

### Limiting Reagents: Theoretical and Theocracy Yield %



If a reaction required reactants  $\text{Na}_2\text{O}$  and  $\text{H}_2\text{O}$ , and  $\text{NaOH}$  and  $\text{O}_2$ , what is the limiting reagent? How many moles of oxygen can be produced?



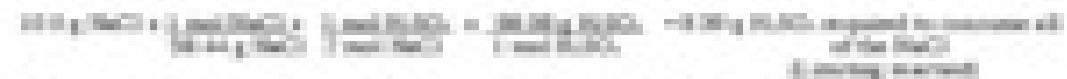
Limiting reagent:  $\text{Na}_2\text{O}$ . Maximum theoretical yield = 0.125 mol  $\text{O}_2$ .



If a reaction required reactants 1.00 g of sodium chloride and 0.70 g of sodium hypochlorite, what is the limiting reagent? What is the theoretical yield of hypochlorous acid? How many grams of water must be reacted are left unreacted?



Limiting reagent:  $\text{NaCl}$ . Maximum theoretical yield = 0.30 g  $\text{NaClO}_2$ .



(0.030 g NaCl) / (0.0178 g NaCl) = 1.70 (excess)

0.030 g  $\text{NaClO}_2$  = 0.030 g  $\text{NaClO}_2$  - 0.030 g of water reacted = 0.030 g  $\text{NaClO}_2$ , maximum yield is complete.