

Xycomp® Composite Material

High-Performance Plastic

Greene Tweed offers precision plastic components for a variety of demanding semiconductor applications. These components are made from a full range of high-performance thermoplastic materials, including our Xycomp® composite materials. Xycomp® is ideally suited to replace metal or ceramic compounds due to its high strength, low weight, corrosion resistance, and dimensional stability. Xycomp® materials may also be used in high-pressure and high-temperature (up to 482°F/250°C) applications.

The optimal Xycomp® material for a specific application is determined by the unique combination of plastic material, fibers, and fiber orientation, as well as manufacturing techniques. Greene Tweed provides the necessary application evaluation services to assist in choosing the best performance characteristics.

Features and Benefits

- High-strength, heavy-load capabilities
- Lightweight
- High-temperature functionality
- Outstanding chemical resistance
- High-impact resistance
- Excellent wear properties
- Vibration dampening
- Consolidation of assemblies

Applications

- Wafer processing equipment components
- Robotic equipment, e.g., end effectors
- Replacement of metal or ceramic parts



Designed to Meet Performance Requirements

- Technology and design expertise
- Part design reflects application needs
 - Evaluation of application with FEA (Finite Element Analysis)
 - Strength and stiffness can be designed into specific locations to meet application requirements
 - Resin/fiber combination chosen to match application needs
- Variety of manufacturing methods
 - Various shapes and geometries include thin, flat, hollow, flanged parts
 - Incorporate metal, ribs, and other strengthening components
 - Optional coatings to encapsulate parts and reduce friction

Contact Us

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Products and Engineering

Greene Tweed offers a complete line of high-performance, application-specific seals and plastic components. Many Greene Tweed products result from cooperative efforts between Greene Tweed and leading semiconductor equipment manufacturers and forward-looking fabs.

Our dedicated team of chemists, chemical and mechanical engineers, customer service specialists, and production technicians are ready to assist you in solving your processing challenges.

Typical Properties		
Physical Properties (ASTM Standard)	Xycomp® 1000-03	Xycomp® 1000-04
Resin	PEEK	PEEK
Fiber	Carbon	Carbon
Fiber Orientation	(0°) unidirectional	(0/90°) bi-directional
Color	Black	Black
Density, g/cc	1.6	1.54
Hardness, Rockwell M (D785)	105	100
Water Absorption @ 24 Hours, % (D570)	0.001	0.008
Mechanical (ASTM Standard)		
Tensile Break Strength, ksi (MPa) (D3039)	300 (2,100)	91 (630)
Elongation, % (D3039)	1.5	1.0
Flexural Strength, ksi (MPa) (D790)	290 (2,000)	120 (830)
Flexural Modulus, Msi (GPa) (D790)	18 (124)	7.0 (48.3)
Compressive Strength, ksi (MPa) (D3410)	197 (1,400)	83 (570)
Compressive Modulus, Msi (GPa) (D3410)	18 (124)	8.0 (55.2)
Thermal (ASTM Standard)		
Coefficient of Thermal Expansion, in/in/°F (cm/cm/°C) <300°F (149°C), 10 ⁻⁶ (TMA)	0.30 (0.5)	TBD
Glass Transition Temperature, T _g (DSC)	289°F (143°C)	289°F (143°C)
Maximum Service Temperature (DSC)	482°F (250°C)	482°F (250°C)
Electrical		
Volume Resistivity, ohms-cm, 10 ⁻⁵ (D257)	2.19	1.39

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