These attachments represent the design data to be used for the Group Design Project on the Space Shuttle Manipulator Arm Boom. They should also be retained for future homeworks and the final exam.

Source: Original Version of Advanced Composite Design Guide

This package contains the following:

**CARPET PLOTS**

High Modulus Graphite/Epoxy, [0/±45/90]s Laminate Family [Balanced-Symmetric]

1. Elastic Moduli \( (E_x & E_y) \)
2. Shear Modulus \( (G_{xy}) \)
3. Poisson's Ratio \( (V_{xy} & V_{yx}) \)
4. Coefficient of Thermal Expansion \( (\alpha_x & \alpha_y) \)
5. Ultimate Tensile Strengths \( (F_{xu} & F_{yu}) \)
6. Ultimate Compressive Strengths \( (F_{cu} & F_{cu}) \)
7. Ultimate Shear Strength \( (F_{xy}) \)

Obtained by Mike McKenzie from Prof. Hyonny Kim, October 2001. Use for 450 structural work with FEM and graphite epoxy sandwich structure.
1. ELASTIC MODULUS $E_x (E_y)$

2. SHEAR MODULUS ($G_{xy}$)
3. POISSON'S RATIO ($\nu_{xy}$ & $\nu_{yx}$)

4. COEFFICIENT OF THERMAL EXPANSION $\alpha_x(\alpha_y)$
5. ULTIMATE TENSILE STRENGTH $F_{x}^{tu}$($F_{y}^{tu}$)

6. ULTIMATE COMPRESSIVE STRENGTH $F_{x}^{cu}$($F_{y}^{cu}$)
HIGH-MODULUS GRAPHITE/EPOXY

Room Temperature and 350°F

7. ULTIMATE SHEAR STRENGTH $F_{xy}^{su}$