

### Answer on Question #67185, Chemistry / General Chemistry

Show the calculation of the expected grams of alum ( $KAl(SO_4)_2 \cdot 12H_2O$ ) formed from the reaction of 1.3 grams of aluminum metal and then show the calculation of the % yield if the actual yield of alum is 19.32 grams.

#### Solution:

1. Calculation of expected grams of alum:

$$M(Al) = 27.0 \frac{g}{mol}$$

$$M(KAl(SO_4)_2 \cdot 12H_2O) = 474.39 \text{ g/mol}$$

from **27 g/mol Al** is formed **474,39 g/mol alum**

from **1.3 g Al** is formed **x g alum**

$$x = \frac{1.3 * 474.39}{27,0} = 22.84 \text{ (g)}$$

2. Calculation of the % yield:

$$\% \text{ yield} = \frac{\text{actual mass}}{\text{expected mass}} \times 100 \%$$

$$\% \text{ yield} = \frac{19.32}{22.84} \times 100 \% = 84.59 \% = 84.6 \%$$

**Answer:** 22.84 g; 84.6 %.