

Unit 2 Matter and Energy

Name ____ **Answer Key** ____

Dry Ice – Post Lab Questions

Block # _____

1. What is the name of the chemical compound that dry ice is composed of?

Carbon Dioxide

2. What is the chemical formula for dry ice? **CO₂**

3. The temperature of dry ice is **__-109.5__ °F = __-78.5__ °C = __194.5__ Kelvin.**

4. What phase change occurred when the dry ice was placed in the warm water?

Sublimation – when a solid absorbs heat and becomes a gas

5. How are intermolecular forces different for solids and gases?

Solids have strong forces that hold molecules together tightly.

Gases have weak or no forces, so their molecules can float freely from each other.

6. What happened to the white dry ice vapors after you couldn't see them anymore?

They do NOT disappear. The Law of Mass Conservation states “Matter is neither created nor destroyed.” The gas molecules are actually still there. When they move apart, they are so tiny by themselves, it is difficult to see them.

7. Which gas is heavier – dry ice or air? How do you know?

Dry Ice – Because the bubble popped and the gas sank onto the table.

8. Why do you think the food coloring changed the color of the water but not the color of the dry ice vapors?

Water and food dye are polar molecules. (They have a positive side and negative side that attract to other opposite charges.) So water is attracted to the dye. Dry ice is non-polar, meaning that is balanced on all sides. Since it lacks opposite charges, it is not attracted to the water or the dye.

9. Why do you think the bromothymol blue pH indicator changed colors in the presence of dry ice and water?

Water is neutral. When you add the H₂O to the CO₂, they chemically react to form H₂CO₃ carbonic acids.