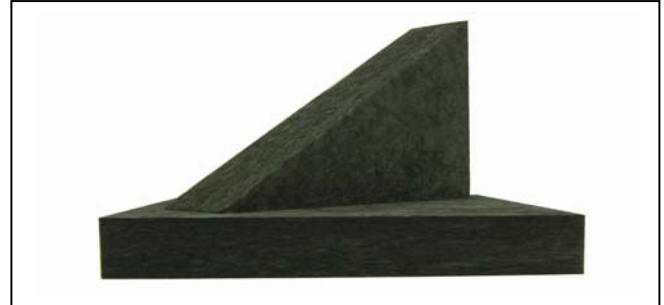


Thermshield™ Rigid Thermal Board

Thermshield RTB grades provide a thermal management solution tailored toward crystal growing and other advanced heat treating applications requiring precision machined heat packs and consistent repeatable process conditions. Thermshield RTB grades can be used in high temperature applications operating up to 2,800°C (5,072°F) in an inert or vacuum environment.



CONSTRUCTION: Thermshield RTB grades are produced with a proprietary process combining long carbon fibers and binder. The production process is optimized to orient fibers to minimize the thermal conductivity through the material thickness, while achieving excellent density uniformity.

STANDARD SIZES: In addition to these standard sizes, Thermshield RTB grades can be manufactured to customer specification in a variety of complex geometries.

Length	Width	Thickness	Thickness Tolerance
1000mm	1500mm	20, 30, 40, 50	± 0.5mm
1000mm	1000mm	20, 30, 40, 50	± 0.5mm
24"	42"	1", 1.5", 2"	± 0.02"
24"	48"	1", 1.5", 2"	± 0.02"
24"	52"	1", 1.5", 2"	± 0.02"
48"	60"	1", 1.5", 2"	± 0.02"

MATERIAL ATTRIBUTES:

- **Machinability:** Thermshield RTB grades are readily machinable to tight tolerances using conventional methods such as cutting, drilling, sawing, as well as CNC milling.
- **Thermal Uniformity:** Thermshield RTB grades reduce hot spots providing improved process control to furnace users.
- **Low Specific Heat:** Allows for rapid furnace cycling and improved throughput.
- **Low Dusting:** Thermshield RTB grades utilize long carbon fiber materials, which minimize erosion and particle generation.
- **Purity:** Halogen and Vacuum purification is available for Semiconductor and other specialty applications.

Typical Properties	SI Units		English Units	
Density	0.17	g/cm ³	10.61	lb/ft ³
Thermal Conductivity (Argon)				
1,000°C (1,832°F) (⊥)	0.49	W/mK	3.39	BTU ft h °F
2,000°C (3,632°F) (⊥)	1.11	W/mK	7.69	BTU ft h °F
Thermal Conductivity (Vacuum)				
1,000°C (1,832°F) (⊥)	0.40	W/mK	2.77	BTU ft h °F
2,000°C (3,632°F) (⊥)	1.00	W/mK	6.93	BTU ft h °F
CTE: 20 – 1,000°C (//) (68 – 1,832°F) (//)	2.5 x 10 ⁻⁶	1/K	1.4 x 10 ⁻⁶	1/°F
Flexural Strength (⊥)	2.0	MPa	300	psi
Compressive Strength (⊥) @ 10% Deformation	0.25	MPa	40	psi

Material Grade	Total Ash	Sulfur Content	Total Elemental Impurities	Processing Temp
RTB-317	≤ 0.1%	300 ppm	500 - 1,000 ppm	1,900°C
RTB-317H	≤ 0.01%	25 ppm	≤ 150 ppm	1,900°C
RTB-317HP	N/A	5 ppm	≤ 20 ppm	2,100°C w/ Halogen