

AP WORKSHEET 03B: Properties of Solids

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	Poor	Poor	N/A
B	396	980	Insulator	Good	Good
C	801	1465	Insulator	Good	Good
D	3422	5930	Good	Good	Does not dissolve
E	200	600	Insulator	Good	Good
F	98	892	Good	Good	Chemical reaction occurs
G	> 3000	> 4000	Poor	Poor	Does not dissolve

- (a) Which substance is *not* a solid at 298 K? (1)
- (b) Which two substances are most likely to be metals? (2)
- (c) Which three substances are most likely to be ionic? (2)
- (d) Substance C is a poor conductor when solid. What feature of its structure and bonding creates this property? (1)
- (e) Which substance is most likely to have a giant covalent network structure? (1)
- (f) Substance D is a good conductor when solid. What feature of its structure and bonding creates this property? (1)
- (g) Which two substances will have the lowest vapor pressure? Explain your answer. (3)

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

Solid Substance	Property	Explanation in <u>terms of bonding/forces 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	
Iodine	Low boiling point	