

# CONDUCTING PAINT TO DESIGN ELECTRIC CIRCUIT

Siddharth Sudhir Vathare, Akshay Santosh Lale, Avadhut Balaso Nikam, Jaheer Shakil Mujawar, Pravin Atamaram Thorat  
Department of Electrical Engineering,  
SIT, Polytechnic, Yadrav.  
Maharashtra, India

**Abstract:** This paper presents conducting paint in designing of different electrical circuits and the innovations in the conductors. Conducting paint can help to save the conductors which we are using till now. It helps in decorative as well as enhancement purpose. Ohm's law fulfills on the conducting paint, also makes it is an ideal strategy to teach the relations between the resistor's length and width and its resistance. This is easy method to teach basic electricity and circuit concept in fundamental courses.

**Keywords:** Resistance, Carbon, Current, Conductivity

## I. INTRODUCTION

We know the properties of the current. A current always required a low resistance, Path, there should be some potential difference, it should have a closed loop. By qualifying the mentioned requirements, we are using different types of Conductors having some properties for flowing the electric Current. Conductors can conduct electrical current easily because It has a free electron. We are using mostly copper and the aluminum due to its properties. But not only this conductor but there are Different materials have the properties for the requirements for Flowing the electric current. By studying the materials or searching the Materials we found the materials possesses the properties for flowing electric Current. It may be carbon, gold, Silver. We can't use gold and silver as a conductor because it is expensive and used for different applications. Carbon is also one of the conductors used in motors, arc welding purposes. So the carbon is amorphous and crystalline in nature. Carbon are good conductor of heat and electricity. Hence they have a good electrical conductivity and well thermal stability. Carbon are widely used in different application due to its properties.

We can get different carbon contained materials and they got easily. They are from coal, graphite and the

batteries or cells. We are measured the materials which possesses the properties for the electric current. So the proper material selection is very important that they withstand properly.

The cells are used once. Hence after the use of the cells it can't be used again. We can use this cells for useful work. This cells have carbon powder which has a good conductivity. This carbon powder can be used as a conductor. Carbon are the good conductor of electricity. Also it has less resistance and fulfills the property of electricity.



## II. LITERATURE VIEW

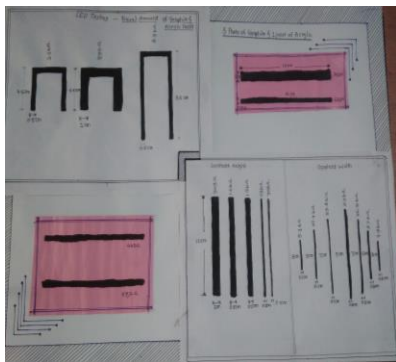
A different types of conductors are used to flow the electricity. The copper is one of the best conductor that having good electrical as well as mechanical properties. Gold and silver are also superconductor but they are expensive and used for various purposes. Aluminum is common conductor used for the power system.

The conductive ink presented in is a skin-safe ink comprising a conductive material, a binder and a humectant. The conductive material may be graphite, carbon black or activated carbon powder or others. It is specified that the conductive material should be at least 30% of the wet weight of the ink and that average diameter is between 40 to 150micro meter.

The dependence of resistance to length and transverse area of the path available to charge carries is a simple and fundamental notion. The conductive paint having the low cost.

### III. PROPOSED METHODOLOGY AND OPERATING PRINCIPLE

On the basic of properties of electric current, we measured the resistance of the material. We make power form of the waste cell. We can make the conducting paint from polymer, silver, Copper and the graphite. We added some drops of the water to make it is paint form. We make the rough circuit for the testing of the paint. Due to high resistance of the material there is so much voltage drops. By incasing cross sectional area of the paint and reducing the length of the paint we reduced the resistance of the material. Carbon can conduct electricity due to the vast electron delocalization within the carbon layers (a phenomenon called aromaticity). These valence electrons are free to move, so are able to conduct electricity. We are taking test of the paint



At different length and different area there is different resistance. So we have to make the resistance value as we want. It can be changed by changing length and the cross sectional area.

We checked resistance at different length and different area. We are try to make it is as low as possible for less voltage drop. The following flowchart shows the working of conducting paint.



As we give supply to the paint current starts flowing through it and the application start to give output. Every conductor has an insulation. So we are used glue as an insulator for the conducting paint to protect the humans as well as machine or equipment from unwanted current path.

We can create any circuit easily. To get proper output we have to make it is more thick to get more efficiency.

### IV. RESULTS AND DISCUSSION

Normally the conductor is checked on the basis of the cross sectional area and the material used in it. Also it is checked on the basis of the length. So we checked resistance of the material at different length and with same thickness that we want.

Sr.No.	Length	Resistance	Width
1	4.5cm	1.5 kohm	0.5cm
2	4.5cm	890ohm	1 cm
3	9.5cm	8.7 kohm	0.5 cm

From the above results we can understand the relation of the resistance for the length and the cross sectional area. So the resistance of the material is directly proportional to the length and the area of the conductor. So to make it is a good conductor we have to make the more thickness with less length for the better conductivity of the material.

### V. CONCLUSION

As we know that the properties for electric current we are using different conductors for fulfillment the requirement for electric current. A conducting paint is the recent conducting material which fulfills the properties for electricity. Hence it is best conductor which can be used for enhancement as well as for decorative and for multi connections instead of normal conductor.

### VI. REFERENCES

1. The forward working group. Uses for our inks[Online].
2. Neil W ascroft and N david mermin. Solid state physics.
3. Bare conductive.
4. T.A.Corboy and J. Philipson. Conductive Paint Composition.R.L.Pilditch, I.Lizardi, B.C.Nelsonand M.M.Johnson. Skin-safe conductive ink and method for application on the body ( Patent),2012