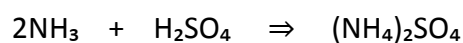## Answer on Question #53167 – Chemistry – Physical Chemistry

Question: Ammonia and sulfuric acid react to form ammonium sulfate. (a) Write an equation for the reaction. (b) Determine the starting mass (in g) of each reactant if 20.3 g of ammonium sulfate is produced and 5.89 g of sulfuric acid remains unreacted.

Answer:

a) $2NH_3 + H_2SO_4 \rightarrow (NH_4)_2SO_4$

b)

$2NH_3$ + H_2SO_4 $\Rightarrow$ $(NH_4)_2SO_4$

34.06g :   98.08g   :   132.14g

   x   y   20.03g

x = [20.03g · 34.06g]/132.14g = 5.16g (starting mass of ammonia)

5.16g + y = 20.03g (from stoichiometric ratio)

20.03g - 5.16g = y

y = 14,87g + 5.89g = 20.76g (starting mass of sulfuric acid)

Answer:

mNH_3 = 5.16g

mH_2SO_4 = 20.76g