8.4 The maximum allowable surface crack length for MgO may be determined using Equation 8.3; taking 225 GPa as the modulus of elasticity (Table 12.5), and solving for a, leads to

$$a = \frac{2E\gamma_s}{\pi\sigma_c^2} = \frac{(2)(225 \text{ x } 10^9 \text{ N/m}^2)(1.0 \text{ N/m})}{(\pi)(13.5 \text{ x } 10^6 \text{ N/m}^2)^2}$$

$$= 7.9 \text{ x } 10^{-4} \text{ m} = 0.79 \text{ mm } (0.031 \text{ in.})$$