Raycarb C2®B Carbon Fiber

Sustainable Carbonized Rayon

Carbonized rayon fiber has long been the preferred reinforcement for ablative composites, such as solid rocket motors and heat shields. Maintaining a reliable and secure supply of rayon has been a challenge. ArianeGroup has overcome this obstacle through the development of Raycarb C2®B. Park supplies phenolic prepregs using Raycarb C2®B.

Park has partnered with ArianeGroup to make Raycarb C2®B carbonized rayon fabric available in North America through an exclusive distribution agreement. This partnership means:

- **Shorter lead times due to inventories of carbonized Raycarb C2®B fabric at Park Aerospace Corp. and ArianeGroup**
- **Park can support small quantities for R&D, new programs, and development**
- **Park can also support smaller MOQs through Raycarb C2®B fabric inventory maintained at its facility in Kansas**

Why Raycarb C2®B

- Proven 20+ year history with civil aerospace programs, including Ariane launcher solid boosters and critical military systems, including the Patriot PAC-3 and SM-3 Missile Systems
- Stable supply chain using European sourced rayon fiber
- Raycarb C2®B is carbonized upon receipt and is ready for impregnation
- Direct replacement for heritage NARC and CYDSA carbonized rayon
- Good behavior on high temperature and thermal erosion
- Low thermal expansion
- Low thermal conductivity
- Compatible with phenolic resins

Raycarb C2®B is considered to be a sustainable carbonized rayon because it is manufactured from tire cord rayon. The market for tire cord rayon in high performance tires is stable and it is expected to remain so. Heritage systems rely on textile rayon, and the use of rayon in clothing continues to decline. Tire cord rayon is a high tenacity fiber, and this can translate to higher mechanical properties. Typical fabric properties are shown in Table 1. Raycarb C2®B is available in approximate roll weights of 85 lbs. and the nominal width of 40".

Fabric Data	Value	Method
Fiber Construction	3300 d, 2000 continuous filament	-
Weave	8HS	-
Construction, Warp x Fill	46 x 44	ASTM D-3775
Weight, oz/yd² (gsm)	9.22 (313)	ASTM D-3776
Nominal Thickness, in (mm)	0.025 (0.635)	ASTM D-1777
Width, in (cm)	41 (104)	-
Carbon Assay	92% min	ASTM D-3178
Ash Content	2.0% max	-
Specific Gravity	1.6	ASTM D-3800
pH	8.6	ASTM E-70

Fabric Mechanical Properties	Value	Method
Tensile Strength (Warp), lb/in	300	ASTM D-5034
Tensile Strength (Fill), lb/in	148	ASTM D-5034

Raycarb C2®B NG Phenolic Prepregs

Park has a long experience prepregging Raycarb C2®B fabrics. Park phenolic resins systems have been used on Atlas V SRM, Patriot Missile PAC-3, and Standard Missile SM-3 to name a few. The phenolic resins systems are based on MIL-R-9299 resins. The Park Raycarb C2®B phenolic prepregs were designed to be direct replacements for the heritage carbonized rayon (NARC, CYDSA) phenolic composites. These prepregs are available as broad goods, slit biased tapes and chopped molding compounds.

ArianeGroup is lead contractor for civil and defense space launcher systems, responsible for the design and the entire production process of Europe's Ariane 5 and Ariane 6, including marketing and operation by its Arianespace subsidiary, as well as for the design, manufacture, and operational condition maintenance of the missiles of the French Oceanic Deterrent Force. Internationally recognized for its innovative, competitive solutions, ArianeGroup has expertise in all aspects of state-of-the-art space

propulsion technologies. ArianeGroup and its subsidiaries also offer their specialist skills in space equipment, services, space surveillance, and critical infrastructure to benefit other industrial sectors. ArianeGroup is a joint venture equally owned by Airbus and Safran and employs approximately 7,000 highly qualified staff in France and Germany. Group revenues in 2021 amounted to €3.1 billion.

Park Aerospace Corp. (NYSE: PKE), a U.S company founded in 1954, is a global advanced materials company which develops and manufactures high-technology advanced composite materials, parts and assemblies for the aerospace markets. Park's core capabilities are in the areas of polymer chemistry formulation and coating technology. The Company's manufacturing and R & D activities are in Kansas.