FLINN SCIENTIFIC

Name_____

Properties of Solids

Data Table

Physical Property	Aluminum	Silicon Dioxide	Sodium Chloride	Stearic Acid	Sucrose
Color and Appearance					
Volatility and Odor					
Conductivity (Solid)					
Solubility in Water					
Conductivity of Aqueous Solution					
Solubility in Hexane					
Brittleness					
Melting Point*					

*The average temperature of a Bunsen burner flame is greater than 1000 °C.

Post-Lab Questions

1. Compare the volatility and odor of stearic acid and sucrose. Which is more volatile? Why? Is it possible for a compound to be volatile but have no odor? Explain.

2. Both stearic acid and sucrose are molecular solids, but one is polar and the other is nonpolar. Compare the solubility of the two compounds in water and in hexane to determine which is which.

3. Based on the answers to Questions #1 and #2, predict whether the intermolecular forces (forces between molecules) are stronger in polar or nonpolar substances.

4. In order for a substance to conduct electricity, it must have free-moving charged particles.

   a. Explain the conductivity results observed for sodium chloride in the solid state and in aqueous solution.

   b. Would you expect molten sodium chloride to conduct electricity? Why or why not?

   c. Use the model of metallic bonding described in the *Background* section to explain why metals conduct electricity.

5. Complete the following table (some of the entries have been filled in for you):

	Type of Solid			
General Properties	**Covalent-network**	**Ionic**	**Metallic**	**Molecular**
Melting Point			Low to high	
Solubility				Depends on polarity
Conductivity of Solid		Nonconductors		
Brittleness				