

45. The force F exerted on the beam is $F = 7900$ N, as computed in the Sample Problem. Let $F/A = S_u/6$, then

$$A = \frac{6F}{S_u} = \frac{6(7900)}{50 \times 10^6} = 9.5 \times 10^{-4} \text{ m}^2 .$$

Thus the thickness is $\sqrt{A} = \sqrt{9.5 \times 10^{-4}} = 0.031$ m.