

Name _____

Class _____ Date _____

OHMIC AND NON-OHMIC CONDUCTORS

Aim to investigate the properties of an ohmic and a non-ohmic conductor.

Equipment

Power supply	globe (6V, 18W or other)
50cm nichrome wire on a base	connecting wires
DC ammeter	DC voltmeter
Rheostat	

Method

1. Connect the non-variable terminals of the rheostat to the 5 V DC terminals of the power supply.
2. Connect the rest of the circuit as shown in the diagram. Be sure to connect the positive terminal of the ammeter to the positive side of the rheostat and the switch to the sliding contact terminal of the rheostat.
3. Connect the voltmeter across the globe.
4. Set the sliding contact of the rheostat near the positive end. Turn on the power supply and close the switch. Watch the meters. Correct any faults in the circuit.
5. Adjust the rheostat to obtain a current of 0.5A through the globe. Record the potential difference across the globe.
6. Use the rheostat to increase the current in steps of 0.5A, recording the potential difference and current each time. Ideally at least 5 readings will be taken. If necessary make the steps in current larger or smaller, to make this possible.
7. Turn off the circuit, and replace the globe with the wire. You will possibly need to change the scale on the ammeter.
8. Use the rheostat to increase the current in steps of 0.2 A, recording V and I. Ideally at least 5 readings will be taken. If necessary make the steps in current larger or smaller, to make this possible.
9. Record the limit of reading errors for each metre, on each scale.
10. Plot a graph of V against I for each conductor.

Questions

1. What is Ohm's Law? (Not the equation)
2. Do both these conductors obey this law? Explain what evidence from the graph shows this.
3. For any conductor which does obey Ohm's law, determine the resistance, indicating the error.

This lab will be assessed on data collection and data analysis only for the IB. The questions will be used for school marks.