

6.35 This problem asks us to demonstrate that true strain may also be represented by

$$\varepsilon_T = \ln \left(\frac{A_0}{A_i} \right)$$

Rearrangement of Equation 6.17 leads to

$$\frac{l_i}{l_0} = \frac{A_0}{A_i}$$

Thus, Equation 6.16 takes the form

$$\varepsilon_T = \ln \left(\frac{l_i}{l_0} \right) = \ln \left(\frac{A_0}{A_i} \right)$$

The expression $\varepsilon_T = \ln \left(\frac{A_0}{A_i} \right)$ is more valid during necking because A_i is taken as the area of the neck.