



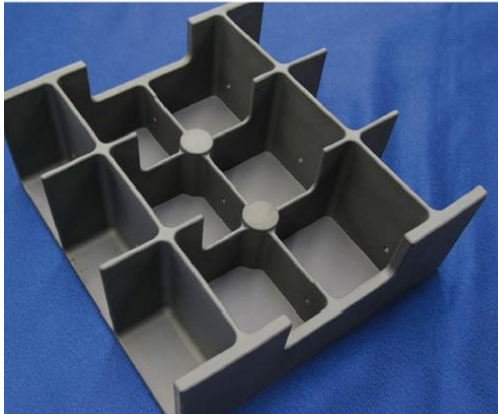
Cactus Materials

LIMITLESS POSSIBILITIES

B₄C Ceramics BC101

Boron carbide (B₄C) has long been used as an abrasive due to its high ranking hardness as a material, surpassed only by diamond and c-BN. Recent developments have seen new applications extending to wear-resistant parts such as sand blasting nozzles with advances in ceramics molding technologies. Characterized by its extremely low weight and high stiffness, it is also used in ultra precision stages in the field of semiconductor manufacturing equipment.

CHARACTERISTICS



		Materials	BC101
		Color	Standard
Mechanical Properties	Bulk Density	g/cm ³	2.42
	Young's Modulus	GPa	385
	Poisson's Ratio		0.17
	Flexural Strength @ RT	MPa	400
	Fracture Toughness (SEPB)	MPam ^{1/2}	3.1
	Hardness HV (98N)	GPa	20.4
Thermal Properties	Coefficient of Linear Thermal Expansion (α)	$\times 10^{-6}/K$ (23°C)	2.3
	Thermal Conductivity @ RT	W/m · K	37
	Specific Heat	J/g · K	0.95
	Thermal Shock Resistance	$\Delta T^{\circ}C$	---
Electrical Properties	Electrical Resistivity @ RT	Ωcm	8×10^0

* The values given above are typical values obtained from reliable testing and should only be used for design guidance.

ADVANTAGES

1. Low weight, high stiffness and high hardness

The specific rigidity (Young's modulus / bulk density) which represents the degree of weight reduction, is 15% higher than that of silicon carbide. The extremely high hardness provides excellent resistance to abrasion.

2. Near Net Shape Sintering Technology

Lower cost production of complex shapes is enabled by machining into near net shape before sintering.

3. Bonding Technology

More complicated shapes can be produced by using our silver brazing method.

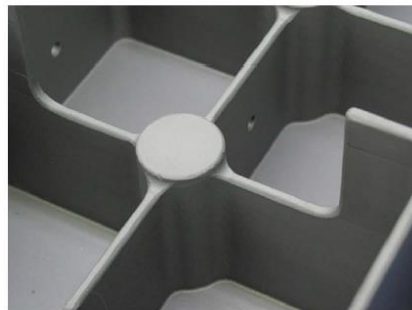


Fig: Thin ribbed structure 210x196x65(mm), Rib thickness 3mm

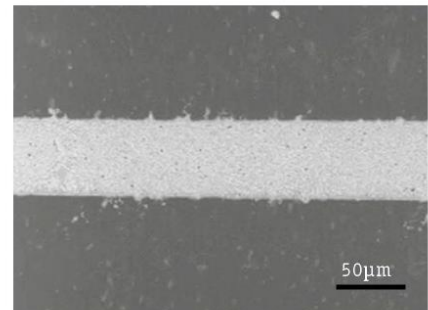


Fig: SEM image of bonding layer