



HEATGUARD

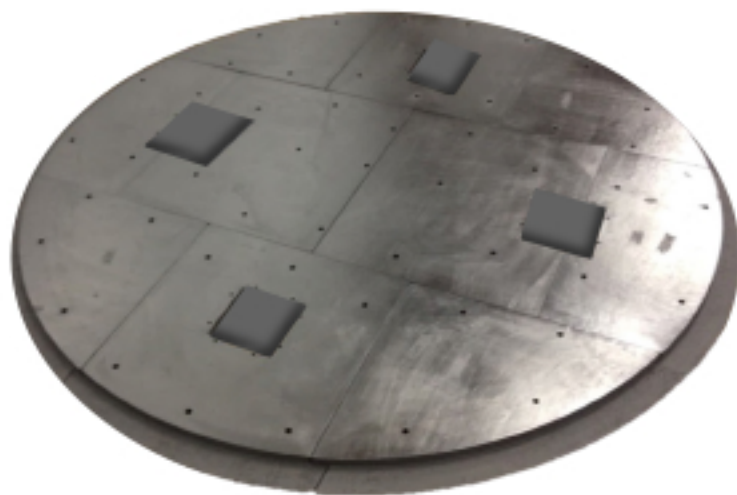
INSULATION

GMI Graphite Machining, Inc.
PRECISION MACHINED GRAPHITE



- ✓ TOUGH
- ✓ MOISTURE RESISTANT
- ✓ OXIDATION RESISTANT
- ✓ LOW ASH
- ✓ REDUCED ENERGY CONSUMPTION
- ✓ MINIMUM INSTALLATION TIME
- ✓ AMERICAN MADE

- ✓ ALLOWS YOU TO PUMP HARD VACUUMS FASTER
- ✓ ALLOWS FURNACES TO HEAT FASTER
- ✓ REDUCES HOT ZONE WEIGHT
- ✓ MACHINED TO CUSTOMER DESIGN



The most important function of graphite insulation is to keep the heat inside the hot zone and away from the furnace walls. It has to be moisture resistant to allow rapid pump down time to maximize production.

HEATGUARD Insulation does that and more !!!

GMI Graphite Machining, Inc.

240 MAIN STREET, TOPTON, PA 19562
www.graphitemachininginc.com

Email: Info@graphitemachininginc.com

Phone: 610-682-0080

Fax: 610-682-0014

HEATGUARD INSULATION EQUALS ENERGY SAVINGS !!!!

HEATGUARD is a very unique insulating material, unlike any current material.

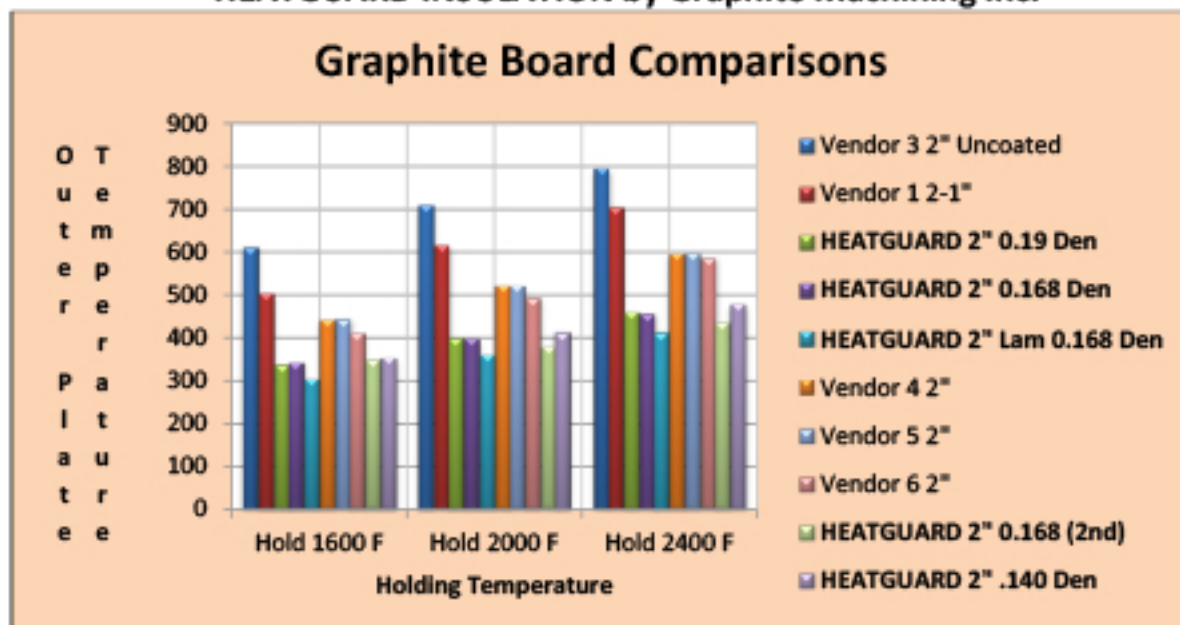
The chart below shows the results against 5 major boards available today. This test was conducted by a major OEM of vacuum furnace equipment. Temperatures indicated on the chart were applied to a 2 inch thick section, allowing the board to soak and reading the temperature on the cold face using thermocouples. HEATGUARD insulating properties were a minimum of 20% better than the best competitor and up to 50% better than most. Its unique design also makes it very resistant to moisture pickup, reducing furnace pump down time.

Graphite Board Test Summary

Insulation Type / Vendor	Hold 1600 F	Hold 2000 F	Hold 2400 F
2" Board/ Facing/ Uncoated/ (Vendor 3)	611	709	795
2 - 1" Boards/Facing (Vendor 1)	502	616	704
2" Board/Facing (0.19 Density) HEATGUARD	338	399	458
2" Board/Facing (0.168 Density) HEATGUARD	341	397	456
2" Board made of 2 pieces 3/4"Bd and 1 piece of 1/2"Bd/Facing and foil between 3/4 " bds(0.168 Density) HEATGUARD	302	359	413
2" Board/Facing (Vendor 4)	441	520	594
2" Board/Facing Graphite (Vendor 5)	444	521	596
2" Board/Facing Carbon (Vendor 6)	410	493	586
2" Board/Facing (0.168 Density) HEATGUARD	349	379	435
2" Board/Facing (0.140 Density)HEATGUARD	351	413	479

*THE RESULTS IN THE GRAPH AND CHART INDICATE THE COLD FACE TEMPERATURE ACROSS A 2 INCH THICK BOARD WHEN 1600F, 2000F AND 2400F ARE APPLIED TO THE HOT FACE AND ALLOWED TO SOAK

HEATGUARD INSULATION by Graphite Machining Inc.



HEATGUARD INSULATION SUPERIOR QUALITY !!!!

HEATGUARD Insulation is Carbon Bonded Carbon Fiber (CBCF). The carbon fibers are locked in place with carbon. Combining this with our proprietary forming process makes HEATGUARD Insulation much tougher and dent resistant than other board insulation. It can be produced in density as low as .100g/cc, reducing weight while maintaining its strength.



HEATGUARD

Cast



HEATGUARD

Sealed and Coated

- Prevent Dust



HEATGUARD

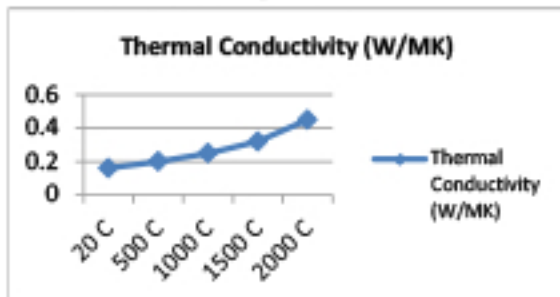
Sealed, Coated and Foiled

- Prevent Dust
- Low Gas Permeability
- Erosion Protection and Resistance

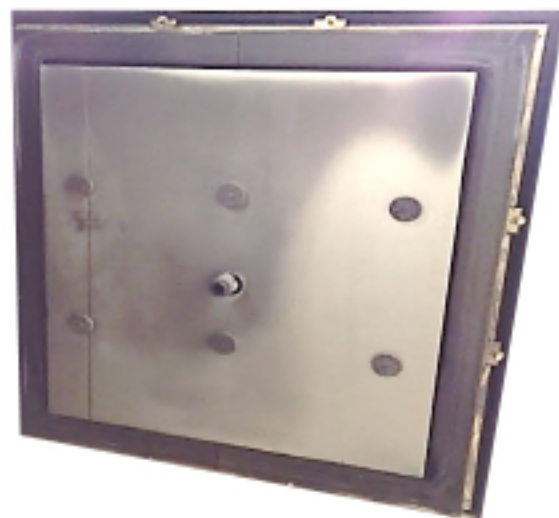


TYPICAL PROPERTIES

- Average Density .15 g/cc
- Density Range .10 g/cc to .19 g/cc
- Flexural Strength 325 PSI



HEATGUARD Insulation is a direct replacement for most felt insulation. It can be supplied precision machined to fit any furnace. Due to its strength, the number of hold downs required for felt applications will be significantly reduced, eliminating heat sinks that cost energy on every run. The 50"x 50" door insulation package, pictured here, is being held in place with 6 hold downs and operates at 2000 degrees C.



GMI provides a wide range of graphite products to the vacuum furnace industry including:

- HEATING ELEMENTS
- FEED THROUGHS
- CONNECTORS
- FASTNERS
- BOATS, TRAYS, CARRIERS



HEATING ELEMENTS ARE
MACHINED TO A SIZE OR
RESISTANCE SPECIFICATION.

