**Electrical Conductivity experiment**

**(This sheet accompanies the video experiment)**

**Aim:** To investigate the electrical conductivity of several liquids.

**Background**

It is fairly easy to predict if a solid will conduct electricity. A malleable, lustrous solid is probably a metal and that metal will conduct. It is not as easy to tell however when it comes to liquids. In this experiment you will test the electrical conductivity of a set of liquids.

**Part A**: Experiment design.

1. Explain how you would test a liquid to see if it conducts electricity. Include in your answer the

 equipment you would require and the way it is set up.

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**Part B**: Testing

The liquids to be tested are:

water methylated spirits (ethanol) 1.0 M CuSO4 Hydrochloric acid 1.0 M sodium chloride

2. For each liquid, use the second row of the table to write the formula of the substance (google it if you have to) and use the third row to predict whether you think it will conduct electricity or not.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **sodium****chloride** | **metho**  | **water**  | **copper sulfate** | **hydrochloric acid** |
| **formula** |  |  |  |  |  |
| **prediction?** |  |  |  |  |  |
| **actual** |  |  |  |  |  |

Complete the video, filling in the final row of the table as you go.

3. Do all liquids conduct electricity? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. Do ionic solutions conduct electricity? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5. Use a diagram to explain why copper sulfate solution conducts.

6. A molten solution of NaCl also conducts electricity, Explain how a molten solution differs from an aqueous

 solution.

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7. Draw the circuit used for testing and explain how it works.

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8. Copper sulfate differs from copper in the reason why it conducts. Explain the difference.

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Extension

9. Why does hydrochloric acid conduct?

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