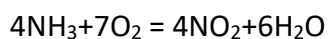
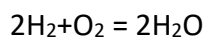
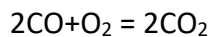


Answer on Question #80263 - Chemistry - Physical Chemistry

Question:

10ml of the gaseous mixture of CO H₂ and NH₃ are completely oxidised by 8 ml O₂ if the original mixture of CO H₂ and NH₃ contains equal volume of CO and H₂ then what is the volume % of NH₃ in original mixture?

Solution:



Let $V(\text{CO}) = V(\text{H}_2) = x$ L, then $V(\text{NH}_3) = (0.01 - 2x)$ L;

So, $n(\text{CO}) = n(\text{H}_2) = x/22.4$ mol, and $n(\text{NH}_3) = (0.01 - 2x)/22.4$ mol;

$n_1(\text{O}_2) = n_2(\text{O}_2) = n/2(\text{CO}; \text{H}_2) = x/11.2$ mol;

$n_3(\text{O}_2) = 7/4n(\text{NH}_3) = 7/4 (0.01 - 2x)/22.4$;

$V_{\text{total}}(\text{O}_2) = V_1 + V_2 + V_3 = 2x + 2x + (7/4 (0.01 - 2x)) = 0.01$ L;

$0.01 = 4x + 0.0175 - 3.5x$;

$0.5x = 0.0075$

$X = 3.5$ mL