



# HexTow<sup>®</sup> AS4

Carbon Fiber

Product Data

HexTow<sup>®</sup> AS4 carbon fiber is a continuous, high strength, high strain, PAN based fiber available in 3,000 (3K), 6,000 (6K) and 12,000 (12K) filament count tows. This fiber has been surface treated and can be sized to improve its interlaminar shear properties, handling characteristics, and structural properties, and is suggested for use in weaving, prepregging, filament winding, braiding, and pultrusion.

AS4-GP 3k (1%), AS4-GP 12k (0.9%), and AS4 12k carbon fibers have been qualified to NMS 818 Carbon Fiber Specification (NCAMP). This allows customers to call out an industry standard, aerospace grade carbon fiber without the need to write and maintain their own specification.

Typical Fiber Properties	U.S. Units	SI Units
Tensile Strength		
3K	670 ksi	4,620 MPa
6K	640 ksi	4,410 MPa
12K	640 ksi	4,410 MPa
Tensile Modulus (Chord 6000-1000)	33.5 Msi	231 GPa
Ultimate Elongation at Failure		
3K	1.8%	1.8%
6K	1.7%	1.7%
12K	1.7%	1.7%
Density	0.0647 lb/in <sup>3</sup>	1.79 g/cm <sup>3</sup>
Weight/Length		
3K	11.8 x 10 <sup>-6</sup> lb/in	0.210 g/m
6K	23.9 x 10 <sup>-6</sup> lb/in	0.427 g/m
12K	48.0 x 10 <sup>-6</sup> lb/in	0.858 g/m
Approximate Yield		
3K	7,086 ft/lb	4.76 m/g
6K	3,485 ft/lb	2.34 m/g
12K	1,734 ft/lb	1.17 m/g
Tow Cross-Sectional Area		
3K	1.82 x 10 <sup>-4</sup> in <sup>2</sup>	0.12 mm <sup>2</sup>
6K	3.70 x 10 <sup>-4</sup> in <sup>2</sup>	0.24 mm <sup>2</sup>
12K	7.43 x 10 <sup>-4</sup> in <sup>2</sup>	0.48 mm <sup>2</sup>
Filament Diameter	0.280 mil	7.1 microns
Carbon Content	94.0%	94.0%
Twist	Never Twisted	Never Twisted

Typical HexPly 8552 Composite Properties (at Room Temperature)	U.S. Units	SI Units	Test Method
0° Tensile Strength	320 ksi	2,205 MPa	ASTM D3039
0° Tensile Modulus	20.5 Msi	141 GPa	
0° Tensile Strain	1.55%	1.55%	
0° Flexural Strength	274 ksi	1,889 MPa	ASTM D790
0° Flexural Modulus	18.4 Msi	127 GPa	
0° Short Beam Shear Strength	18.5 ksi	128 MPa	ASTM D2344
0° Compressive Strength	222 ksi	1,530 MPa	ASTM Mod. D695
0° Compressive Modulus	18.6 Msi	128 GPa	
0° Open Hole Tensile Strength	64 ksi	438 MPa	ASTM D5766
90° Tensile Strength	11.7 ksi	81 MPa	ASTM D3039
Fiber Volume	60%	60%	





<b>Yarn/Tow Characteristics</b>	<b>U.S. Units</b>	<b>SI Units</b>
Specific Heat	0.28 Btu/lb-°F	0.27 cal/g-°C
Electrical Resistivity	$5.6 \times 10^{-5}$ ohm-ft	$1.7 \times 10^{-3}$ ohm-cm
Coefficient of Thermal Expansion	-0.35 ppm/°F	-0.63 ppm/°C
Thermal Conductivity	3.95 Btu/hr-ft-°F	6.83 W/m-°K

### **Carbon Fiber Certification**

This carbon fiber is manufactured to Hexcel aerospace grade specification HS-CP-5000. A copy of this specification is available upon request. A Certification of Analysis will be provided with each shipment.

### **Available Sizing**

Sizing compatible with various resin systems, based on application are available to improve handling characteristics and structural properties. Please see additional information on available Sizes on our website or contact our technical team for additional information.

### **Packaging**

Standard packaging of HexTow<sup>®</sup> AS4 is as follows:

<b>Filament Count</b>	<b>Nominal Weight</b>		<b>Nominal Length</b>	
	<b>(lb)</b>	<b>(kg)</b>	<b>(ft)</b>	<b>(m)</b>
3K	4.0	1.8	28,340	8,640
6K	4.0	1.8	13,940	4,250
12K	8.0	3.6	13,870	4,230

Other package sizes may be available on request. The fiber is wound on a 3-inch ID by 11-inch long cardboard tube and overwrapped with plastic film.

### **Safety Information**

Obtain, read, and understand the Material Safety Data Sheet (MSDS) before use of this product.



## Important

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Hexcel Corporation believes, in good faith, that the technical data and other information provided herein is materially accurate as of the date this document is prepared. Hexcel reserves the right to modify such information at any time. The performance values in this data sheet are considered representative but do not and should not constitute specification minima. The only obligations of Hexcel, including warranties, if any, will be set forth in a contract signed by Hexcel or in Hexcel's then current standard Terms and Conditions of Sale as set forth on the back of Hexcel's Order Acknowledgement.

## For more information

Hexcel is a leading worldwide supplier of composite materials to aerospace and other demanding industries. Our comprehensive product range includes:

- Carbon Fiber
- RTM Materials
- Honeycomb Cores
- Carbon, Glass, Aramid and Hybrid Prepregs
- Structural Film Adhesives
- Honeycomb Sandwich Panels
- Special Process Honeycombs
- Reinforced Fabrics

For US quotes, orders and product information call toll-free 1-866-556-2662 and 1-800-987-0658.

For other worldwide sales office telephone numbers and a full address list, please click here:

<http://www.hexcel.com/contact/salesoffice>