

GENERAL PROPERTIES OF BONDED COMPOUNDS

<i>Property</i>	<i>Ionic Compound</i>	<i>Covalent Compound</i>	<i>Metallic Compound</i>
Solid at room temperature			
Mostly gases at room temperature			
Brittle			
Malleable			
High Melting Point			
Low Melting Point			
Hard			
Soft			
Usually dissolves in water (polar)			
Usually dissolves in nonpolar solvents			
Conducts electricity as a solid			
Conducts electricity as a liquid			
Insulator			
Sustains a current when dissolved in solution			
Does not sustain a current when dissolved in solution			

COME TOGETHER

Chemical Bonding Quiz

Name _____

Period _____ Date _____

1. In which type of bond are electrons shared between atoms?

- A. Ionic
- B. Covalent
- C. Metallic

2. Which type of bond creates a crystalline structure?

- A. Ionic
- B. Covalent
- C. Metallic

3. Which type of bond usually forms between two nonmetals?

- A. Ionic
- B. Covalent
- C. Metallic

4. Which type of bond forms a structure which is often described as an "electron sea"?

- A. Ionic
- B. Covalent
- C. Metallic

5. Which bond is characterized by the formation of oppositely charged particles?

- A. Ionic
- B. Covalent
- C. Metallic

6. In which type of bond are one or more electrons transferred from one atom to another?

- A. Ionic
- B. Covalent
- C. Metallic

7. Which of the following is NOT a characteristic of ionic substances?

- A. Conduct electricity in solution form.
- B. Have high melting points.
- C. Usually dissolve in water.
- D. Are usually gases at room temperature.

8. Which of the following is NOT a characteristic of metallic substances?

- A. Are lustrous, malleable, and ductile.
- B. Conduct electricity.
- C. Have low melting points.
- D. Are usually solids at room temperature.

9. Which of the following is NOT a characteristic of covalent substances?

- A. Have low melting points.
- B. Sometimes dissolve in water.
- C. Usually form small, individual molecules.
- D. Conduct electricity.

10. Why do atoms form chemical bonds?

- A. To increase their potential energy.
- B. To become more stable.
- C. To gain more valence electrons.
- D. To obtain a higher electronegativity.

Section 1 Review

NSES PS 1a, 1b

SECTION VOCABULARY

chemical bond an interaction that holds atoms or ions together	ionic compound a compound made of oppositely charged ions
covalent compound a chemical compound that is formed by the sharing of electrons	

1. Compare How does the melting point of ionic compounds compare to that of covalent compounds?

2. Make Inferences Examine the table below. Use the information in the table to help you decide if the compound is ionic or covalent. Write *ionic* or *covalent* in the box next to each compound.

Compound	Property	Ionic or covalent
A	low melting point	
B	smallest particle is a molecule	
C	water solution conducts an electric current	
D	high melting point	

3. Describe Why do ionic compounds tend to be brittle?

4. Explain Solid crystals of ionic compounds do not conduct an electric current. Why does the solution conduct electricity when the crystals dissolve in water?

5. Describe Describe how a metal and a nonmetal can combine by forming an ionic bond.

Honors Chem – Chpt 6 Chem Bonding

1. Why do covalent compounds have lower melting points than ionic compounds?
2. Why are metals malleable?
3. Why do ionic solids not conduct electricity?
4. Why are ionic solids brittle?
5. Describe three tests that could be performed to determine if a solid was ionically or covalently bonded.