

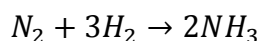
Answer on the question #63896, Chemistry / General Chemistry

Question:

How many moles of NH₃ can be formed from 6.0 mol of N₂ and 12.0 mol of H₂? What is a real world application for this chemical reaction?

Solution:

The reaction equation is:



As one can see, one mole of N₂ gas reacts with three moles of H₂ gas. As we have 6 moles of nitrogen gas and 12 moles of H₂ gas, we have a lack of H₂ gas:

$$\frac{6}{1} > \frac{12}{3}$$

Then, if all the H₂ gas reacts, the number of the moles of NH₃ formed is:

$$n(NH_3) = \frac{2n(H_2)}{3} = 2 \cdot 4(\text{mol}) = 8(\text{mol})$$

Answer: 8 mol