

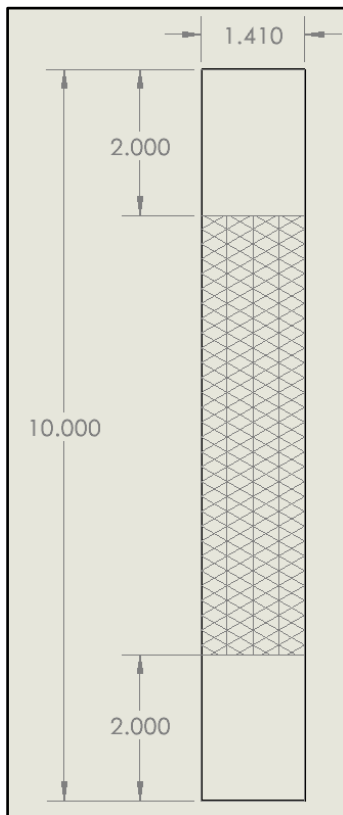
Recommended Test Guidelines for QISO - 0°, +/-60° Fabric

The standard ASTM methods below are recommended for testing QISO, with a modified version of ASTM D3039 required for 90° Tension *when testing Heavy QISO (500+gsm)* and a specified coupon width for 0° and 90° Tensile Testing (this width is within the ASTM accepted range).

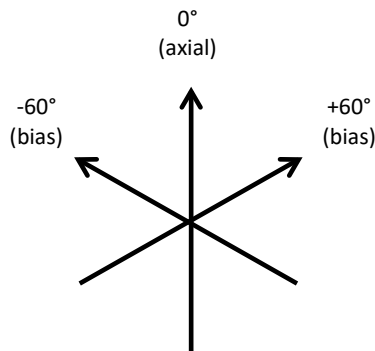
Mechanical Property	Test Method
0° Tension	ASTM D3039
90° Tension	ASTM D3039*
In-plane Shear	ASTM D7078
0° Compression	ASTM D6641
90° Compression	ASTM D6641
0° Open Hole Tensile Strength	ASTM D5766
0° Open Hole Compressive Strength	ASTM D6484
Acid Digestion	ASTM D3171

ASTM D3039 Longitudinal (0°) Tensile Strength & Modulus – Coupon Width Requirement

The straight-sided coupon used to test 0° Tensile properties requires a minimum width of 1.41" (within the recommended range). This width will include a representative number of unit cells of the heavy QISO fabric across the width, enabling accurate measurement of strength values.



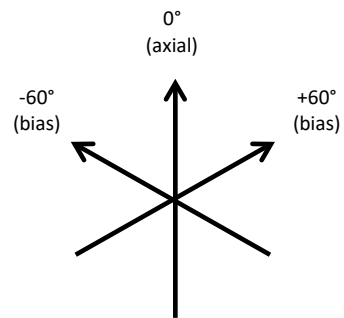
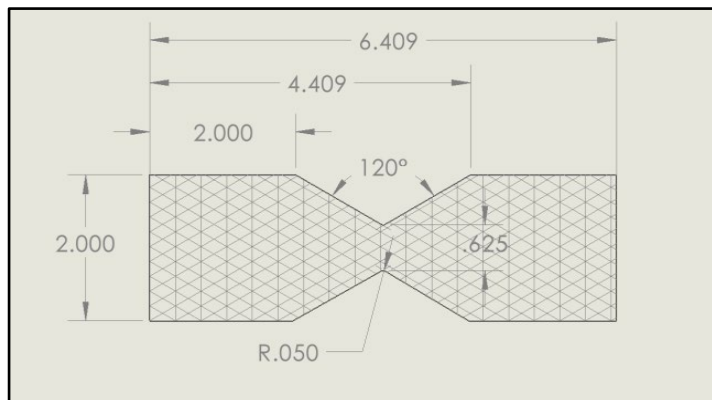
QISO Heavy 0 degree Tension Coupon



Straight-sided coupon - the axial direction runs parallel to the long side of the coupon.

ASTM D3039 Modified Transverse (90°) Tensile Strength – Coupon Geometry Modification for Heavy 0°, +/-60° Fabric (500+ gsm)

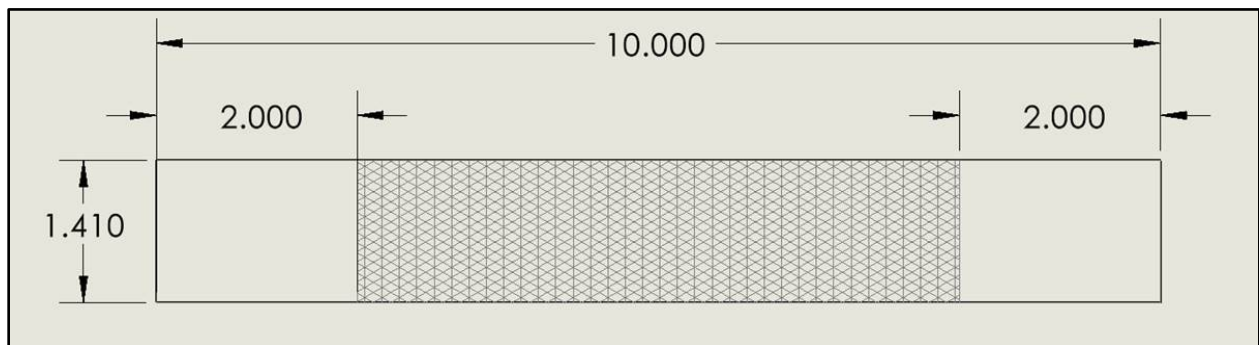
With the standard straight-sided coupon, failures initiate at the coupon edges and occur prematurely. For Heavy QISO, an industry accepted modification to ASTM D3039 uses a **bowtie** coupon geometry, instead of a straight-sided coupon, allowing continuous fiber to travel from grip to grip for accurate load transfer. This modified coupon geometry yields accurate transverse strengths representative of braid performance in actual composite structures. The bowtie coupon geometry has been tested extensively by NASA. Due to complex strain fields, modulus cannot be accurately measured with a bowtie coupon – the bowtie should be used only when testing strength.



Bowtie coupon - the axial direction runs perpendicular to the long side of the coupon.

ASTM D3039 Transverse (90°) Tensile Modulus

For modulus measurement, standard straight-sided coupons are still required.



A&P Technology is happy to support testing of its materials through the fabrication of panels, cutting of coupons, or testing at independent testing labs.

Please contact Brandon Strohming, Application Engineer at A&P Technology, to discuss any testing questions: bstrohming@braider.com or 513-688-3299