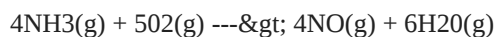


Answer on question#40488, Chemistry, Other

Question:

The Ostwald process is used commercially to produce nitric acid, which is, in turn, used in many modern chemical processes. In the first step of the Ostwald process, ammonia is reacted with oxygen gas to produce nitric oxide and water. What is the maximum mass of H₂O that can be produced by combining 71.8 g of each reactant?



Solution:

We need to know amount of each reactant:

$$n(\text{NH}_3) (\text{mol}) = 71.8 / 17.3 = 4.2$$

$$n(\text{O}_2) (\text{mol}) = 71.8 / 32 = 2.2$$

NH₃ is in excess.

$$m(\text{H}_2\text{O}) (\text{g}) = 18 * (2.2 * 6 / 5) = 47.5$$

Answer: 47.5