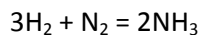


#74975 Chemistry, Other

How many moles of which reactant will remain if 1.39 moles of N_2 and 3.44 moles of H_2 will react to form ammonia? Find out how many grams of ammonia can be formed and how many moles of limiting reactant is required to completely exhaust the other reactant that is in excess?

Answer:



$$n(N_2) = 1/3 \cdot n(H_2) = 1/3 \cdot 3.44 = 1.15 \text{ mol}$$

Therefore, H_2 will be a limiting reagent. It will react fully.

$$\text{The amount of } N_2 \text{ to be left is: } n(N_2) = 1.39 - 1.15 = 0.24 \text{ mol}$$

$$\text{The amount of } H_2 \text{ required to exhaust all the } N_2 \text{ is: } n(H_2) = (1.39 \cdot 3) - 3.44 = 0.73 \text{ mol}$$

The amount of ammonia to be formed from the existing amount of reactants is:

$$n(NH_3) = 2/3 n(H_2) = 2/3 \cdot 3.44 = 2.3 \text{ mol}$$

$$m = nM$$

$$M(NH_3) = 18 \text{ g/mol}$$

$$m(NH_3) = 2.3 \cdot 18 = 41.3 \text{ g}$$

Answer provided by AssignmentExpert.com