06470

General Inquiries: Phone (203) 304-2940
Sales Inquiries: mcubed.sales@ii-vi.com
Phone (203) 304-2940, Fax (203) 426-0880

COGENTUM™

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Material Property	COGENTUM™ Black	COGENTUM™ Blue	COGENTUM™ Gold
Density (g/cc) [ρ]	2.78	2.80	2.96
Poisson's Ratio	0.29	0.29	0.25
Young's Modulus - GPa (E)	125	143	200
CTE avg 20-100°C(ppm/k) [α]	15	12	11
Thermal Conductivity (W/mK) [k]	160	164	160
Specific Heat(J/kg-K)	820	800	730
Ultimate Tensile Strength (MPa)	370	320	340
Fracture Toughness (MPa-$m^{1/2}$)	15	13	13
Damping Factor(% Zeta)	0.26	0.26	0.58
Specific Stiffness(E/ρ)	45	51	68
Thermal Stability(k/α)	11	14	14

SEMICONDUCTOR BACK END OF LINE PRODUCT EXAMPLES

STAGE STRUCTURES & ASSEMBLIES

WAFER HANDLING COMPONENTS

Call or write today!

Materials, Machining, Motion

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