

What Is a Chemical Reaction?

Data Table A. Reactions of Hydrochloric Acid

Initial appearance and temperature of HCl Solution? _____

Reaction Well	Reagents	Observations
1	HCl + NaOH	
2	HCl + NaHCO ₃	
3	HCl + AgNO ₃	
4	HCl + Zn	
5	HCl + Al	
6	HCl + Mg	

Data Table B. Reactions of Cupric Chloride

Initial appearance and temperature of CuCl_2 solution? _____

Reaction Well	Reagents	Observations
1	$\text{CuCl}_2 + \text{Al (shot)}$	
2	$\text{CuCl}_2 + \text{Al (foil)}$	
3	$\text{CuCl}_2 + \text{Zn}$	
4	$\text{CuCl}_2 + \text{NH}_4\text{OH}$	
5	$\text{CuCl}_2 + \text{Na}_2\text{CO}_3$	
6	$\text{CuCl}_2 + \text{AgNO}_3$	

Optional Demonstration Activity—Conservation of Mass

Your teacher may perform an optional demonstration activity to test the law of conservation of mass.

Initial mass of flask assembly _____

(before mixing)

Final mass of flask assembly _____

(after mixing)

Change in mass = | final mass – initial mass | _____

Post-Lab Questions

1. Summarize the observations of chemical change in the reactions of HCl and CuCl₂, respectively. All reactions should be listed; some reactions may appear more than once.

Reaction Well	Reactions of HCl	Reactions of CuCl ₂
Precipitate formation		
Gas bubbles		
Color change		
Temperature change		
No observable change		

2. Compare and contrast the reactions of Al, Mg, and Zn with HCl.

3. Based on the observed reactions of HCl and CuCl₂ with different metals, predict whether CuCl₂ will react with Mg.

4. Compare the reactions of CuCl₂ and HCl with AgNO₃. Propose a hypothesis to account for the reaction product. Hint: What is the likely chemical formula for the product?

5. Compare the reactions of CuCl₂ with Al shot and Al foil. Discuss some possible reasons for any differences in the reaction of the two forms of aluminum.

6. (Optional) Discuss the results of the conservation of mass demonstration. Does the law of conservation of mass apply to chemical reactions?