

AC-Alcon

Overview

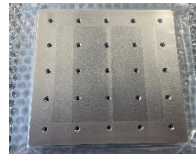
Composite material of Si (silicon) and Al (aluminum), lighter than aluminum Machinable with carbide tools



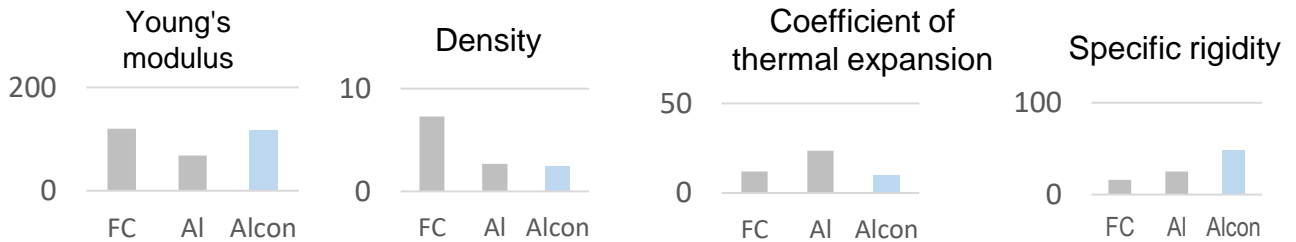
SiC



Matrix(Preform)



Alcon



Features

- Specific gravity: Lighter than Aluminum (2.45 g/cm³)
- Young's modulus: same as cast iron (117GPa)
- Specific stiffness (Young's modulus/specific gravity): Higher than Alsic (Sic 30%, Al 70%). 3 times higher than cast iron
- Coefficient of thermal expansion: Closer than the coefficient of thermal expansion of SUS guide
- Excellent Vibration Damping
- Machinable with carbide tools
- No outgassing in a vacuum environment

Application

Precision Moving Parts

- Front end of semiconductor manufacturing (lithography, inspection, etc)
- Back end of semiconductor manufacturing (chip mounting, bonding)



Data

Materials	Our composite material				General materials	
	AC-Alsic (SiC30%/Al70%)	AC-Alsic (SiC70%/Al30%)	AC-Alcon (Si60%/Al40%)	AC-Albolon	FC250	A5052
Density (g/cm ³)	2.78	3.0	2.45	2.8	7.3	2.7
Young's modulus (GPa)	125	260	117	120	120	68
Specific Rigidity (Gpa-g/cm)	45	87	48	43	16	25
CTE (ppm/K)	14.4	7	10	12	12	23.6
Thermal Conductivity (W/m·K)	150	160	107	81	50	140
Electrical Resistivity (Ω·cm)	—	4.78×10 ⁻⁵	3.90×10 ⁻⁵	1.90×10 ⁻⁵	—	—
Machinability	Difficult (diamond Tools)		Good	Good	Good	Excellent
Typical Size(mm)	2,500×3,000×50t	Φ510×25t	□420×40t	□250×80t	—	—

※The above property values are not guaranteed values.

