

Chapter One (1.1-1.3) Study Guide

Concepts

1. Know the different classifications of matter including the different types of pure substances and mixtures and how they are distinguished from one another
2. Know the difference between physical and chemical properties and changes
3. Know the names and symbols of the elements required by Blackmer (1-18 and P as of 9/8/05)
4. Know the difference between an intensive and extensive property
5. Know the law of constant composition (law of multiple proportions)

Outline

I. Definition of Chemistry

II. States of Matter

A. Solid

B. Liquid

C. Gas

III. Kinds of Changes

A. Physical Changes

B. Chemical Changes

IV. Classifications of Matter

A. Mixtures

1. Homogeneous Mixtures

2. Heterogeneous Mixtures

B. Pure substances

1. Compounds

2. Elements

V. Definitions

A. Physical Property

B. Chemical Property

C. Intensive Property

D. Extensive Property

Practice Problems

- Which one of the following is not a physical property of water?
 - It boils at 100°C at 1 atm pressure
 - It freezes at 0°C at 1 atm pressure
 - It is clear and colorless
 - Water exists in solid, liquid and gaseous forms
 - It reacts rapidly with potassium metal to form potassium hydroxide

- What is the physical state in which matter has no specific shape but does have a specific volume?
 - gas
 - solid
 - liquid
 - salts
 - ice

- Circle any of the following that are not considered a chemical change.
 - rotting wood
 - crushing ice
 - boiling water
 - iron rusting

- True/False. Saltwater is an example of a homogeneous mixture.

- Give the proper symbol for the following elements.

Sodium	_____
Oxygen	_____
Carbon	_____
Phosphorus	_____
Magnesium	_____
Boron	_____

- Give the proper element name for the following symbols.

Si	_____
Cl	_____
Be	_____
F	_____
Ar	_____

- Of the following, only _____ is an extensive property.
 - density
 - mass
 - boiling point
 - freezing point
 - pressure

8. Homogeneous mixtures are also known as _____.
- solids
 - compounds
 - elements
 - substances
 - solutions
9. The radius of the bromine atom is 1.14 Angstroms. How many of these atoms will span a distance of 52.17 cm? (1 Angstrom = 10^{-10} m)
10. Which of the following is a chemical property of sodium chloride?
- It melts at a high temperature
 - It is a solid at room temperature
 - It dissolves in water
 - It can be decomposed into sodium metal and chlorine gas
 - It is not significantly compressible
11. An element cannot _____.
- Be part of a heterogeneous mixture
 - Be part of a homogeneous mixture
 - Be separated into other substances by chemical means
 - Interact with other elements to form compounds
 - Be a pure substance
12. Gases and liquids share the property of _____.
- Compressibility
 - Definite volume
 - Incompressibility
 - Indefinite shape
 - Definite shape
13. In the following list, only _____ is NOT an example of matter.
- Planets
 - Light
 - Dust
 - Elemental Phosphorus
 - Table salt