

with A&P Technology's QISO[®] Fabric Improved mechanical performance, efficiency and value over woven fabric prepregs.

PRODUCT HIGHLIGHTS

- › QISO[®] improves mechanical strength in composite laminates
- › Provides efficiency gains and manufacturing robustness
- › Reduces material cost by eliminating material waste from $\pm 45^\circ$ ply layers
- › Provides enhanced damage tolerance



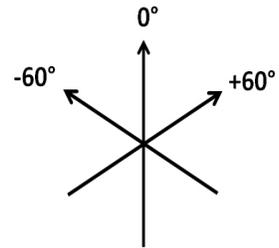
MECHANICAL RESULTS OF TENCATE TC275-1 COMPARING QISO[®] LIGHT AS4-C WITH 3K PLAIN WEAVE AS4-C

Room Temperature Mechanical Properties	Test Methods at RTD	QISO [®] Light Fabric	Plain Weave	QISO [®] vs PW Fabric
Tensile Strength 0° MPa/ksi	ASTM 3039	775/112	657/95	18%
Compressive Strength 0° MPa/ksi	ASTM D6641	603/87	465/67	30%
OHT 0° MPa/ksi	ASTM D5766	494/72	378/55	30%
OHC MPa/ksi	ASTM D6484	374/54	298/43	26%
CAI MPa/ksi	ASTM D7136/D7137	240/35	227/33	6%

**Comparative properties from equal weight laminates of plain weave vs QISO[®] fabric. Laminate construction was 9 plies of 272 faw QISO[®] vs plain weave in Quasi-isotropic orientation for total areal weight of 2448gsm. Fiber architecture used was AS4-C 3k for both materials, and values were normalized to 55% fiber volume.*

SUMMARY: THIS UNIQUE BALANCED QUASI-ISOTROPIC FABRIC OFFERS USERS

- › Improved mechanical performance
- › Reduced ply counts and less waste (each ply of QISO[®] fabric represents a balanced 0°/ $\pm 45^\circ$ /90° construction)
- › Improves nesting efficiency for cutting, kitting and more robust layouts
- › More value compared to woven fabrics
- › An attractive option over woven fabric composite part construction



BACKGROUND

A&P Technology's QISO[®] quasi-isotropic braided fabrics are based upon a 0°, $\pm 60^\circ$ quasi-isotropic orientation. This allows users to fabricate quasi-isotropic laminates without the need for $\pm 45^\circ$ orientations, eliminating material waste. In addition, further efficiencies may be realized in automated kitting and cutting nesting. Currently, QISO[®] quasi-isotropic fabrics are utilized in primary aircraft structure in a variety of applications to enhance strength and damage tolerance.

TESTING

Using TenCate's TC275-1 prepreg resin, A&P Technology's QISO[®] quasi-isotropic fabrics were compared to a plain weave laminate also made with TenCate TC275-1. In preliminary single lot comparisons with a standard plain weave fabric, the QISO[®] fabrics demonstrated improvements in tensile, compressive and open hole properties.

MECHANICAL PROPERTIES BENEFITS

Above is a comparison of mechanical properties using QISO[®] quasi-isotropic laminates vs. a plain weave laminate prepregged with TenCate's TC275-1 resin. Both laminates were of equal weight. Additional data and comparisons with QISO[®] heavy quasi-isotropic fabrics at 536gsm FAW may be found on A&P Technology's website.

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