



## Graphite Insulation Boards

### What are Graphite Insulation Boards?

Graphite insulation boards, manufactured from rigidized rayon felt, are used as refractory insulation for vacuum or protective atmosphere process furnaces. The graphite boards are a premium material pre-fired to 3992°F (2200°C) to increase purity, reduce ash content, and ensure consistent performance. Ash purification services to ≤ 20 ppm are available. The rigid insulation boards are easily cut or machined to custom sizes in both square and round hot zones.

### Material Benefits

- Boards able to be fabricated into complex shapes & machined to print(s)
- Graphite foil option available on surface(s) or layered
- CFC/CC option available on surface(s) or layered
- GraphiSeal coating option available on surface(s) and/or edge(s)
- Carbon content ≥ 98%
- Greater carbon content, lower ash content, and lower thermal conductivity in comparison to carbon insulation boards made from pan.

### Surface and Layering Options

Materials such as Graphite Foil, Carbon Fiber Composite (CFC), and GraphiSeal can be used to enhance the performance of the graphite boards. Foil and CFC can be used on exterior surface(s) or layered internally.

#### • Graphite Foil

- *Dust generation prevention*
- *Surface protection*
- *Low gas-permeability*
- *Increase radiant heat retention while reducing issues with furnace contaminant containment*
- *Decrease pump downtimes and increases longevity of the insulation.*

#### • Carbon Fiber Composite (CFC)

- *Dust generation prevention*
- *High strength and surface protection*
- *Promotes excellent durability, impact, & wear resistance*

#### • GraphiSeal Coating

- *Reduce porosity and dusting*
- *Improve oxidation resistance*
- *Surface(s) and/or edge(s) can be sealed with specified number of coats*
- *Material can be mixed with Silicon Carbide powder to produce an anti-eutectic coating*

### Applications

- Vacuum Furnaces
- Graphite Purification, & Carbon Fiber Heat Treating Furnaces
- Powdered Metal Sintering
- Sputtering Targets
- Fiber optics production
- Annealing & Hot Pressing
- Silicon / GaAs Crystal Growing Furnaces



### Stocked Sizing & Properties

Graphite insulation boards are stocked and ready to ship in the following sizes below. Surface and layering options may have additional lead times, depending on inventory. Contact us directly for a custom quote if you need a specific size, options, and/or machining.

Stock Sizing	Graphite Boards
1" x 24" x 52"	✓
1" x 40" x 60"	✓
1.5" x 24" x 52"	✓
1.5" x 40" x 60"	✓
2" x 24" x 52"	✓
2" x 40" x 60"	✓
4" x 24" x 52"	✓
4" x 40" x 60"	✓

Properties	Unit	Graphite Boards
Density	g/cm3	0.17
Carbon Content	%	≥ 98-99.9
Thermal Conductivity		
3632°F   2000°C	W/mk	0.48
4532°F   2500°C	W/mk	0.61
Specific Resistance	Ohm.cm	0.18 - 0.22
Bending Strength	MPa	1.10
Compressive Strength	MPa	1
Ash Content	ppm	≤ 1000
Ash Content Purified	ppm	≤ 20
Moisture Absorption	%	≤ 1.0
Volatiles	%	Nil
Temperature Rating <sup>1</sup>	°F   °C	5432   3000
Pre-fire Temperature	°F   °C	3992   2200
Standard Size Board	inches	40" x 60"
Max Size Board	inches	60" x 60"
Max Board Thickness	inches	≤ 20"
Alternate Sizing & Purities	Standard   Metric	Contact Us

Notes:

<sup>1</sup> Temp rating in vacuum or inert atmosphere