

## **PURIFICATION OF WATER BY ACTIVATED CHARCOAL**

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### **ABSTRACT**

*Activated charcoal is generally used to purify the impure water in industries and manufacturing process. It is mostly preferable for extracting free chlorine from water. Thereby making water more suitable for reusing again for many purposes. If it is purified perfectly i.e. if lead is extracted from water it can be used for drinking purpose.*

*Nowadays activated charcoal is used at industries and manufacturing processes but not in our daily uses. So, our aim is to provide better and healthy water to all. We have purified the samples of impure water by activated charcoal at very low cost, which is affordable to anyone. But, there are some impurities which cannot be extracted by activated carbon such as sodium, microbes, fluoride and nitrates. We are trying to improvise our project in order to extract such impurities also.*

**Keywords:** *Activated Charcoal, Natural Process, Water Management*

### **I. INTRODUCTION**

The main problem we are facing today about environment is pollution. It may be water, soil or air pollution. We have made this research to focus on water pollution problem. Today we are facing scarcity of water and there is an urgent need to conserve the little amount of pure water we have. Due to problem such as global warming we need to take steps and improve watershed management so that we do not face more water scarcity in the future i.e. we must try new techniques to recycle use water to make it pure for industrial purpose and domestic need. The main motive behind this project is to serve the needy people by providing a cost effective method that helps to purify water and provides them with clean and pathogen free hygienic water.

### **II. ACTIVATED CHARCOAL**

Activated charcoal is also called activated carbon, is a form of carbon processed to have small, low-volume pores that increase the surface area available for adsorption or chemical reactions. Activated is sometimes substituted with active. Activated carbon is usually derived from charcoal and is sometimes utilised bio-char. Those derived from coal and coke and referred as activated coal and activated coke.



### **III. MATERIALS REQUIRED**

In order to make a cost effective water purifier we require-

Activated charcoal, two clean earthen pots, cotton, tripod stand, tap for upper pot.

### **IV. CONSTRUCTION AND WORKING**

One earthen pot is placed on the tripod stand and this pot has a tap to control the flow of purified water. The second pot is placed on top of the lower pot, this pot has a hole made at its bottom which is covered by a layer of wet cotton to keep it in its place, and then a single layer of activated charcoal on it.

When impure water is poured into the pot, it gets mixed with the charcoal powder and on filtration through the cotton layer, purified water is collected into the lower pot drop by drop. Approximately 50 gram charcoal purifies 1litre of water in 15-20 minutes. As we increase the amount of water it will take more time.

### **V. IMPLEMENTATION AND OBSERVATION**

As mentioned in above procedure, now we are going to show two observations.

Observation table 1: Drainage water

Observation table 2: Drainage water after filtration.

<b>PARAMETERS (CHEMICAL)</b>	<b>UNITS</b>	<b>METHOD OF ANALYSIS</b>	<b>RESULT OF DRAINAGE WATER</b>	<b>RESULT OF DRAINAGE WATER AFTER FILTRATION</b>
pH	mg/L	APHA 4500-H <sup>+</sup> B	9.15	7.12
Total Hardness as CaCO <sub>3</sub>	mg/L	APHA 2340 C	132.6	59.16
Total Alkalinity as CaCO <sub>3</sub>	mg/L	IS:3025 (Part 23) 1986 Reaff.2003	240.87	202.02
Total dissolved solids	mg/L	APHA-2510 A	389	291
Lead as Pb	mg/L	APHA 3111 B	Nil	Nil

### **VI. ADVANTAGES AND CHALLENGES**

It is cheap and a very simple process. It contains all natural materials and there is no loss of natural properties.

The use of earthen pot is to keep the water cool.

There is a chance that if the cotton layer is not placed properly, the charcoal can get mixed with clean water.



## **VII.FUTURE SCOPE**

In future we are going to suffer water(pure) shortage, so by this method we can purify water in low cost and almost attain the same unit as obtained by aqua guard purification.

This method is easy to implement in village areas due to lack of purified water so this would be a big step to implement in village areas.

## **VIII.ACKNOWLEDGEMENT**

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## **REFERENCE**

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## **PICTURES:**



