

Limiting Reagents

[1]

Objectives

- Identify the limiting reagent and excess reagent in a reaction
- Calculate the amount of product produced
- Determine the amount of ER left over

[2]

Limiting Reagent

- An insufficient quantity of any reactant will limit the amount of product formed
 - Example: Two slices of bread and a whole jar of peanut butter—you can only make one sandwich because you are limited by the bread

[3]

- LR determines the amount of product that will form and is completely used up (bread)
- Excess reagent is not completely used up, there is some left over (PB)

[4]

$N_2 + 3H_2 \rightarrow 2NH_3$

- If you have 2.0 moles of nitrogen reacting with 4.0 moles of hydrogen, which reagent is limiting?
- Which reagent is in excess?
- How much NH_3 will form?
- How much excess reagent will be left over?

[5]

$2Cu + S \rightarrow Cu_2S$

- 80.0 g Cu reacts with 25.0 g S
- What mass of copper (I) sulfide will be produced?
- What is the limiting reagent?
- What is the excess reagent?
- How much excess reagent will be left over?

[6]



- If 100. grams of both reagents are available, which is the limiting reagent?
- How much calcium chloride will be formed?
- What mass of excess reagent will be left over?

[7]
