Alex Iacob 9/15/20
Prof. Lanzafame Avogadro's Number

To solve this problem, I figured out that in order to get Aluminum atoms per 1 cent, I needed to find out how many grams of Aluminum foil you could purchase with 1 cent. I continued to work backwards. I searched of the equation to convert grams of an element to atoms of the element from a website named Clutchprep.com, the rest was my own work.

$$6666\,yds \cdot \frac{3ft}{1yd} \cdot \frac{12in}{1ft} \cdot \frac{2.54cm}{1in} = 6095.3904cm\ (4SF)$$

$$12in \cdot \frac{2.54cm}{1in} = 30.48cm\ (4SF) \qquad Area = 6095.3904cm \cdot 30.48cm = 185787.3cm^2\ (4SF)$$

- A 2.5in x 2.3in sheet of Aluminum foil has a mass of 0.187g (3SF)
- $2.5in \cdot \frac{2.54cm}{1in} = 6.35cm \Rightarrow A = 40.3225cm^2\ (3SF)$
- $\frac{40.3225cm^2}{0.187g} = \frac{185,787.5cm^2}{xg} \Rightarrow x = 861.6098g\ (3SF)$
- $\frac{549\ cents}{861.6098g} = \frac{1\ cent}{xg} \Rightarrow x = 1.438g\ (3SF)$
- (From Clutchprep.com) $1.438g\ of\ Al \cdot \frac{1\ mol\ of\ Al}{26.982g\ Al} \cdot \frac{6.022E23}{1\ mol\ of\ Al} = 3.209E22$ atoms of Al (3SF)

You can purchase 3.21×10^{22} atoms of Aluminum with 1 cent.