

$$\epsilon_f^* = \frac{\delta \epsilon^*}{\epsilon_f} = \frac{1900 \times 10^6}{86 \times 10^3} = 2.21 \times 10^{-2} \leftarrow$$

$$\epsilon_m^* = \frac{\delta \epsilon^*}{\epsilon_m} = \frac{60 \times 10^6}{2.4 \times 10^9} = 2.5 \times 10^{-2}$$

$\epsilon_f^*$  smaller  $\Rightarrow$  brittle fibres

$$\delta_m' = (\epsilon_m)(\epsilon_f^*) = (2400)(2.21 \times 10^{-2}) = 53.04 \text{ MPa}$$

$$\delta_1 = \phi_f \delta_f^* + (1 - \phi_f) \delta_m'$$

$$(0.55)(1.90) + (0.45)(0.053) = \underline{\underline{1.07 \text{ GPa}}}$$

ALTERNATIVE

$$\delta_1 = \phi_m \delta_m^* = (0.45)(60) = 27 \text{ MPa}$$

$\therefore \delta_1^* = 1.07 \text{ GPa}$  Higher of two

Axial Tensile  $\rightarrow \delta_1^* / \cos^2 \theta = 19212 \text{ MPa}$

Axial Shear  $\rightarrow \tau_{12}^* / (\cos \theta \sin \theta) = \underline{\underline{171 \text{ MPa}}}$

Transverse Tensile  $\rightarrow \delta_2^* / \sin^2 \theta = 213 \text{ MPa}$

$$\delta_\theta^* = 171 \text{ MPa} \text{ (lowest of 3)}$$

failure mode: Axial shear failure

