

Chemical Reactions Lab

Instructions on Prelab writeup:

Write: Theory & Data Table (make one! & fill in the “reactants formulas” column by reading the procedure and figuring out what you are reacting)

Paste in: Points to Remember (read and highlight), Procedure

Theory: The law of definite proportions

The law of multiple proportions (*define both of them*)

Purpose: To observe chemical reactions by mixing liquids/solids together.

Points to Remember:

- If a solid is used, let it react for at least 5 minutes.
- You may want to compare an unreacted piece of metal with the reacted one to see a difference.
- Remember to use alconox to clean all glassware BEFORE and AFTER the lab. Final Rinse with DI water.
- For spotplate, 1 mL = 10 drops and for a test tube (TT) 1 mL = 20 drops.
- Metals are monatomic elements. They have a neutral charge when they are by themselves. As they pair up with ions, in a chemical reaction, then they become part of an ionic compound.

Procedure:

- In a spotplate, add 3 drops of barium chloride, add about 2 drops of sulfuric acid. Observe & record.
- In a TT, cover a small piece of copper with 3 mL of silver nitrate. Put it into a TT rack and let it react for 3 min. Then, pick up the TT and flick the TT on an angle, observe, & record.
- In a spotplate, add 3 drops of lead (II) nitrate, add 3 drops of potassium chromate. Observe & record. Is there a ppt? Put in your stirring rod to see if any stick onto it.
- Put a small ball of iron wool (steel wool) into a TT. Make sure you don't get your iron wool stuck in the tube, otherwise you have to get it out!) Add 2 mL of copper (II) sulfate. Observe & record.
- In an evaporating dish, place a small amount of ammonium carbonate. Wet a piece of hydrion paper with DI water and stick it to the underside of a watch glass. Put the watch glass on top of the evaporating dish. Place the dish on a wire gauze and heat using a bunsen burner. Observe and record.
- Obtain a piece of steel wool about 5 cm in length. Record qualitative observations such as: color, luster, and flexibility of the metal in your data section. Holding one end with the crucible tongs, ignite the other end in the burner flame. **CAUTION: Once on fire, remove from flame and allow the ashes to fall on the lab table and then put in the trash.**
- In a small beaker, place a small piece of sea shell (calcium carbonate) and add 3 mL of sulfuric acid. Observe & record. *For this experiment, there are 2 reactions, so write two equations in the discussion table. Carbonic acid is produced by the initial reaction. That acid breaks down into the compounds that make the acid up, which are water and carbon dioxide.*

Data: (Make a table, skipping around 3 lines for each step in the procedure.)

Reactants formulas	Reaction Type	OBSERVATIONS – detailed qualitative
BaCl ₂ + H ₂ SO ₄		

Discussion: NOTE (Don't ignore this!): *To the iron compounds, the charge is +3. To the copper compounds, the charge is +2. Metals have no charge when they are by themselves.*

For each reaction, write the balanced chemical equation.

Conclusion: