Chapter 1 Problem 25 [†]

Given

$coverage = 350\ ft^2/gal$
$1\ ft = 0.3048\ m$
$1\ L = 10^{-3}\ m^3$
$1\ gal = 3.785 \times 10^{-3}\ m^3$

Solution

Convert to m^2/L.

Apply the following convertions. First convert gallons to m^3 and then m^3 to L. Next convert ft^2 to m^2.

$$350\ \frac{ft^2}{gal}\left(\frac{1.000\ gal}{3.785 \times 10^{-3}\ m^3}\right)\left(\frac{10^{-3}\ m^3}{1.000 L}\right)\left(\frac{0.3048\ m}{1.000\ ft}\right)^2$$

$$coverage = 8.59\ m^2/L$$

[†]Problem from Essential University Physics, Wolfson