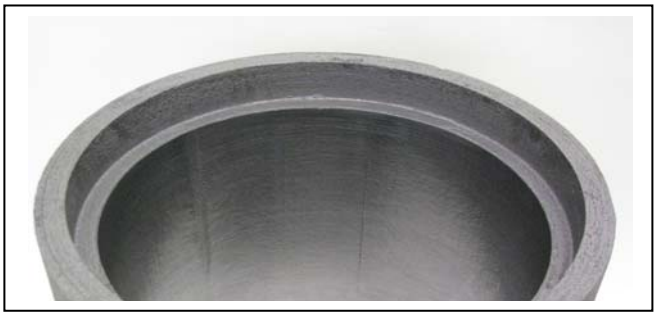
CARBON COMPOSITES INC.

"Innovations in Carbon"

Rigid Felt Cylinder Insulation

RFC provides a cost effective solution for most conventional heat treating furnaces and is well suited to the solar industry. RFC can be used in high temperature applications operating up to 2,800°C (5,072°F) in an inert or vacuum environment.



CONSTRUCTION: RFC is produced by laminating multiple layers of soft felt with a resin and firing it to 1,900°C. As an option, graphite foil may be bonded to any surface specified to lower the emissivity and minimize process gas infiltration. Graphite Paint can also be coated on select surfaces to reduce particle generation.

SIZES: Cylinders are fabricated to customer specified sizes up 48" in diameter and 40" tall. Multiple cylinders can be mated together with shiplap ends to assemble taller hot zones.

Maximum OD	Minimum ID	Maximum Height
1220mm	510mm	1010mm
48"	20"	40"

MATERIAL ATTRIBUTES:

- Machinability: RFC is readily machinable to precision tolerances with conventional methods such as cutting, drilling, sawing, and milling to facilitate rapid furnace rebuilds.
- Dimensional Stability: RFC will not bow, warp, or crack as a result of thermal shock or multiple heating cycles.
- Low Specific Heat: Allows for rapid furnace cycling and improved throughput.
- Purity: Halogen and Vacuum purification is available for Semiconductor and other specialty applications.

Typical Properties	SI Units		English Units	
Density	0.18	g/cm³	11.2	lb/ft³
Thermal Conductivity (Argon) 1,000°C (1,832°F) (⊥) 2,000°C (3,632°F) (⊥)	 0.47 1.05	 W/mK W/mK	 3.26 7.29	 BTU in/hr ft² BTU in/hr ft²
Thermal Conductivity (Vacuum) 1,000°C (1,832°F) (⊥) 2,000°C (3,632°F) (⊥)	 0.33 0.92	 W/mK W/mK	 2.29 6.39	 BTU in/hr ft² BTU in/hr ft²
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
RFC-200	≤ 0.1%	300 ppm	500 - 1,000 ppm	1,900°C
RFC-200H	≤ 0.01%	25 ppm	≤ 150 ppm	1,900°C
RFC-200HP	N/A	5 ppm	≤ 20 ppm	2,100°C w/ Halogen

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