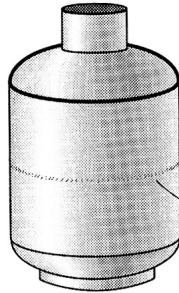


Example 12.1

A steel propane tank for a barbecue grill has a 12-in inside diameter and a wall thickness of 1/8 in. The tank is pressurized to 200 psi. Determine the axial and hoop components of stress in the wall of the tank.



$$\begin{aligned}\sigma_h &= \text{hoop stress comp.} \\ &= \frac{pr}{t} = \frac{(200 \frac{\text{lb}}{\text{in}^2})(6 \text{ in})}{(1/8 \text{ in})}\end{aligned}$$

$$= 9.6 \text{ ksi}$$

$$\sigma_a = \text{axial stress comp.}$$

$$= \frac{pr}{2t} = \frac{\sigma_h}{2} = 4.8 \text{ ksi}$$

