Key Features
• High Strength & Modulus
• Corrosion resistant
• Electrical & thermal conductor
• Flame Resistant
• UV Inert
• X-Ray Permeable
• Excellent EMI (Electromagnetic Interference)

Disadvantages
• Susceptible to filamentation
• Conductivity may be a hindrance to some processing
• Susceptible to galvanic corrosion
• Poor abrasion resistance (untreated)

FIBER-LINE® PROCESS FOR CARBON FIBER
• Coating
• Twisting
• Extrusion
• Pultrusion
• Precision Winding

FIBER-LINE® CARBON FIBER PRODUCTS
• Strength Members
• Packing Yarn
• Belt & Hose Reinforcement Yarn
• Synthetic Wire Rope

Molecular Structure

Chemical Name
Carbon, Graphite.

Manufacturer
FIBER-LINE® works with a multitude of Carbon fiber manufacturers.

History
Carbon fibers have been available since Thomas Edison used them in the light bulb in the late 1800’s. Carbon fiber production took off during the 1960’s but the high price of the material limited its initial usage. Traditionally, Carbon fiber tows were used in thermoset composite applications but are being incorporated into thermoplastics more and more. Today, there are several types and manufacturers of carbon fiber tows, which has broadened the materials usage to a vast number of applications and markets.

Composition
The majority of production carbon fibers are made from the precursor polyacrylonitrile (PAN). The precursor undergoes several processes including carbonization and oxidation which produces high tensile & modulus carbon fiber filaments. Carbon fiber can also be produced from other carbon-rich precursors such as Pitch & Rayon. Typically, higher carbon purity yields greater conductive and modulus properties but in turn produces a less flexible and stiff tow.

Common Filament Counts
1K, 3K, 12K, & 24k.

Types
CARBON FIBER DATA

<table>
<thead>
<tr>
<th>Property</th>
<th>UOM</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breaking Tenacity</td>
<td>g/d</td>
<td>23.0</td>
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<tr>
<td>Specific Gravity</td>
<td>Ratio</td>
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<tr>
<td>Elongation @ Break</td>
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<tr>
<td>Tensile Modulus</td>
<td>g/d</td>
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<tr>
<td>Moisture Regain*</td>
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<tr>
<td>Creep**</td>
<td>%</td>
<td>0</td>
</tr>
<tr>
<td>Shrinkage***</td>
<td>%</td>
<td>0</td>
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<tr>
<td>Melt Point</td>
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<td>None</td>
</tr>
<tr>
<td>Decomposition Temp.</td>
<td>°C</td>
<td>Various</td>
</tr>
</tbody>
</table>

* Equilibrium moisture regain @ 55% RH  ** Creep @ 40%-58% ultimate tensile strength  *** Shrinkage in dry air @ 177°C for 30 minutes

This data is provided for informational purposes only, and does not constitute a specification. FIBER-LINE® makes no warranty, express or implied, that the product conforms to these values. Contact your FIBER-LINE® representative for exact product details which conform to your specific requirements.
For over 25 years, FIBER-LINE® has provided science-driven expertise that improves the performance and the end-use processing of high performance fibers. Our products enable the search for new energy reserves and extend the life of fiber optic telecommunication cables. They also add important characteristics, such as SWELLCOAT® water-blocking, water repellence, adhesion, color, and wear and UV-resistance to these and many other applications. We believe that our ongoing commitment to protect the environment, to remain at the forefront of fiber and coating technology, and to ‘treat others as we want to be treated’ will continue to drive the success of our customers, shareholders, and employees.