

LAB: Reaction Types — Chem Honors

(do not hand in background/procedures)

Purpose: To observe reactions, classify them and write balanced equations for them.

Procedure: Write up: Hand in the completed data sheet

--Fill out the data sheet by doing the following for each reaction:

- (1) Look on my YouTube channel to see these reactions
- (2) Record your observations of the reactants and write down their formulas, states of matter.
- (3) Do the reaction, record your observations of the products and determine their formulas.
- (4) Balance your overall equation
- (5) Write the overall reaction by using the names of each substance.
- (6) Deduce the type(s) of each reaction.

--Do the post lab questions

--- Reaction #1:

- 1) Examine a piece of magnesium ribbon. Record its appearance.
- 2) Using tongs, hold the magnesium in the burner flame until the ribbon starts to burn.
DO NOT LOOK DIRECTLY INTO THE FLAME! Record observations. Evidence for adding the oxygen is that when you burn something in air, it adds O₂.
- 3) When the ribbon stops burning, put this new product into an evaporation dish. Record observations. Only one product (white solid)
- 4) Fill out the overall reaction on your data sheet. (With formulas and with names)
HINT: magnesium is being oxidized by an element in the air.

--- Reaction #2: (2 reactants and 2 product lines)

- 1) Obtain a small piece of zinc metal. (Zn is a metal atom, no charge!) Examine zinc and record its appearance.
- 2) Add the Zinc to some hydrochloric acid. (aqueous solution)
- 3) Hold a glowing splint above the flask. Record observations. This is a test for one product, not your reaction. One product is a gas and the other product is a colorless aqueous solution left over in the test tube) Even though Zinc is a transition metal, it always gets a +2 charge when part of an ionic compound.

--- Reaction #3: (2 reactants and 2 product lines)

- 1) Observe the appearance of the first solution, CuSO₄. Add 1 dropper full into a well.
- 2) Observe the appearance of the second solution, NaOH. Add dropper full into same well
- 3) Write overall reaction. One product is a blue solid the other is a colorless aqueous solution. Determine which product is (s) and which is(aq)

--- Reaction #4:

- 1) Put very small amount of MnO₂ into a large graduated cylinder. (catalyst)
- 2) Add 40 mL of 30% hydrogen peroxide (H₂O₂) (aq) into a flask. Watch 1 minute. Record observations.
- 3) Hold a glowing splint above the flask. Record observations. This is a test for one product, not your reaction. One product is a gas, and the other is the steam being given off.

--- Reaction #5:

- 1) Light a Bunsen burner.
The gas (fuel) coming out of the Bunsen burner is methane, CH₄.
That's it. That is a chemical reaction happening. Evidence for adding the oxygen is that, when you burn something in air, it adds O₂.
- 2) You will not have much evidence for the products because the flame is so hot that both products are in the gas phase as colorless gases. (that's ok, just write colorless gas for both)

LAB [25 pts]
Reaction Types-- DATA SHEET

Name _____
Lab partner(s) _____

Reaction #1: Type of reaction: _____

Overall Reaction: _____ + _____ \longrightarrow _____
(using formulas-- balance equation)

Evidence/observation: _____
(for each substance)

Overall Reaction: _____ + _____ \longrightarrow _____
(using names)

Reaction #2: Type of reaction: _____

Overall Reaction: _____ + _____ \longrightarrow _____ + _____
(using formulas-- balance equation)

Evidence/observation: _____
(for each substance)

Overall Reaction: _____ + _____ \longrightarrow _____ + _____
(using names)

Reaction #3: Type of reaction: _____

Overall Reaction: _____ + _____ \longrightarrow _____ + _____
(using formulas-- balance equation)

Evidence/observation: _____
(for each substance)

Overall Reaction: _____ + _____ \longrightarrow _____ + _____
(using names)

Reaction #4: Type of reaction: _____

Overall Reaction: _____ \longrightarrow _____ + _____
(using formulas-- balance equation)

Evidence/observation: _____
(for each substance)

Overall Reaction: _____ \longrightarrow _____ + _____
(using names)

Reaction #5: Type of reaction: _____

Overall Reaction: _____ + _____ \longrightarrow _____ + _____
(using formulas-- balance equation)

Evidence/observation: _____
(for each substance)

Overall Reaction: _____ + _____ \longrightarrow _____ + _____
(using names)

Post Lab Questions: For the following reactions:

- 1) Write the overall reaction with the names first and then underneath put the correct chemical formulas.
- 2) Balance the equation and determine the type of reaction
- 3) Put states of matter for any *elements* and for the *reactants and products of the double replacement* reaction(s) only.

1) manganese (II) sulfate \rightarrow manganese (II) oxide + sulfur trioxide
_____ \rightarrow _____ + _____ Type of reaction
1) _____

2) nickel (II) sulfate + lithium phosphate \rightarrow _____ + _____
_____ + _____ \rightarrow _____ + _____ 2) _____

3) chlorine + potassium iodide \rightarrow _____ + _____
_____ + _____ \rightarrow _____ + _____ 3) _____

4) _____ + _____ \rightarrow iron (III) oxide
_____ + _____ \rightarrow _____ 4) _____

5) the reaction of pentene (C₅H₁₀) in oxygen (air)
_____ + _____ \rightarrow _____ + _____ 5) _____