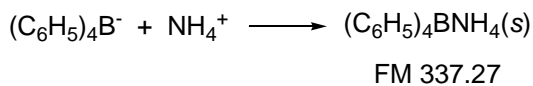
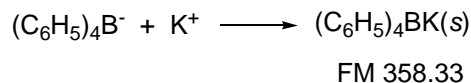
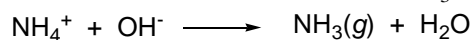


Chapter 27 Example Problems

1. (Harris 27-20) A 1.475-g sample containing NH_4Cl (FM 53.492), K_2CO_3 (FM 138.21), and inert ingredients was dissolved to give 0.100 L of solution. A 25.0-mL aliquot was acidified and treated with excess sodium tetraphenylborate, $\text{Na}^+\text{B}(\text{C}_6\text{H}_5)_4^-$, to precipitate K^+ and NH_4^+ ions completely:



The resulting precipitate amounted to 0.617 g. A fresh 50.0-mL aliquot of the original solution was made alkaline and heated to drive off all the NH_3 :



It was then acidified and treated with sodium tetraphenylborate to give 0.554 g of precipitate. Find the weight percent of NH_4Cl and K_2CO_3 in the original solid.

2. (Harris 27-21) A mixture containing only Al_2O_3 (FM 101.96) and Fe_2O_3 (FM 159.69) weighs 2.019 g. When heated under a stream of H_2 , the Al_2O_3 is unchanged, but the Fe_2O_3 is converted to metallic Fe plus $\text{H}_2\text{O}(\text{g})$. If the residue weighs 1.774 g, what is the weight percent of Fe_2O_3 in the original mixture?