Introduction to Matter

Part 2: Physical Properties and Phase Change

1. What is **brittleness**?

2. Give an example of a brittle material. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. What is **malleability**?

4. Give an example of a malleable material. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5. In general, most \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are malleable and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_are not.

6. Add brittleness and malleability to your list of physical properties.

7. Definition of **physical change** –

8. What are the **melting point** and **boiling points** of water in degrees Celsius?

 Melting point \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Boiling point \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

9. Is freezing water a physical change or a chemical change? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Explain your answer.

10. What is a **phase change**?

11. Is boiling water a physical change or a chemical change? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Explain your answer.

12. Phase changes are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (physical or chemical) changes.

13. Phase changes often occur in response to changes in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

14. As the temperature of a system increases, the **ENTHALPY** of the system also increases. What is enthalpy?

15. As heat is added to a solid system, the enthalpy of the system increases and the molecules begin to vibrate faster and faster. Eventually the attractive forces between the molecules or atoms will begin to break and the solid will \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. If more heat is added the molecules will vibrate even more and the liquid will **vaporize**.

16. Vaporization

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Takes place at the surface of a Takes place all throughout the body

 liquid and at any temperature. of a liquid and at only one temperature.

17. **Phase changes**

|  |  |
| --- | --- |
| Solid → Liquid |  |
| Liquid → Solid |  |
| Liquid → Gas |  |
| Gas → Liquid |  |
| Solid →Gas |  |
| Gas→Solid |  |

18. What is the definition of **freezing point**?

19. **The freezing point and the melting point of a substance are the same temperature!** Explain.

20. What is the definition of **temperature**?

21. What are intermolecular forces?

22. Particles with strong intermolecular forces will have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_melting points.

23. Heating Curve of Water



24. What is the condensation point? How is it related to boiling point?

25. What causes condensation on the outside of a glass of cold lemonade?