Name: _____ Group: _____ Date: _____

TECH 19
EXPERIMENT

ELECTRICAL CONDUCTIVITY

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GOAL

Determine the electrical conductivity of various materials (wood, rubber, copper, aluminum, nickel chromium, porcelain and glass) by means of an electrical circuit.

1. What is the independent variable in this lab?

_____

2. What is the dependent variable in this lab?

_____

HYPOTHESIS

I think that _____

_____

because _____

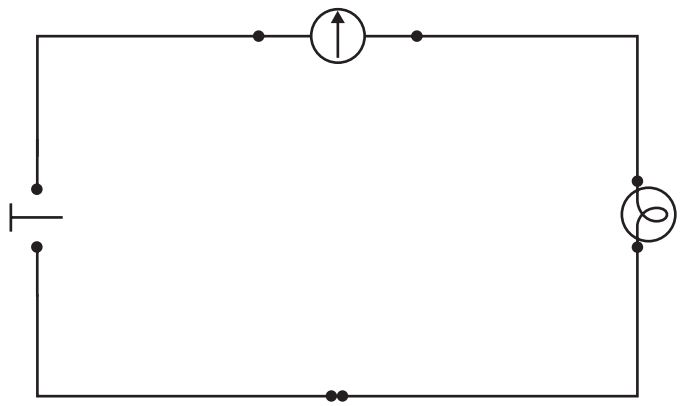
_____

MATERIALS

- source of alternating current
- push-button switch
- 1.5-V light bulb in wooden or porcelain socket
- 4 electrical wires with alligator clips
- piece of wood
- piece of rubber
- piece of copper
- piece of aluminum
- piece of nickel chromium
- piece of porcelain
- piece of glass

PROCEDURE

1. Set up the electrical circuit illustrated below, in which the dots (•) stand for alligator clips on the wires. (Wait until Step 4 before inserting the material to be tested.)



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2. Turn on the power supply and set the voltage to 1.5 V.
3. Press the switch and verify that the light bulb goes on. If it does not, find the defective component of the circuit with the help of your lab instructor.
4. Add one of the materials you wish to test to the electrical circuit between the set of unconnected alligator clips.
5. Press the switch to allow current to flow through the electrical circuit.
6. Observe the brightness of the light bulb (none, weak, medium or strong). Record the result.
7. Repeat Steps 4 through 6 with each of the other materials.

RESULTS

Record your results in the table below. Give the table a title.

Title: _____

Material	Light bulb brightness
Wood	
Rubber	
Copper	
Aluminum	
Nickel chromium	
Porcelain	
Glass	

ANALYSIS OF THE RESULTS

1. Did the type of material affect electrical conductivity? If so, explain using your results.

_____

_____

_____

_____

_____

2. Are there metals that conduct electricity better than others? Explain your answer using your results.

_____

_____

_____

_____

_____

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3. State the electrical function of each component listed in the table below.

Component	Electrical function
Source of alternating current	
Push-button switch	
Light bulb	
Light bulb socket	
Electrical wires	
Wire sheathing	

4. Of the materials you tested, which ones would be best for conduction?

_____

5. What electrical function is the opposite of conduction? Of the materials you tested, which ones would be best for this function?

_____

_____

CONCLUSION

1. Complete the sentences below.

Wood, glass, rubber and porcelain are _____. The conductors from best to worst are: _____.

2. Did this experiment allow you to verify your hypothesis? If the answer is yes, explain whether your hypothesis was confirmed or not.

_____

_____

_____

APPLICATION

The handles on electricians' pliers are generally covered in rubber or plastic. What is the function of these two materials?

_____

_____

_____