

## GC-70-UCL: Product Specifications

### **GC-70-UCL: UNIDIRECTIONAL CARBON FIBER LAMINATE**

A light weight laminate composed of continuous unidirectional carbon fiber in an epoxy matrix, providing high strength and stiffness. GC-70-UCL is manufactured with a proprietary pulforming process in which all carbon fibers are pretensioned and aligned during impregnation and curing. This process assures the efficient utilization of the superior mechanical properties of the carbon fibers.



### **Applications**

- Infrastructure Reinforcement
- Structural Components
- Archery Bow Limbs
- Sail Battens
- Industrial Springs
- Prosthetics
- Aerospace

### **Sizing**

Width: 1.50" to 8.75"

Thickness: .020" to .045"

Length: 6" to 120"(Also available in roll form with lengths up to 250 ft.)

### **Color**

Black

### **Finish**

The material is normally supplied with one surface prepared for bonding but can also be supplied with a bonding surface on both sides.

[Physical and Mechanical Properties \(other side\)](#)

**Contact us, or visit [www.gordoncomposites.com](http://www.gordoncomposites.com) for additional product information.**

### **Gordon Composites, Inc.**

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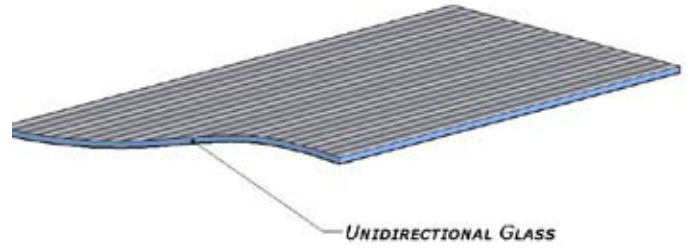
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# GC-70-UCL: Physical and Mechanical Properties

## GC-70-UCL: UNIDIRECTIONAL CARBON FIBER LAMINATE



### Physical and Mechanical Properties

| PROPERTY DESCRIPTION<br>(ORIENTATION and MATERIAL CONSTANT) | UNITS     | TEST METHOD | MIN VALUE      | AVG. VALUE     |
|---|-----------|-------------|----------------|----------------|
| PRODUCT TYPE  |           | ASTM D3647  | UNIDIRECTIONAL | UNIDIRECTIONAL |
| FIBER CONTENT BY WEIGHT                                     | %         | ASTM D2584  | 68             | 70             |
| DENSITY   | lbs./c.i. | ASTM D1505  | .055           | .056           |
| FIBER ORIENTATION   | 0°/ 90°   | ASTM D3647  |                | 0              |
| FLEX STRENGTH, 0° ***                                       | KSI       | ASTM D790   | 240            | 303            |
| FLEX MODULUS, 0° ***  | MSI       | ASTM D790   | 17.7           | 19.9           |
| TENSILE STRENGTH, 0°, ( $\tau S_{11}$ )                     | KSI       | ASTM D3039  | 350            | 430            |
| TENSILE MODULUS of ELASTICITY, 0°, ( $\tau E_{11}$ )        | MSI       | ASTM D3039  | 20             | 22             |
| ULTIMATE TENSILE STRAIN, 0°, ( $\tau \epsilon_{11}$ )       | %         | ASTM D3039  | 1.75           | 1.9            |
| TENSILE STRENGTH, 90°, ( $\tau S_{22}$ )                    | KSI       | ASTM D3039  | 6              | 7              |
| TENSILE MODULUS of ELASTICITY, 90°, ( $\tau E_{22}$ )       | MSI       | ASTM D3039  | 1.23           | 1.4            |
| POISSON'S RATIO, 0°/ 90°, ( $\nu_{12}$ ) tension            |           | ASTM D3039  |                | .31            |
| COMPRESSION STRENGTH, 0°, ( $S_{11}$ )                      | KSI       | ASTM D6641  | 112            | 160            |
| COMPRESSION MODULUS OF ELASTICITY, 0°, ( $E_{11}$ )         | MSI       | ASTM D6641  | 18.2           | 19.5           |
| ULTIMATE COMPRESSION STRAIN, 0°, ( $\epsilon_{11}$ )        | %         | ASTM D6641  | .62            | .82            |
| COMPRESSION STRENGTH, 90°, ( $S_{22}$ )                     | KSI       | ASTM D6641  | 21.8           | 24             |
| COMPRESSION MODULUS OF ELASTICITY, 90°, ( $E_{22}$ )        | MSI       | ASTM D6641  | 1.4            | 1.6            |
| POISSON'S RATIO, 0°/ 90°, ( $\nu_{12}$ ) compression        |           | ASTM D6641  |                |                |
| IN PLANE SHEAR STRENGTH, ( $S_{12}$ )                       | KSI       | ASTM D5379  |                |                |
| IN PLANE SHEAR MODULUS, ( $G_{12}$ )                        | MSI       | ASTM D5379  |                |                |
| INTER-LAMINAR SHEAR STRENGTH, ( $S_{23}$ )                  | KSI       | ASTM D5379  |                |                |
| INTER-LAMINAR SHEAR MODULUS, ( $G_{23}$ )                   | MSI       | ASTM D5379  |                |                |
| GLASS TRANSITION TEMP.                                      | (°F)      | ASTM D3418  | 235            | 240            |
| WATER ABSORPTION  | %         | ASTM D570   |                | .2             |

E is Elastic Modulus

G is Shear Modulus

S is strength

$\nu$  is Poisson's ratio

$\tau$  is tension

C is compression

$\epsilon$  is strain

"1" is parallel to fiber direction (length)

"2" is transverse to fiber direction (width)

"3" is vertical to fiber direction (thickness)

\*\*50/50 Scrim Fiberglass Cloth Inlay, 1.45 oz. per square yd.

\*\*\*Note: Strength Values developed from ASTM D790 are dependent on thickness.

As thickness increased flex strength decreased. The test data above is based on a test thickness of .060"

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Because Gordon Composites, Inc. has no control over the ways in which others may use its products, it cannot guarantee or accept responsibility for the effectiveness or the safety of any possible or suggested design or application of articles containing its products. Each user of the material should perform their own tests to determine the suitability of the material or design, or both for their particular use or application.



Engineered Structural Materials

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