

Ch3/ PowerPoint Study-Stoichiometry – 4 Limiting Reagent/Excess Reagent

Name: _____

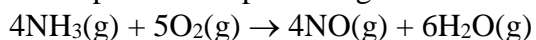
Answer these questions as you are watching the videos. They are due in class.

These questions are not just for you to answer but also to prepare you for the exam.

Make sure you understand what you are writing and not just copy from the text book. Show all work.

Calculating limiting reagent, theoretical yield, percent yield and excess reagent.

The first step in the Ostwald process for producing nitric acid is



- If the reaction of 150. g of ammonia with 150. g of oxygen gas yields 87.0 g of nitric oxide (NO) then what is the percent yield of this reaction?
- How much in grams is the excess reagent left?

Strategy: For solving part a

- Convert g NH_3 \rightarrow mol NH_3 \rightarrow mol ratio to NO
- Convert g O_2 \rightarrow mol O_2 \rightarrow mol ratio to NO
- Write down the limiting reagent. (Which mols of the product are less in steps 1 and 2. The reagent giving the lower mols is the limiting reagent as it will finish first).
- Convert the lesser of the mols of NO to g of NO. This is the theoretical yield of NO.
- Calculate % yield (87.0 g NO divided by the theoretical yield in grams (calculated from step 4) and multiply by 100%.

Strategy: For solving part b

- Subtract the smaller number from the larger number of mols from steps 1 and 2. This is mols of the reagent that is excess in quantity.
- Convert mols of the excess reagent \rightarrow mol ratio to the starting material \rightarrow g of the starting material.