

GREIG WEBSTER 1804348  
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ACHA 6012.

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$$4c) V_f = 0.45 \therefore V_m = 0.55$$

$$A = 300 \text{ mm}^2 = ~~3 \times 10^{-5} \text{ m}^2~~ 3 \times 10^{-4} \text{ m}^2$$

$$E_f = \text{Fibre Modulus} = 65 \text{ GPa} = 65 \times 10^9 \text{ Pa}$$

$$E_m = \text{Matrix Modulus} = 3.2 \text{ GPa} = 3.2 \times 10^9 \text{ Pa}$$

$$\text{STRESS} = 30 \text{ MPa} = 30 \times 10^6 \text{ Pa}$$

LONGITUDINAL SO ST

$$E_u = E_m V_m + E_f V_f$$

$$= ((3.2 \times 10^9) \times 0.55) + ((65 \times 10^9) \times 0.45)$$

$$= 1.76 \times 10^9 + 29.25 \times 10^9$$

$$= 31.01 \times 10^9 \text{ Pa} = 31.01 \text{ GPa}$$

$$\frac{F_f}{F_m} = \frac{E_f V_f}{E_m V_m} = \frac{(65 \times 10^9) \times 0.45}{(3.2 \times 10^9) \times 0.55}$$

$$= \frac{29.25 \times 10^9}{1.76 \times 10^9} = 16.62$$

$$\therefore F_f = 16.62 F_m$$