

Revised August 2009

HONORS WORKSHEET 9b: Bonding & Properties

1. Consider the table of data below and then answer the questions that follow.

Substance	Melting Point / °C	Boiling Point / °C	Electrical Conductivity		
			When Solid	When Liquid (molten)	When in solution (dissolved in water)
A	0	100	Insulator	Poor	-
B	396	980	Insulator	Good	Good
C	-55	-2	Insulator	Insulator	Insulator
D	-9	58	Insulator	Insulator	Good
E	200	600	Insulator	Good	Good
F	98	892	Good	Good	Chemical reaction occurs
G	-39	360	Good	Good	Does not dissolve

- Which substances are liquids at room temperature (approx. 25°C)? (3)
- Which substances are metals? (2)
- Which two substances are ionic? (2)
- In what physical state would substance C be found at 50°C? (1)
- Which substance is molecular, but changes to ionic when dissolved in water? (1)
- Which three substances are made up from covalent molecules? (3)
- Of your three answers to part (f), which is most likely to have the strongest intermolecular bonds, which has the weakest? (2)

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2. Complete the following table. In each case offer a **brief** explanation of the property in terms of a **RELEVANT TYPE OF BONDING** present in the substance. (8)

Substance	Property	Explanation in <u>terms of bonding present</u>
Diamond	Extremely hard	
Graphite	Conducts electricity in ONE plane only	
Aluminum	Excellent conductor of heat	
Aluminum Oxide	Used to line the inside of furnaces and industrial ovens	
Bromine gas	Low boiling point	