Equations

problem 7.29

A cylindrical specimen of cold-worked copper has a ductilitiy (%EL) of 25%. If its radius after cold-working is 10 mm, what was it's radius before deformation?

Step 1.

From Figure 7.17 c, with copper, it appears that this ductility goes with about 14% cw.

Step 2.

Use the definition of CW

$$A_f = \pi/4 \cdot 10^2 \tag{1}$$

$$A_i = \pi/4 \cdot d_i^2 \tag{2}$$

$$CW = \frac{A_i - A_f}{A_i} \cdot 100 \tag{3}$$

$$CW = 14 \tag{4}$$

Looks like about 10 3/4 mm

Solution

$$A_f = 78.54 \quad A_i = 91.33$$
$$CW = 14 \qquad d_i = 10.78$$