

## .125" OD Carbon Fiber Pultruded Tube



Carbon Fiber Pultruded Tubes are manufactured through a process referred to as pultrusion. Continuous fibers combined with a resin matrix are pulled through a heated steel forming die. As the carbon fibers are saturated with the resin mixture and then pulled through a round die, the hardening of the resin is initiated by the heat from the die and a rigid, cured structure is formed in the shape and size of the die. The majority of the fibers are running in the 0 degree direction, along the length of the tube, to produce an extremely stiff and lightweight with incredible linear strength, due to the orientation of the carbon fibers, and tight outer diameter (OD) tolerances.

### Physical Properties

Outer Diameter (OD)	.125"OD +.000"/- .003"	Test Method-Caliper
Inner Diameter (ID)	.072" ID +/- .003"	Test Method-Caliper
Straightness	.054" total indicator runout (TIR) over 24" span	For reference only
Color	Natural dark gray to black	No color match
Surface Finish	Small scratches, surface defects, or blemishes may be apparent.	Mimimum-Visual
Composite Type	0° unidirectional orientation	For reference only
Resin Type	Premium grade bisphenol epoxy vinyl ester	For reference only
Fiber Type	33 MSI standard modulus carbon fiber	For reference only
Fiber Volume	60%	+/- 5%
Cuts	Rough abrasive cut both ends, small burrs may be apparent.	Mimimum-Visual

### Technical Properties

Tensile Strength	240 ksi / 1.65 GPa
Tensile Modulus	19.5 msi / 134 GPa
Ultimate Shear Strength	6.0 ksi / 41.3 Mpa
Ultimate Tensile Strain	1.40%
Flexural Strength	200 ksi / 1.37 GPa
Flexural Modulus	18.5 msi / 127 GPa
CTE	-0.1 ppm/cm3 / -0.2 ppm/°C
Thermal Properties	150°F maximum
Glass Transition Temp	100°C
Density	.054 lbs/in3 / 1.5 g/cm3

Sample data is measured from a .156" diameter solid rod with standard modulus fibers and Bisphenol Epoxy Vinyl Ester

All the information contained in these properties is believed to be reliable. It is intended for comparison purposes only as each manufactured lot will exhibit variations. The user should evaluate the suitability of each product for their application. We cannot anticipate the variations in all end use and we make no warranties and assume no liability in connection with the use of this information.

## .156" OD Carbon Fiber Pultruded Tube



Carbon Fiber Pultruded Tubes are manufactured through a process referred to as pultrusion. Continuous fibers combined with a resin matrix are pulled through a heated steel forming die. As the carbon fibers are saturated with the resin mixture and then pulled through a round die, the hardening of the resin is initiated by the heat from the die and a rigid, cured structure is formed in the shape and size of the die. The majority of the fibers are running in the 0 degree direction, along the length of the tube, to produce an extremely stiff and lightweight with incredible linear strength, due to the orientation of the carbon fibers, and tight outer diameter (OD) tolerances.

### Physical Properties

Outer Diameter (OD)	.156"OD +.000"/- .003"	Test Method-Caliper
Inner Diameter (ID)	.110" ID +/- .003"	Test Method-Caliper
Straightness	.035" total indicator runout (TIR) over 24" span	For reference only
Color	Natural dark gray to black	No color match
Surface Finish	Small scratches, surface defects, or blemishes may be apparent.	Mimimum-Visual
Composite Type	0° unidirectional orientation	For reference only
Resin Type	Premium grade bisphenol epoxy vinyl ester	For reference only
Fiber Type	33 to 35 MSI standard modulus carbon fiber	For reference only
Fiber Volume	60%	+/- 5%
Cuts	Rough abrasive cut both ends, small burrs may be apparent.	Mimimum-Visual

### Technical Properties

Tensile Strength	240 ksi / 1.65 GPa
Tensile Modulus	19.5 msi / 134 GPa
Ultimate Shear Strength	6.0 ksi / 41.3 Mpa
Ultimate Tensile Strain	1.40%
Flexural Strength	200 ksi / 1.37 GPa
Flexural Modulus	18.5 msi / 127 GPa
CTE	-0.1 ppm/cm3 / -0.2 ppm/°C
Thermal Properties	150°F maximum
Glass Transition Temp	100°C
Density	.054 lbs/in3 / 1.5 g/cm3

Sample data is measured from a .156" diameter solid rod with standard modulus fibers and Bisphenol Epoxy Vinyl Ester

All the information contained in these properties is believed to be reliable. It is intended for comparison purposes only as each manufactured lot will exhibit variations. The user should evaluate the suitability of each product for their application. We cannot anticipate the variations in all end use and we make no warranties and assume no liability in connection with the use of this information.

## .180" OD Carbon Fiber Pultruded Tube



Carbon Fiber Pultruded Tubes are manufactured through a process referred to as pultrusion. Continuous fibers combined with a resin matrix are pulled through a heated steel forming die. As the carbon fibers are saturated with the resin mixture and then pulled through a round die, the hardening of the resin is initiated by the heat from the die and a rigid, cured structure is formed in the shape and size of the die. The majority of the fibers are running in the 0 degree direction, along the length of the tube, to produce an extremely stiff and lightweight with incredible linear strength, due to the orientation of the carbon fibers, and tight outer diameter (OD) tolerances.

### Physical Properties

Outer Diameter (OD)	.180"OD +/- .005"	Test Method-Caliper
Inner Diameter (ID)	.110" ID +/- .015"	Test Method-Caliper
Straightness	.050" total indicator runout (TIR) over 24" span	For reference only
Color	Natural dark gray to black	No color match
Surface Finish	Small scratches, surface defects, or blemishes may be apparent.	Mimimum-Visual
Composite Type	0° unidirectional orientation	For reference only
Resin Type	Premium grade bisphenol epoxy vinyl ester	For reference only
Fiber Type	33 to 35 MSI standard modulus carbon fiber	For reference only
Fiber Volume	60%	+/- 5%
Cuts	Rough abrasive cut both ends, small burrs may be apparent.	Mimimum-Visual

### Technical Properties

Tensile Strength	240 ksi / 1.65 GPa
Tensile Modulus	19.5 msi / 134 GPa
Ultimate Shear Strength	6.0 ksi / 41.3 Mpa
Ultimate Tensile Strain	1.40%
Flexural Strength	200 ksi / 1.37 GPa
Flexural Modulus	18.5 msi / 127 GPa
CTE	-0.1 ppm/cm3 / -0.2 ppm/°C
Thermal Properties	150°F maximum
Glass Transition Temp	100°C
Density	.054 lbs/in3 / 1.5 g/cm3

Sample data is measured from a .156" diameter solid rod with standard modulus fibers and Bisphenol Epoxy Vinyl Ester

All the information contained in these properties is believed to be reliable. It is intended for comparison purposes only as each manufactured lot will exhibit variations. The user should evaluate the suitability of each product for their application. We cannot anticipate the variations in all end use and we make no warranties and assume no liability in connection with the use of this information.

## .188" OD Carbon Fiber Pultruded Tube



Carbon Fiber Pultruded Tubes are manufactured through a process referred to as pultrusion. Continuous fibers combined with a resin matrix are pulled through a heated steel forming die. As the carbon fibers are saturated with the resin mixture and then pulled through a round die, the hardening of the resin is initiated by the heat from the die and a rigid, cured structure is formed in the shape and size of the die. The majority of the fibers are running in the 0 degree direction, along the length of the tube, to produce an extremely stiff and lightweight with incredible linear strength, due to the orientation of the carbon fibers, and tight outer diameter (OD) tolerances.

### Physical Properties

Outer Diameter (OD)	.188"OD +/- .003"	Test Method-Caliper
Inner Diameter (ID)	.116" ID +/- .003"	Test Method-Caliper
Straightness	.050" total indicator runout (TIR) over 24" span	For reference only
Color	Natural dark gray to black	No color match
Surface Finish	Small scratches, surface defects, or blemishes may be apparent.	Mimimum-Visual
Composite Type	0° unidirectional orientation	For reference only
Resin Type	Premium grade bisphenol epoxy vinyl ester	For reference only
Fiber Type	33 to 35 MSI standard modulus carbon fiber	For reference only
Fiber Volume	60%	+/- 5%
Cuts	Rough abrasive cut both ends, small burrs may be apparent.	Mimimum-Visual

### Technical Properties

Tensile Strength	240 ksi / 1.65 GPa
Tensile Modulus	19.5 msi / 134 GPa
Ultimate Shear Strength	6.0 ksi / 41.3 Mpa
Ultimate Tensile Strain	1.40%
Flexural Strength	200 ksi / 1.37 GPa
Flexural Modulus	18.5 msi / 127 GPa
CTE	-0.1 ppm/cm3 / -0.2 ppm/°C
Thermal Properties	150°F maximum
Glass Transition Temp	100°C
Density	.054 lbs/in3 / 1.5 g/cm3

Sample data is measured from a .156" diameter solid rod with standard modulus fibers and Bisphenol Epoxy Vinyl Ester

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## .196" OD Carbon Fiber Pultruded Tube - 3 Series



Carbon Fiber Pultruded Tubes are manufactured through a process referred to as pultrusion. Continuous fibers combined with a resin matrix are pulled through a heated steel forming die. As the carbon fibers are saturated with the resin mixture and then pulled through a round die, the hardening of the resin is initiated by the heat from the die and a rigid, cured structure is formed in the shape and size of the die. The majority of the fibers are running in the 0 degree direction, along the length of the tube, to produce an extremely stiff and lightweight with incredible linear strength, due to the orientation of the carbon fibers, and tight outer diameter (OD) tolerances.

### Physical Properties

Outer Diameter (OD)	.196"OD +/- .005"	Test Method-Caliper
Inner Diameter (ID)	.121" ID +/- .015"	Test Method-Caliper
Straightness	.050" total indicator runout (TIR) over 24" span	For reference only
Color	Natural dark gray to black	No color match
Surface Finish	Small scratches, surface defects, or blemishes may be apparent.	Mimimum-Visual
Composite Type	0° unidirectional orientation	For reference only
Resin Type	Premium grade bisphenol epoxy vinyl ester	For reference only
Fiber Type	33 to 35 MSI standard modulus carbon fiber	For reference only
Fiber Volume	60%	+/- 5%
Cuts	Rough abrasive cut both ends, small burrs may be apparent.	Mimimum-Visual

### Technical Properties

Tensile Strength	240 ksi / 1.65 GPa
Tensile Modulus	19.5 msi / 134 GPa
Ultimate Shear Strength	6.0 ksi / 41.3 Mpa
Ultimate Tensile Strain	1.40%
Flexural Strength	200 ksi / 1.37 GPa
Flexural Modulus	18.5 msi / 127 GPa
CTE	-0.1 ppm/cm3 / -0.2 ppm/°C
Thermal Properties	150°F maximum
Glass Transition Temp	100°C
Density	.054 lbs/in3 / 1.5 g/cm3

Sample data is measured from a .156" diameter solid rod with standard modulus fibers and Bisphenol Epoxy Vinyl Ester

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## .210" OD Carbon Fiber Pultruded Tube - 3 Series



Carbon Fiber Pultruded Tubes are manufactured through a process referred to as pultrusion. Continuous fibers combined with a resin matrix are pulled through a heated steel forming die. As the carbon fibers are saturated with the resin mixture and then pulled through a round die, the hardening of the resin is initiated by the heat from the die and a rigid, cured structure is formed in the shape and size of the die. The majority of the fibers are running in the 0 degree direction, along the length of the tube, to produce an extremely stiff and lightweight with incredible linear strength, due to the orientation of the carbon fibers, and tight outer diameter (OD) tolerances.

### Physical Properties

Outer Diameter (OD)	.210"OD +/- .005"	Test Method-Caliper
Inner Diameter (ID)	.132" ID +/- .015"	Test Method-Caliper
Straightness	.050" total indicator runout (TIR) over 24" span	For reference only
Color	Natural dark gray to black	No color match
Surface Finish	Small scratches, surface defects, or blemishes may be apparent.	Mimimum-Visual
Composite Type	0° unidirectional orientation	For reference only
Resin Type	Premium grade bisphenol epoxy vinyl ester	For reference only
Fiber Type	33 to 35 MSI standard modulus carbon fiber	For reference only
Fiber Volume	60%	+/- 5%
Cuts	Rough abrasive cut both ends, small burrs may be apparent.	Mimimum-Visual

### Technical Properties

Tensile Strength	240 ksi / 1.65 GPa
Tensile Modulus	19.5 msi / 134 GPa
Ultimate Shear Strength	6.0 ksi / 41.3 Mpa
Ultimate Tensile Strain	1.40%
Flexural Strength	200 ksi / 1.37 GPa
Flexural Modulus	18.5 msi / 127 GPa
CTE	-0.1 ppm/cm3 / -0.2 ppm/°C
Thermal Properties	150°F maximum
Glass Transition Temp	100°C
Density	.054 lbs/in3 / 1.5 g/cm3

Sample data is measured from a .156" diameter solid rod with standard modulus fibers and Bisphenol Epoxy Vinyl Ester

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## .220" OD Carbon Fiber Pultruded Tube - 3 Series



Carbon Fiber Pultruded Tubes are manufactured through a process referred to as pultrusion. Continuous fibers combined with a resin matrix are pulled through a heated steel forming die. As the carbon fibers are saturated with the resin mixture and then pulled through a round die, the hardening of the resin is initiated by the heat from the die and a rigid, cured structure is formed in the shape and size of the die. The majority of the fibers are running in the 0 degree direction, along the length of the tube, to produce an extremely stiff and lightweight with incredible linear strength, due to the orientation of the carbon fibers, and tight outer diameter (OD) tolerances.

### Physical Properties

Outer Diameter (OD)	.220"OD +/- .005"	Test Method-Caliper
Inner Diameter (ID)	.138" ID +/- .015"	Test Method-Caliper
Straightness	.050" total indicator runout (TIR) over 24" span	For reference only
Color	Natural dark gray to black	No color match
Surface Finish	Small scratches, surface defects, or blemishes may be apparent.	Mimimum-Visual
Composite Type	0° unidirectional orientation	For reference only
Resin Type	Premium grade bisphenol epoxy vinyl ester	For reference only
Fiber Type	33 to 35 MSI standard modulus carbon fiber	For reference only
Fiber Volume	60%	+/- 5%
Cuts	Rough abrasive cut both ends, small burrs may be apparent.	Mimimum-Visual

### Technical Properties

Tensile Strength	240 ksi / 1.65 GPa
Tensile Modulus	19.5 msi / 134 GPa
Ultimate Shear Strength	6.0 ksi / 41.3 Mpa
Ultimate Tensile Strain	1.40%
Flexural Strength	200 ksi / 1.37 GPa
Flexural Modulus	18.5 msi / 127 GPa
CTE	-0.1 ppm/cm3 / -0.2 ppm/°C
Thermal Properties	150°F maximum
Glass Transition Temp	100°C
Density	.054 lbs/in3 / 1.5 g/cm3

Sample data is measured from a .156" diameter solid rod with standard modulus fibers and Bisphenol Epoxy Vinyl Ester

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## .230" OD Carbon Fiber Pultruded Tube - 3 Series



Carbon Fiber Pultruded Tubes are manufactured through a process referred to as pultrusion. Continuous fibers combined with a resin matrix are pulled through a heated steel forming die. As the carbon fibers are saturated with the resin mixture and then pulled through a round die, the hardening of the resin is initiated by the heat from the die and a rigid, cured structure is formed in the shape and size of the die. The majority of the fibers are running in the 0 degree direction, along the length of the tube, to produce an extremely stiff and lightweight with incredible linear strength, due to the orientation of the carbon fibers, and tight outer diameter (OD) tolerances.

### Physical Properties

Outer Diameter (OD)	.230"OD +/- .003"	Test Method-Caliper
Inner Diameter (ID)	.160" with a minimum wall thickness of .035"	For reference only
Straightness	.050" total indicator runout (TIR) over 24" span	For reference only
Color	Natural dark gray to black	No color match
Surface Finish	Small scratches, surface defects, or blemishes may be apparent.	Mimimum-Visual
Composite Type	0° unidirectional orientation	For reference only
Resin Type	Premium grade bisphenol epoxy vinyl ester	For reference only
Fiber Type	33 to 35 MSI standard modulus carbon fiber	For reference only
Fiber Volume	60%	+/- 5%
Cuts	Rough abrasive cut both ends, small burrs may be apparent.	Mimimum-Visual

### Technical Properties

Tensile Strength	240 ksi / 1.65 GPa
Tensile Modulus	19.5 msi / 134 GPa
Ultimate Shear Strength	6.0 ksi / 41.3 Mpa
Ultimate Tensile Strain	1.40%
Flexural Strength	200 ksi / 1.37 GPa
Flexural Modulus	18.5 msi / 127 GPa
CTE	-0.1 ppm/cm3 / -0.2 ppm/°C
Thermal Properties	150°F maximum
Glass Transition Temp	100°C
Density	.054 lbs/in3 / 1.5 g/cm3

Sample data is measured from a .156" diameter solid rod with standard modulus fibers and Bisphenol Epoxy Vinyl Ester

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## .240" OD Carbon Fiber Pultruded Tube - 3 Series



Carbon Fiber Pultruded Tubes are manufactured through a process referred to as pultrusion. Continuous fibers combined with a resin matrix are pulled through a heated steel forming die. As the carbon fibers are saturated with the resin mixture and then pulled through a round die, the hardening of the resin is initiated by the heat from the die and a rigid, cured structure is formed in the shape and size of the die. The majority of the fibers are running in the 0 degree direction, along the length of the tube, to produce an extremely stiff and lightweight with incredible linear strength, due to the orientation of the carbon fibers, and tight outer diameter (OD) tolerances.

Physical Properties		
Outer Diameter (OD)	.240"OD +/- .005"	Test Method-Caliper
Inner Diameter (ID)	.150" ID +/- .015"	Test Method-Caliper
Straightness	.050" total indicator runout (TIR) over 24" span	For reference only
Color	Natural dark gray to black	No color match
Surface Finish	Small scratches, surface defects, or blemishes may be apparent.	Mimimum-Visual
Composite Type	0° unidirectional orientation	For reference only
Resin Type	Premium grade bisphenol epoxy vinyl ester	For reference only
Fiber Type	33 to 35 MSI standard modulus carbon fiber	For reference only
Fiber Volume	60%	+/- 5%
Cuts	Rough abrasive cut both ends, small burrs may be apparent.	Mimimum-Visual

Technical Properties	
Tensile Strength	240 ksi / 1.65 GPa
Tensile Modulus	19.5 msi / 134 GPa
Ultimate Shear Strength	6.0 ksi / 41.3 Mpa
Ultimate Tensile Strain	1.40%
Flexural Strength	200 ksi / 1.37 GPa
Flexural Modulus	18.5 msi / 127 GPa
CTE	-0.1 ppm/cm3 / -0.2 ppm/°C
Thermal Properties	150°F maximum
Glass Transition Temp	100°C
Density	.054 lbs/in3 / 1.5 g/cm3

Sample data is measured from a .156" diameter solid rod with standard modulus fibers and Bisphenol Epoxy Vinyl Ester

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## .254" OD Carbon Fiber Pultruded Tube



Carbon Fiber Pultruded Tubes are manufactured through a process referred to as pultrusion. Continuous fibers combined with a resin matrix are pulled through a heated steel forming die. As the carbon fibers are saturated with the resin mixture and then pulled through a round die, the hardening of the resin is initiated by the heat from the die and a rigid, cured structure is formed in the shape and size of the die. The majority of the fibers are running in the 0 degree direction, along the length of the tube, to produce an extremely stiff and lightweight with incredible linear strength, due to the orientation of the carbon fibers, and tight outer diameter (OD) tolerances.

### Physical Properties

Outer Diameter (OD)	.254"OD +/- .005"	Test Method-Caliper
Inner Diameter (ID)	.158" ID +/- .015"	Test Method-Caliper
Straightness	.050" total indicator runout (TIR) over 24" span	For reference only
Color	Natural dark gray to black	No color match
Surface Finish	Small scratches, surface defects, or blemishes may be apparent.	Mimimum-Visual
Composite Type	0° unidirectional orientation	For reference only
Resin Type	Premium grade bisphenol epoxy vinyl ester	For reference only
Fiber Type	33 to 35 MSI standard modulus carbon fiber	For reference only
Fiber Volume	60%	+/- 5%
Cuts	Rough abrasive cut both ends, small burrs may be apparent.	Mimimum-Visual

### Technical Properties

Tensile Strength	240 ksi / 1.65 GPa
Tensile Modulus	19.5 msi / 134 GPa
Ultimate Shear Strength	6.0 ksi / 41.3 Mpa
Ultimate Tensile Strain	1.40%
Flexural Strength	200 ksi / 1.37 GPa
Flexural Modulus	18.5 msi / 127 GPa
CTE	-0.1 ppm/cm3 / -0.2 ppm/°C
Thermal Properties	150°F maximum
Glass Transition Temp	100°C
Density	.054 lbs/in3 / 1.5 g/cm3

Sample data is measured from a .156" diameter solid rod with standard modulus fibers and Bisphenol Epoxy Vinyl Ester

All the information contained in these properties is believed to be reliable. It is intended for comparison purposes only as each manufactured lot will exhibit variations. The user should evaluate the suitability of each product for their application. We cannot anticipate the variations in all end use and we make no warranties and assume no liability in connection with the use of this information.

## .265" OD Carbon Fiber Pultruded Tube - 3 Series



Carbon Fiber Pultruded Tubes are manufactured through a process referred to as pultrusion. Continuous fibers combined with a resin matrix are pulled through a heated steel forming die. As the carbon fibers are saturated with the resin mixture and then pulled through a round die, the hardening of the resin is initiated by the heat from the die and a rigid, cured structure is formed in the shape and size of the die. The majority of the fibers are running in the 0 degree direction, along the length of the tube, to produce an extremely stiff and lightweight with incredible linear strength, due to the orientation of the carbon fibers, and tight outer diameter (OD) tolerances.

### Physical Properties

Outer Diameter (OD)	.265"OD +/- .005"	Test Method-Caliper
Inner Diameter (ID)	.176 ID +/- .015"	Test Method-Caliper
Straightness	.050" total indicator runout (TIR) over 24" span	For reference only
Color	Natural dark gray to black	No color match
Surface Finish	Small scratches, surface defects, or blemishes may be apparent.	Minimum-Visual
Composite Type	0° unidirectional orientation	For reference only
Resin Type	Premium grade bisphenol epoxy vinyl ester	For reference only
Fiber Type	33 to 35 MSI standard modulus carbon fiber	For reference only
Fiber Volume	60%	+/- 5%
Cuts	Rough abrasive cut both ends, small burrs may be apparent.	Minimum-Visual

### Technical Properties

Tensile Strength	240 ksi / 1.65 GPa
Tensile Modulus	19.5 msi / 134 GPa
Ultimate Shear Strength	6.0 ksi / 41.3 Mpa
Ultimate Tensile Strain	1.40%
Flexural Strength	200 ksi / 1.37 GPa
Flexural Modulus	18.5 msi / 127 GPa
CTE	-0.1 ppm/cm3 / -0.2 ppm/°C
Thermal Properties	150°F maximum
Glass Transition Temp	100°C
Density	.054 lbs/in3 / 1.5 g/cm3

Sample data is measured from a .156" diameter solid rod with standard modulus fibers and Bisphenol Epoxy Vinyl Ester

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## .281" OD Carbon Fiber Pultruded Tube - 3 Series



Carbon Fiber Pultruded Tubes are manufactured through a process referred to as pultrusion. Continuous fibers combined with a resin matrix are pulled through a heated steel forming die. As the carbon fibers are saturated with the resin mixture and then pulled through a round die, the hardening of the resin is initiated by the heat from the die and a rigid, cured structure is formed in the shape and size of the die. The majority of the fibers are running in the 0 degree direction, along the length of the tube, to produce an extremely stiff and lightweight with incredible linear strength, due to the orientation of the carbon fibers, and tight outer diameter (OD) tolerances.

### Physical Properties

Outer Diameter (OD)	.281"OD +/- .000"	Test Method-Caliper
Inner Diameter (ID)	.185" ID +/- .002"	Test Method-Caliper
Straightness	.050" total indicator runout (TIR) over 24" span	For reference only
Color	Natural dark gray to black	No color match
Surface Finish	Small scratches, surface defects, or blemishes may be apparent.	Mimimum-Visual
Composite Type	0° unidirectional orientation	For reference only
Resin Type	Premium grade bisphenol epoxy vinyl ester	For reference only
Fiber Type	33 to 35 MSI standard modulus carbon fiber	For reference only
Fiber Volume	60%	+/- 5%
Cuts	Rough abrasive cut both ends, small burrs may be apparent.	Mimimum-Visual

### Technical Properties

Tensile Strength	240 ksi / 1.65 GPa
Tensile Modulus	19.5 msi / 134 GPa
Ultimate Shear Strength	6.0 ksi / 41.3 Mpa
Ultimate Tensile Strain	1.40%
Flexural Strength	200 ksi / 1.37 GPa
Flexural Modulus	18.5 msi / 127 GPa
CTE	-0.1 ppm/cm3 / -0.2 ppm/°C
Thermal Properties	150°F maximum
Glass Transition Temp	100°C
Density	.054 lbs/in3 / 1.5 g/cm3

Sample data is measured from a .156" diameter solid rod with standard modulus fibers and Bisphenol Epoxy Vinyl Ester

All the information contained in these properties is believed to be reliable. It is intended for comparison purposes only as each manufactured lot will exhibit variations. The user should evaluate the suitability of each product for their application. We cannot anticipate the variations in all end use and we make no warranties and assume no liability in connection with the use of this information.

## .315" OD Carbon Fiber Pultruded Tube



Carbon Fiber Pultruded Tubes are manufactured through a process referred to as pultrusion. Continuous fibers combined with a resin matrix are pulled through a heated steel forming die. As the carbon fibers are saturated with the resin mixture and then pulled through a round die, the hardening of the resin is initiated by the heat from the die and a rigid, cured structure is formed in the shape and size of the die. The majority of the fibers are running in the 0 degree direction, along the length of the tube, to produce an extremely stiff and lightweight with incredible linear strength, due to the orientation of the carbon fibers, and tight outer diameter (OD) tolerances.

### Physical Properties

Outer Diameter (OD)	.315"OD +.000"/- .004"	Test Method-Caliper
Inner Diameter (ID)	.236" ID +/- .003"	Test Method-Caliper
Straightness	.050" total indicator runout (TIR) over 24" span	For reference only
Color	Natural dark gray to black	No color match
Surface Finish	Small scratches, surface defects, or blemishes may be apparent.	Mimimum-Visual
Composite Type	0° unidirectional orientation	For reference only
Resin Type	Premium grade bisphenol epoxy vinyl ester	For reference only
Fiber Type	33 to 35 MSI standard modulus carbon fiber	For reference only
Fiber Volume	60%	+/- 5%
Cuts	Rough abrasive cut both ends, small burrs may be apparent.	Mimimum-Visual

### Technical Properties

Tensile Strength	240 ksi / 1.65 GPa
Tensile Modulus	19.5 msi / 134 GPa
Ultimate Shear Strength	6.0 ksi / 41.3 Mpa
Ultimate Tensile Strain	1.40%
Flexural Strength	200 ksi / 1.37 GPa
Flexural Modulus	18.5 msi / 127 GPa
CTE	-0.1 ppm/cm3 / -0.2 ppm/°C
Thermal Properties	150°F maximum
Glass Transition Temp	100°C
Density	.054 lbs/in3 / 1.5 g/cm3

Sample data is measured from a .156" diameter solid rod with standard modulus fibers and Bisphenol Epoxy Vinyl Ester

All the information contained in these properties is believed to be reliable. It is intended for comparison purposes only as each manufactured lot will exhibit variations. The user should evaluate the suitability of each product for their application. We cannot anticipate the variations in all end use and we make no warranties and assume no liability in connection with the use of this information.

## .375" OD Carbon Fiber Pultruded Tube - 3 Series



Carbon Fiber Pultruded Tubes are manufactured through a process referred to as pultrusion. Continuous fibers combined with a resin matrix are pulled through a heated steel forming die. As the carbon fibers are saturated with the resin mixture and then pulled through a round die, the hardening of the resin is initiated by the heat from the die and a rigid, cured structure is formed in the shape and size of the die. The majority of the fibers are running in the 0 degree direction, along the length of the tube, to produce an extremely stiff and lightweight with incredible linear strength, due to the orientation of the carbon fibers, and tight outer diameter (OD) tolerances.

### Physical Properties

Outer Diameter (OD)	.375"OD +.000"/- .008"	Test Method-Caliper
Inner Diameter (ID)	.290" ID +/- .007"	Test Method-Caliper
Straightness	.050" total indicator runout (TIR) over 24" span	For reference only
Color	Natural dark gray to black	No color match
Surface Finish	Small scratches, surface defects, or blemishes may be apparent.	Mimimum-Visual
Composite Type	0° unidirectional orientation	For reference only
Resin Type	Premium grade bisphenol epoxy vinyl ester	For reference only
Fiber Type	33 to 35 MSI standard modulus carbon fiber	For reference only
Fiber Type	60%	+/- 5%
Cuts	Rough abrasive cut both ends, small burrs may be apparent.	Mimimum-Visual

### Technical Properties

Tensile Strength	240 ksi / 1.65 GPa
Tensile Modulus	19.5 msi / 134 GPa
Ultimate Shear Strength	6.0 ksi / 41.3 Mpa
Ultimate Tensile Strain	1.40%
Flexural Strength	200 ksi / 1.37 GPa
Flexural Modulus	18.5 msi / 127 GPa
CTE	-0.1 ppm/cm3 / -0.2 ppm/°C
Thermal Properties	150°F maximum
Glass Transition Temp	100°C
Density	.054 lbs/in3 / 1.5 g/cm3

Sample data is measured from a .156" diameter solid rod with standard modulus fibers and Bisphenol Epoxy Vinyl Ester

All the information contained in these properties is believed to be reliable. It is intended for comparison purposes only as each manufactured lot will exhibit variations. The user should evaluate the suitability of each product for their application. We cannot anticipate the variations in all end use and we make no warranties and assume no liability in connection with the use of this information.

## .393" OD Carbon Fiber Pultruded Tube - 3 Series



Carbon Fiber Pultruded Tubes are manufactured through a process referred to as pultrusion. Continuous fibers combined with a resin matrix are pulled through a heated steel forming die. As the carbon fibers are saturated with the resin mixture and then pulled through a round die, the hardening of the resin is initiated by the heat from the die and a rigid, cured structure is formed in the shape and size of the die. The majority of the fibers are running in the 0 degree direction, along the length of the tube, to produce an extremely stiff and lightweight with incredible linear strength, due to the orientation of the carbon fibers, and tight outer diameter (OD) tolerances.

### Physical Properties

Outer Diameter (OD)	.393"OD +/- .005"	Test Method-Caliper
Inner Diameter (ID)	.290 ID +/- .015"	Test Method-Caliper
Straightness	.050" total indicator runout (TIR) over 24" span	For reference only
Color	Natural dark gray to black	No color match
Surface Finish	Small scratches, surface defects, or blemishes may be apparent.	Mimimum-Visual
Composite Type	0° unidirectional orientation	For reference only
Resin Type	Premium grade bisphenol epoxy vinyl ester	For reference only
Fiber Type	33 to 35 MSI standard modulus carbon fiber	For reference only
Fiber Volume	60%	+/- 5%
Cuts	Rough abrasive cut both ends, small burrs may be apparent.	Mimimum-Visual

### Technical Properties

Tensile Strength	240 ksi / 1.65 GPa
Tensile Modulus	19.5 msi / 134 GPa
Ultimate Shear Strength	6.0 ksi / 41.3 Mpa
Ultimate Tensile Strain	1.40%
Flexural Strength	200 ksi / 1.37 GPa
Flexural Modulus	18.5 msi / 127 GPa
CTE	-0.1 ppm/cm3 / -0.2 ppm/°C
Thermal Properties	150°F maximum
Glass Transition Temp	100°C
Density	.054 lbs/in3 / 1.5 g/cm3

Sample data is measured from a .156" diameter solid rod with standard modulus fibers and Bisphenol Epoxy Vinyl Ester

All the information contained in these properties is believed to be reliable. It is intended for comparison purposes only as each manufactured lot will exhibit variations. The user should evaluate the suitability of each product for their application. We cannot anticipate the variations in all end use and we make no warranties and assume no liability in connection with the use of this information.

## .472" OD Carbon Fiber Pultruded Tube



Carbon Fiber Pultruded Tubes are manufactured through a process referred to as pultrusion. Continuous fibers combined with a resin matrix are pulled through a heated steel forming die. As the carbon fibers are saturated with the resin mixture and then pulled through a round die, the hardening of the resin is initiated by the heat from the die and a rigid, cured structure is formed in the shape and size of the die. The majority of the fibers are running in the 0 degree direction, along the length of the tube, to produce an extremely stiff and lightweight with incredible linear strength, due to the orientation of the carbon fibers, and tight outer diameter (OD) tolerances.

### Physical Properties

Outer Diameter (OD)	.472"OD +/- .004"	Test Method-Caliper
Inner Diameter (ID)	.360" ID +/- .008"	Test Method-Caliper
Straightness	.050" total indicator runout (TIR) over 24" span	For reference only
Color	Natural dark gray to black	No color match
Surface Finish	Small scratches, surface defects, or blemishes may be apparent.	Mimimum-Visual
Composite Type	0° unidirectional orientation	For reference only
Resin Type	Premium grade bisphenol epoxy vinyl ester	For reference only
Fiber Type	33 to 35 MSI standard modulus carbon fiber	For reference only
Fiber Volume	55%	+/- 5%
Cuts	Rough abrasive cut both ends, small burrs may be apparent.	Mimimum-Visual

### Technical Properties

Tensile Strength	240 ksi / 1.65 GPa
Tensile Modulus	19.5 msi / 134 GPa
Ultimate Shear Strength	6.0 ksi / 41.3 Mpa
Ultimate Tensile Strain	1.40%
Flexural Strength	200 ksi / 1.37 GPa
Flexural Modulus	18.5 msi / 127 GPa
CTE	-0.1 ppm/cm3 / -0.2 ppm/°C
Thermal Properties	150°F maximum
Glass Transition Temp	100°C
Density	.054 lbs/in3 / 1.5 g/cm3

Sample data is measured from a .156" diameter solid rod with standard modulus fibers and Bisphenol Epoxy Vinyl Ester

All the information contained in these properties is believed to be reliable. It is intended for comparison purposes only as each manufactured lot will exhibit variations. The user should evaluate the suitability of each product for their application. We cannot anticipate the variations in all end use and we make no warranties and assume no liability in connection with the use of this information.



## .517" OD Carbon Fiber Pultruded Tube



Carbon Fiber Pultruded Tubes are manufactured through a process referred to as pultrusion. Continuous fibers combined with a resin matrix are pulled through a heated steel forming die. As the carbon fibers are saturated with the resin mixture and then pulled through a round die, the hardening of the resin is initiated by the heat from the die and a rigid, cured structure is formed in the shape and size of the die. The majority of the fibers are running in the 0 degree direction, along the length of the tube, to produce an extremely stiff and lightweight with incredible linear strength, due to the orientation of the carbon fibers, and tight outer diameter (OD) tolerances.

### Physical Properties

Outer Diameter (OD)	.517"OD +/-0.003	Test Method-Caliper
Inner Diameter (ID)	.413" ID +/-0.003"	Test Method-Caliper
Straightness	.050" total indicator runout (TIR) over 24" span	For reference only
Color	Natural dark gray to black	No color match
Surface Finish	Small scratches, surface defects, or blemishes may be apparent.	Mimimum-Visual
Composite Type	0° unidirectional orientation	For reference only
Resin Type	Premium grade bisphenol epoxy vinyl ester	For reference only
Fiber Type	33 to 35 MSI standard modulus carbon fiber	For reference only
Fiber Volume	60%	+/- 5%
Cuts	Rough abrasive cut both ends, small burrs may be apparent.	Mimimum-Visual

### Technical Properties

Tensile Strength	240 ksi / 1.65 GPa
Tensile Modulus	19.5 msi / 134 GPa
Ultimate Shear Strength	6.0 ksi / 41.3 Mpa
Ultimate Tensile Strain	1.40%
Flexural Strength	200 ksi / 1.37 GPa
Flexural Modulus	18.5 msi / 127 GPa
CTE	-0.1 ppm/cm3 / -0.2 ppm/°C
Thermal Properties	150°F maximum
Glass Transition Temp	100°C
Density	.054 lbs/in3 / 1.5 g/cm3

Sample data is measured from a .156" diameter solid rod with standard modulus fibers and Bisphenol Epoxy Vinyl Ester

All the information contained in these properties is believed to be reliable. It is intended for comparison purposes only as each manufactured lot will exhibit variations. The user should evaluate the suitability of each product for their application. We cannot anticipate the variations in all end use and we make no warranties and assume no liability in connection with the use of this information.

## .625" OD Carbon Fiber Pultruded Tube



Carbon Fiber Pultruded Tubes are manufactured through a process referred to as pultrusion. Continuous fibers combined with a resin matrix are pulled through a heated steel forming die. As the carbon fibers are saturated with the resin mixture and then pulled through a round die, the hardening of the resin is initiated by the heat from the die and a rigid, cured structure is formed in the shape and size of the die. The majority of the fibers are running in the 0 degree direction, along the length of the tube, to produce an extremely stiff and lightweight with incredible linear strength, due to the orientation of the carbon fibers, and tight outer diameter (OD) tolerances.

### Physical Properties

Outer Diameter (OD)	.625"OD +.000"/- .008"	Test Method-Caliper
Inner Diameter (ID)	.505 ID +/- .005"	Test Method-Caliper
Straightness	.050" total indicator runout (TIR) over 24" span	For reference only
Color	Natural dark gray to black	No color match
Surface Finish	Small scratches, surface defects, or blemishes may be apparent.	Mimimum-Visual
Composite Type	0° unidirectional orientation	For reference only
Resin Type	Premium grade bisphenol epoxy vinyl ester	For reference only
Fiber Type	33 to 35 MSI standard modulus carbon fiber	For reference only
Fiber Volume	60%	+/- 5%
Cuts	Rough abrasive cut both ends, small burrs may be apparent.	Mimimum-Visual

### Technical Properties

Tensile Strength	240 ksi / 1.65 GPa
Tensile Modulus	19.5 msi / 134 GPa
Ultimate Shear Strength	6.0 ksi / 41.3 Mpa
Ultimate Tensile Strain	1.40%
Flexural Strength	200 ksi / 1.37 GPa
Flexural Modulus	18.5 msi / 127 GPa
CTE	-0.1 ppm/cm3 / -0.2 ppm/°C
Thermal Properties	150°F maximum
Glass Transition Temp	100°C
Density	.054 lbs/in3 / 1.5 g/cm3

Sample data is measured from a .156" diameter solid rod with standard modulus fibers and Bisphenol Epoxy Vinyl Ester

All the information contained in these properties is believed to be reliable. It is intended for comparison purposes only as each manufactured lot will exhibit variations. The user should evaluate the suitability of each product for their application. We cannot anticipate the variations in all end use and we make no warranties and assume no liability in connection with the use of this information.

## Carbon Fiber Pultruded Tubes - Vinyl Ester 5 Series



Carbon Fiber Pultruded Tubes are manufactured through a process referred to as pultrusion. Continuous fibers combined with a resin matrix are pulled through a heated steel forming die. As the carbon fibers are saturated with the resin mixture and then pulled through a round die, the hardening of the resin is initiated by the heat from the die and a rigid, cured structure is formed in the shape and size of the die. The majority of the fibers are running in the 0 degree direction, along the length of the tube, to produce an extremely stiff and lightweight with incredible linear strength, due to the orientation of the carbon fibers, and tight outer diameter (OD) tolerances.

### Physical Properties

Thickness/Width	+/- .005"	Test Method-Caliper
Straightness	Not specified or controlled	For reference only
Color	Natural dark gray to black	No color match
Surface Finish	Small scratches, surface defects, or blemishes may be apparent.	Minimum-Visual
Composite Type	0° unidirectional orientation	For reference only
Resin Type	Bisphenol Epoxy Vinyl Ester	For reference only
Fiber Type	33 to 35 MSI standard modulus carbon fiber	For reference only
Fiber Volume	60%	+/- 5%
Cuts	Rough abrasive cut both ends, small burrs may be apparent.	Minimum-Visual
Cleaning	Product blown off with dry air, some dust may be apparent.	Minimum-Visual

### Technical Properties

Tensile Strength	240 ksi / 1.65 GPa
Tensile Modulus	19.5 msi / 134 GPa
Ultimate Shear Strength	6.0 ksi / 41.3 Mpa
Ultimate Tensile Strain	1.40%
Flexural Strength	200 ksi / 1.37 GPa
Flexural Modulus	18.5 msi / 127 GPa
CTE	-0.1 ppm/cm3 / -0.2 ppm/°C
Density	.054 lbs/in3 / 1.5 g/cm3
Glass Transition Temp.	100° C
Thermal Properties	150°F maximum

All the information contained in these properties is believed to be reliable. It is intended for comparison purposes only as each manufactured lot will exhibit variations. The user should evaluate the suitability of each product for their application. We cannot anticipate the variations in all end use and we make no warranties and assume no liability in connection with the use of this information.