Metal-like Thermal Conductivity! Enhanced with Thermalnite®

High-Strength AlN Substrate

◆Size: □4.5 inch ◆Thickness: 0.2–1.0mm

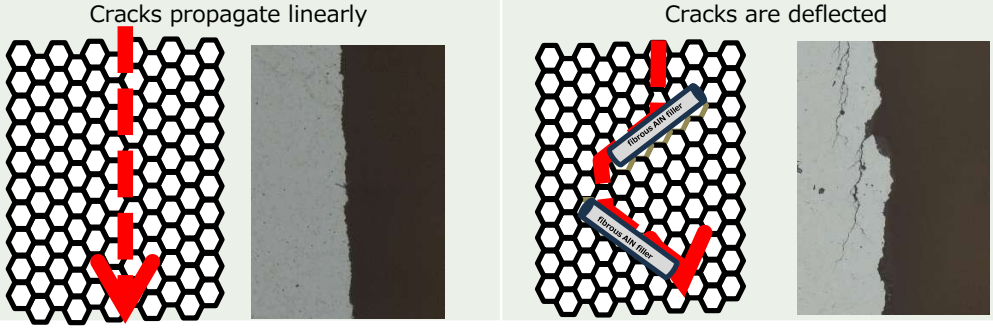
◆Characteristics

Characteristics	Measurement Method	Unit	170WGrade			200W Grade		230WGrade
			Standard	High Flexural Strength	0.1mm Thin Sheet	Standard	High Flexural Strength	High Flexural Strength
Thermal Conductivity	Laser Flash Method	W/m·K	170	170	170	200	200	225
Density	Archimedes Method	g/cm^3	3.3	3.3	3.3	3.3	3.3	3.3
Flatness	3D Measuring Machine (5×5 points)	‰	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5
Coefficient of Thermal Expansion	TMAMethod (40–300° C)	×10^{-6}	3.92	X dir:3.81 Y dir:4.28	X dir:3.81 Y dir:4.28	3.92	X dir:3.81 Y dir:4.28	X dir:3.81 Y dir:4.28
Flexural Strength	3-Point Bending Test	MPa	370	455 X:530、Y:380	465 X:520、Y:410	280	375 X:420、Y:330	330 X:363、Y:300
Fracture Toughness	SEPBMethod	MPa√m	6.0	5.3 X:6.2、Y:4.4	5.3 X:6.2、Y:4.4	6.0	5.3 X:6.2、Y:4.4	5.3 X:6.2、Y:4.4

※The values shown in the table are measured data and not guaranteed product specifications.

◆Mechanism for Improving Mechanical Strength

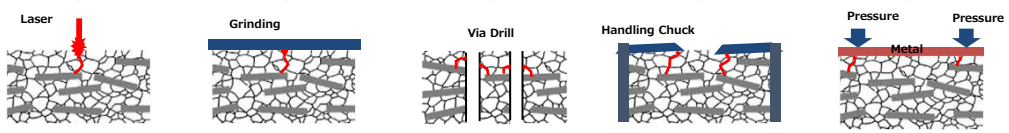
	Competitor Product	U-MAP Product
	AlN Substrate	High-Strength AlN Substrate
Crack Propagation	Cracks propagate linearly	Cracks are deflected



Fibrous AlN filler induces crack deflection, increasing fracture energy and thereby enhancing fracture toughness

◆Suppression of Microcrack Propagation in Each Process

	Laser Processing	Grinding / Polishing	Via Hole Drilling	Metallization	Assembly
Issue	Cracks form during laser scribing and breaking	Surface cracks form and propagate during grinding	Microcracks form and propagate during via processing	Cracks expand and cause damage during handling	Cracks expand due to reflow heating or pressure
Effect of Thermalnite®-Added AlN Substrate	Reduces formation of new cracks	Suppresses crack formation during grinding	Improves handling and yield	Improves handling and yield	Prevents cracking during assembly
Customer Benefit	Improves yield	Enables thinning of substrate and reduces thermal resistance	Enables substrate downsizing through finer pitch Enhances heat dissipation for larger Via Drill		



Contact us ▶

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