

Name _____ Block _____

Lab 13: Double Replacement Reactions and Solubility Rules

Objective

To study various double replacement reactions, identifying precipitates and spectator ions.

Introduction

Combining solutions of soluble ionic compounds often results in a product that precipitates. The insoluble product can be determined by using the rules of solubility shown on Table F of your reference tables.

Materials

Well plate, dropper bottles containing the following:

Sodium chloride, ammonium hydroxide, silver nitrate, sodium carbonate, potassium iodide, copper sulfate, cobalt chloride, lead nitrate; chemistry reference table .

Procedure

Take a well plate and clean it completely. Place 1 drop of the following in a well:

No.	Reactants	Reactant 1 Formula	Reactant 2 Formula	Precipitate Color
1	Sodium chloride and silver nitrate			
2	cobalt (II) chloride and silver nitrate			
3	sodium carbonate and silver nitrate			
4	potassium iodide and silver nitrate			
5	lead (II) nitrate and ammonium hydroxide			
6	lead (II) nitrate and sodium chloride			
7	lead (II) nitrate and potassium iodide			
8	copper (II) sulfate and sodium carbonate			
9	copper (II) sulfate and ammonium hydroxide			
10	copper (II) sulfate and lead nitrate			
11	cobalt (II) chloride and sodium carbonate			
12	cobalt (II) chloride and ammonium hydroxide			

Summary of Results

Using Table F, identify the precipitate and give two justifications based on the table. The first one is done for you.

No.	Precipitate	Justification #1 (soluble product)	Justification #2 (insoluble product)
1	Silver Chloride	Sodium is always soluble (Group 1); Nitrate is always soluble	Silver is insoluble with halides
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			

2. One student looked at a precipitate and identified the precipitate as pink. Her lab partner insisted it was white. Sometimes it isn't easy to tell what the color of a precipitate is. Devise a method to find out!
3. Why do some combinations of solutions not produce precipitates?
4. Using Table F, find a combination of solutions that should not produce a precipitate, and explain why. Make sure you verify your prediction with a test.
5. There are several combinations of the seven solutions that form precipitates that are not included. For **extra credit**, figure out one of them, and write a complete balanced equation for the reaction.