ZOLTEK

PANEX® 30

Thermal Management Solutions

99.9% CARBON CONTENT

PANEX® 30 products are PAN based materials that are >99% carbonized. These high-purity products are derived from Zoltek's high temperature batch carbonization process. They are most often used in extreme applications that demand resistance to harsh temperature and chemical environments. All PANEX® 30 materials are thermally stable and chemically pure.

Rovings & Spun Yarns:

PANEX® 30 carbon fiber yarns are >99% carbonized and have a density of 1.75 g/cc. These yarns are characterized by their many surface fibrils protruding in various directions, making them ideally suited for high performance applications including carbon/carbon and other refractory composites.

Rovings & Spun Yarn Applications:

- Used for carbon/carbon preforms
- Braided compression packings and seals

Carbon Content	99.9%
Tensile Strength	1,552 MPa (225 Ksi)
Tensile Modulus	221 GPa (32 Msi)
Yield	2,015 m/kg (1,000 yds/lb)
Denier	4,820 g/9000m
Twist Direction	S or Z

Technical Data for High Twist Roving

Woven Fabrics:

PANEX® 30 woven carbon fiber fabrics made from spun yarn that is tailored for a variety of finished composite thicknesses. These fabrics have high cross-ply tensile and interlaminar shear strengths in composite materials. Another advantage of these fabrics is their contour conformation without wrinkling. PANEX® 30 fabrics are thermally stable and chemically pure with low oxidation rates.

Woven Fabric Applications:

- Aircraft & automotive brakes
- Clutch plates
- Gas diffusion layer for fuel cells

Carbon Content	99.9%
Density	1.75 g/cc (0.063 lb/in^3)
Oxidation Rate	1% per hour at 932°F (500°C)

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Felts: Zoltek's needlepunched felt is produced from PYRON® oxidized PAN fibers and later carbonized to >99% carbon content in our vacuum furnaces. Current applications include filtration media in high temperature and/or corrosive environments and energy storage. The unique properties of our PANEX® 30 carbon felts are optimal for complex thermal, corrosive or conductive applications.

Felts Applications:

- Energy storage
- Filtration media in corrosive environments

Process Temperature	2,552°F (1,400°C)
Width	35 in (89 cm)
Weight	30 oz/yd^2 (1,017 g/m^2
Thickness	0.4 in (10 mm)
Density	0.0368 lb/in^3 (0.102 g/m^2)
Roll Length	50 yds (45 m)
Thermal Conductivity @ 23° C	0.21 Btu*in/hr*ft*F (0.31 W/m*k)
Thermal Conductivity @ 600° C	0.51 Btu*in/hr*ft*F (0.74 W/m*k)
Specific Heat @ 23° C	0.99 Btu/lb*F (0.741 W*sec/g*K)
Specific Heat @ 600° C	0.232 Btu/lb*F (1.72 W*sec/g*K)

ABOUT PANEX 30

Panex 30 carbon fibers are high purity and high-thermal performance materials designed for fuel cells, carbon/carbon composites, and friction applications.

Panex 30 carbon fibers are available in the following product forms: woven fabrics, scrim fabrics, carbonized yarns, high twist rovings, carbonized felts.

ABOUT ZOLTEK

Energy Technology is the next great global industry. But it cannot evolve without carbon fiber.

Zoltek is on a mission to lead the commercialization of carbon fiber and to drive new energy forward through advanced technology and expanded capacity.

Today Zoltek products are increasing the energy output of wind turbines, creating more fuel efficient vehicles, enhancing energy storage and lifting other industries to unheard of levels of performance.

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