**Task 5 Comparing the Physical Properties of Sucrose and Sodium Chloride**  
Name: /25

Materials:

|  |  |  |
| --- | --- | --- |
| * Sucrose (C12H22O11) | * Electrode | * Power pack |
| * Sodium chloride | * Bunsen burner | * Electrical leads |
| * Distilled water | * Crucible |  |
| * 100 mL beaker | * Stirring rod |  |
| * Bench mat | * Globe |  |

Method:

**Part 1 – Electrical Conductivity**

1. Rinse and then fill a 100 mL beaker with 75 mL of distilled water.
2. Pour 5 grams of sucrose into the water, and stir with a stirring rod until dissolved.
3. Place the electrode kit in the beaker and set up the circuit shown in Figure 1.
4. Turn the power pack on at 8V. Record any observations.
5. Rinse and refill the 100 mL beaker with distilled water. Repeat steps 2-4 with sodium chloride.
6. Repeat the experiment using a solid sample of each compound. Record any observations.

**Part 2 – Melting Point**

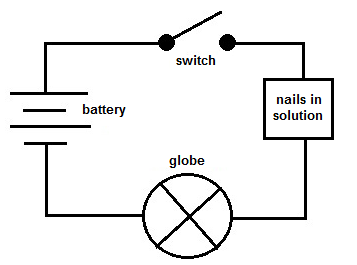
1. Add 1 g of sucrose to a crucible, enough cover the bottom with a single layer.
2. Place the crucible on a gauze mat sitting on a tripod.
3. Light the Bunsen burner and adjust the level of oxygen to produce the hot, non-luminous flame.
4. Move the tripod so that the crucible sits over the flame.
5. Carefully observe contents of the crucible.
6. Extinguish the Bunsen burner if you observe the contents of the crucible start to melt.
7. Extinguish the Bunsen burner if you do NOT observe a change within 1 minute.
8. Allow the crucible and contented to cool while writing down any observations.
9. Repeat steps 1-6 with sodium chloride.

Figure 1: Circuit diagram to set up in order to test the   
electrical conductivity of the two solutions.

**Questions:**

1. What is the independent variable?

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(1 mark)

1. What is the dependent variable for each part?

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(2 marks)

1. What is one controlled variable for each part?

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(2 marks)

1. In the space below, draw up a table of results.

(6 marks)

1. Complete the table for the two substances tested, and predict the properties of the other substances listed.

(6 marks)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Substance** | **Chemical Formula** | **Bonding Present ionic/covalent** | **Melting Point**  **low/high** | **Conduct Electricity when solid?** | **Conduct electricity when aqueous?** |
| Table Salt |  |  |  |  |  |
| Sucrose | C12H22O11 |  |  |  |  |
| Carbon dioxide |  |  |  |  |  |
| Copper(II) sulfate |  |  |  |  |  |
| Iron(II) oxide |  |  |  |  |  |

1. Use your knowledge of bonding types to compare the differences in electrical conductivity between sucrose and sodium chloride.

(4 marks)

1. Use your knowledge of bonding types to compare the differences in melting point between sucrose and sodium chloride.

(4 marks)