



Graphi-Bond™ 551-RN bonds graphite blocks.



Graphi-Bond™ 551-RN seals sensor in carbon brushes.

Aremco's high temperature graphite adhesives are formulated using both phenolic and silicate binders to bond carbon, carbon fiber composite (CFC), and graphite components, structures and tools used in a broad range of applications to 5400 °F (2985 °C).

Part No.	551-RN	551-RN-MV	669
Filler	Graphite	Carbon	Graphite
Binder	Phenolic	Phenolic	Silicate
Consistency	High Viscosity	Medium Viscosity	Low Viscosity
Use Atmosphere	Reducing/Vacuum	Reducing/Vacuum	Oxidizing
Bond Strength	High	Ultra-High	Moderate
Max Temperature	5400 °F (2985 °C)	5400 °F (2985 °C)	1400 °F (760 °C)

TYPICAL APPLICATIONS

Bonding

- Graphite Insulation
- Carbon Brick
- Carbon Foam & Felt
- Carbon Fiber Composites
- Graphite Rams & Punches
- Graphite Sight Tubes
- Graphite Pour Spouts
- Graphite Foil to Rigid Graphite Insulation
- Graphite Foil to CFC

Laminating

- Carbon Fiber Composites

Repairing

- Graphite Trays, Dies, Jigs, Fixtures
- Patch Holes
- Fix Scratches
- Repair Susceptors

Sealing

- Porosity in Carbon & Graphite

HIGH TEMPERATURE GRAPHITE ADHESIVES PROPERTIES

Part Number		551-RN ^{1,2}	551-RN-MV ^{1,2}	669
Tradename		Graphi-Bond™		
Major Constituent		Graphite	Carbon	Graphite
Color		Black	Black	Black
Temperature Limit, °F (°C)		5400 (2985)	5400 (2985)	1400 (760)
No. Components		1	1	1
Viscosity, cP		Paste	60,000–90,000	20,000–40,000
Specific Gravity, g/cc		1.45–1.50	1.15–1.25	1.45–1.50
CTE, in/in/°F × 10 (°C)		4.1 (7.4)	4.1 (7.4)	4.2 (7.6)
Handling	Mix Ratio, powder:liquid	NA	NA	NA
	Thinner	Ethanol ³	Ethanol ³	669-T / H ₂ O
	Application Temperature, °F	40–90	40–90	50–90
	Storage Temperature, °F	30–75	30–75	40–90
	Shelf Life, months	6	6	6
Curing	Air Set, hrs	1–4	1–4	1–4
	Heat Cure, °F, hrs	265, 4 + 500, 2	265, 4 + 500, 2	200, 2
Bond Type		99% Carbonaceous	99% Carbonaceous	Silicate-Graphite
Dielectric Strength, volts/mil @ RT		75	130	105
Lap-Shear Strength, psi @ RT Post-Cure		810	1425	224
Moisture Resistance		Excellent	Excellent	Excellent
Alkali Resistance		Good	Good	Good
Acid Resistance		Good	Good	Good

APPLICATION PROCEDURES

Surface Preparation

Remove any loose or embedded carbon or graphite dust thoroughly prior to adhesive application and make sure the substrate is completely dry and free of moisture.

Mixing

Make sure adhesive is brought to room temperature prior to application and remix as needed using a spatula or automatic equipment. Refer to Tech Bulletin A12 for information about Aremco's **Model 7000 Pneumatic Mixer**. Viscosity may be adjusted by using the thinner indicated in the property chart up to 20% by weight.

Application

Apply a thin coat of adhesive to each substrate using a proper tool. Use a clamp to maintain a uniform glue line thickness of 5–10 mils across the joint. Wipe away excess material prior to drying and curing.

Curing

Refer to the Property Chart for specific curing instructions for each product. Note that excessive film thickness or rapid heating may result in blisters.

Footnotes

¹ Graphi-Bond 551-RN and 551-RN-MV are also offered in a two-part, resin and powder, kit. Add "-X" to part number.

² Graphi-Bond 551-RN and 551-RN-MV volatile loss is complete at ~1300 °F (700 °C). Major loss occurs at 200–400 °C, methane at < 400 °C, hydrogen to 700 °C.

³ Graphi-Bond™ 551-RN and 551-RN-MV can also be thinned with methanol and isopropyl alcohol.

Abbreviations

NA Not Applicable

Refer to Price List for availability of sample kits and complete order information.

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The user assumes all risk of use or handling whether or not in accordance with directions or suggestions, or used singly or in combination with other products.