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Note: Carbon fiber and its related products are subject to control under export/import regulations of each country

TANSOME
CARBON FIBER
by HYOSUNG
Carbon Fiber for a Better World
Hyosung Corporation, founded in 1966, develops, produces, and distributes products for various applications in the industrial materials, power systems, machinery, chemical, and textile industries. Hyosung is the world’s leader in polyether tire cord production, spandex, airbag, and seatbelt fabrics.

Hyosung Corporation, with sales of approximately $12 billion USD, is headquartered in Seoul, South Korea. South Korea is also home to Hyosung’s 11 manufacturing facilities and 4 R&D facilities globally. Hyosung Corporation has 66 sales facilities that reach Asia, North America, South America, and Europe, providing service to customers in over 130 countries. Hyosung employs over 25,000 employees in 27 countries worldwide.

**Hyosung Carbon Fiber - History**

- **2008 - Development Stage**
  - Started Carbon Fiber Development
- **2010**
  - Successfully Developed H2550 Precursor & Carbon
- **2011**
  - Approved Corporate Investment Plans for the Commercial Production Line
  - Established Semi-Commercial Line in Jeonju, Korea
  - (CF Capa.: 500MT/y)
- **2013 - Commercial Production Stage**
  - Established Commercial Plant in Jeonju, Korea
  - (CF Capa.: 2,000MT/y)
  - "The 1st Korean company to produce High Performance Carbon Fiber & PAN Precursor"
  - 2020 Carbon Fiber Capa.: 14,000 MT/y
  - Precursor Capa.: 20,000 MT/y

**Hyosung Carbon Fiber - The Number 1 High Strength Carbon Fiber in the World**

- Produces own precursor - Hyosung’s own Technology
- Fully controlled continuous process from raw material to carbon fiber
- Technology development capability
- Customer technical support
- High Strength carbon fiber
- High Translation of fiber properties

**Typical Tow Properties**

<table>
<thead>
<tr>
<th>Fiber Type</th>
<th>Number of Filaments</th>
<th>Tensile Strength (SI Unit)</th>
<th>Tensile Modulus (SI Unit)</th>
<th>Elongation (%)</th>
<th>Density (g/cm³)</th>
<th>Diameter (mm)</th>
<th>Yield</th>
<th>Spinning Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Strength, Standard Modulus H2550</td>
<td>6000</td>
<td>5,516 MPa</td>
<td>250 GPa</td>
<td>36.3</td>
<td>2.2</td>
<td>1.80 g/cm³</td>
<td>7.2 mm</td>
<td>400 g/km</td>
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<tr>
<td></td>
<td>12000</td>
<td>5,516 MPa</td>
<td>250 GPa</td>
<td>36.3</td>
<td>2.2</td>
<td>1.80 g/cm³</td>
<td>7.2 mm</td>
<td>800 g/km</td>
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<td>24000</td>
<td>5,516 MPa</td>
<td>250 GPa</td>
<td>36.3</td>
<td>2.2</td>
<td>1.80 g/cm³</td>
<td>7.2 mm</td>
<td>1,600 g/km</td>
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<tr>
<td>High Strength, Intermediate Modulus H3055</td>
<td>12000</td>
<td>5,516 MPa</td>
<td>250 GPa</td>
<td>42.1</td>
<td>1.9</td>
<td>1.80 g/cm³</td>
<td>6.4 mm</td>
<td>725 g/km</td>
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</tbody>
</table>

**Typical Composite Properties**

- Tensile Properties
  - Tensile Strength H2550: 2,150 MPa; 2,150 MPa; 2,150 MPa; 2,150 MPa; 2,150 MPa; 2,150 MPa; 2,150 MPa; 2,150 MPa
  - Tensile Modulus H2550: 20.3 GPa; 20.3 GPa; 20.3 GPa; 20.3 GPa; 20.3 GPa; 20.3 GPa; 20.3 GPa; 20.3 GPa
  - Tensile Strain: 2.0%; 2.0%; 2.0%; 2.0%; 2.0%; 2.0%; 2.0%; 2.0%

- Compressive Properties
  - Compressive Strength: 1,650 MPa; 1,650 MPa; 1,650 MPa; 1,650 MPa; 1,650 MPa; 1,650 MPa; 1,650 MPa; 1,650 MPa
  - Flexural Properties
  - Flexural Strength: 1,800 MPa; 1,800 MPa; 1,800 MPa; 1,800 MPa; 1,800 MPa; 1,800 MPa; 1,800 MPa; 1,800 MPa
  - ILSS: 190 MPa; 13.1 KJ/m²; 90 MPa; 13.1 KJ/m²; 90 MPa; 13.1 KJ/m²; 90 MPa; 13.1 KJ/m²

**Standard Packaging**

- Fiber Type | Number of Filaments | Loose Net Weight (kg) | Bobbin Size (In mm) | Spool Per Case (In kg) | Case Net Weight (kg) | Spool Per Weight (In kg) | Weight (In kg) |
<table>
<thead>
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<td>2.0</td>
<td>76</td>
<td>84</td>
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<td>84</td>
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<td>84</td>
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<td>84</td>
<td>220</td>
<td>250</td>
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<td>80</td>
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<tr>
<td>High Strength, Intermediate Modulus H3055</td>
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<td>84</td>
<td>131</td>
<td>250</td>
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<td>84</td>
<td>155</td>
<td>250</td>
<td>280</td>
<td>6</td>
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</tbody>
</table>

The above properties do not constitute any warranty or guarantees. These values are for material selection purposes only.