

Solids

Q: Why is a solid a solid?

Q: What are the internal and external factors that affect a solid?

Q: How do I mathematically describe the composition of a solid?

Q: What is the difference between an empirical formula and a molecular formula?

Do: Must be able to determine the % mass from a formula.

Do: Must be able to convert a % mass to a formula.

Do: Must be able to convert an empirical formula to molecular formula.

Liquids

Q: Why is a liquid a liquid?

Q: What are the internal and external factors that affect a liquid?

Q: What factors affect the solubility of solids and gases in liquids?

Q: How do I mathematically describe how much stuff dissolves in a solvent?

Do: Must be able to make a solution.

Do: Must be able to calculate how to make a solution and fully utilize the molarity formula.

Do: Must be able mathematically calculate all parts of a dilution and physically make a dilution.

Q: Be able to interpret a Beer's law plot.

Do: Be able to do all aspects of stoichiometry with solutions :)

Gases

Q: Why is a gas a gas?

Q: What are the internal and external factors that affect gases?

Q: What are the factors that affect if something boils?

Q: Understand how the factors of a gas affect each other. (T, P, V)

Do: mathematically be able to solve problems using $PV=nRT$ and Combined gas law.

Do: Be able to do all aspects of stoichiometry with gases :)

Solid

1. A 250mg pill containing aspirin actually has a mass 475mg. Meaning that the entire pill is not aspirin. What percent by mass of the pill is actually aspirin?
2. Determine the percent mass of each element of CaCl_2 .
3. CaCl_2 is commonly used as road salt to melt ice. If one buys a 50lb bag of road salt, how much mass of actual calcium is in the bag?

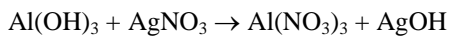
4. Benzene has the formula of C_6H_6 . What would the empirical formula of benzene?

Solutions

5. Sketch a triple phase diagram of water. Label the locations of the solid, liquid, and gas. Also indicate the temperatures on the graph of the melting points and freezing points.
6. What that we can control relative to a substance being a liquid?
7. If one wants to dissolve a gas into liquid how would you increase the solubility?
8. If one wants to increase the rate at which a liquid converts to a gas, Give two ways.
9. What is ΔH vaporization?
10. I want to make a 100mL sample of .5M NaCl. Describe the steps.
11. Give an everyday example of where you would dilute something?
12. What is the difference between a qualitative test and a quantitative test?

Gases

13. 1.5 L of CO_2 @ STP is dissolved in 4L of water. What is the molarity of the solution?
14. A gas tank reads 500lbs/sq inch of pressure when inside a refrigerator. If that tank is removed from and placed outside in a warmer environment. What happens to the pressure?
15. Describe the environmental change on a molecular level.
16. If the fridge was 3C and the room was 18C. What would be the new pressure in lbs/in²?



Given 25 grams of silver nitrate dropped into 750 mL of .5M $Al(NO_3)_3$

- Balance
- Determine moles of each
- What is the limiting reactant?
- What is the ending volume?
- What is the concentration of $Al(NO_3)_3$?
- The silver hydroxide precipitates out? What mass precipitates out?