

## **ACTIVATED CARBON**

It is known that removal of impurities from liquids or gases by Activated Carbon is by adsorption. But only a thin layer of molecules is enough to neutralize the residual attraction of the outer carbon atoms, which then cannot be adsorb any further molecules and carbon is said to be exhausted. It is however possible to make carbon porous. In this way many countless are created and internal surface area is increased. Many more carbon atoms are then exposed to the surroundings resulted in more molecules from surroundings can be attracted. The carbon is more active and hence called “Activated Carbon”. One gram of ground carbon has an external surface area of 2 to 4 square meters, whereas when carbon has been activated this one gram of carbon may acquire an internal surface area of more one thousand square meters.

## **PRODUCTION OF ACTIVATED CARBON**

Activated carbon can be produced from many raw materials i.e. Soft wood, Coconut shell, Peat lignite (Both mineral & coal). The raw material must be relatively low cost and source of raw material should be closed to the factory location to minimize the transport cost. We are using Soft wood & Coconut shell charcoal as raw material in our factory.

## **PROCESS OF MANUFACTURING:**

### **1. STEAM ACTIVATED PROCESS:**

The majority of Activated Carbon used through out the world is produced by two stage process. Firstly the material is carbonized and cock is produced. The pores of produced cock are too small; hence, the next is a process of enlarging the pore structure so that an accessible internal surface is created. This is achieved by semi product with steam at temperature between 900°C to 1200°C. At this temperature rate determination factor is the chemical reaction between steam and carbon. This reaction takes place at the internal surface of the carbon removing carbon from the pore walls and there by enlarging them.

Opening up the pore structure is costly as the yield decreases and extra heat is required. e.g. In the purification of water for the adsorption of small molecules from solution. This carbon is cheaper compare to sugar decolorizing carbon where large molecules are to be removed.

Thus, steam activation process allows the pore size to be altered and finally carbon can be made to suit different purpose.

## **PRODUCT**

The product range of our company can be broadly divided in two categories that is -Powder Carbon & Granular Carbon. Activated carbons are produced from selected best quality of wood charcoal to give a high quality product.

### **POWDER CARBON:**

- a. **Oil Grade Carbons:** We have wide range of different grade of Activated carbon for bleaching of edible oils like G.N., Solvent extracted G.N. Oil, Cotton seed Oil, Rapeseed Oil, Soya bean Oil, Palm Oil, Rice bran Oil, Maize Oil, etc. as well as non edible oil like castor oil & mineral oil.
- b. **Carbon for Purification Of Sugar & Related Products:** Activated Carbon for purification of sugar syrups, refining of glucose, dextrose & in manufacture of sugar cubs.
- c. **Carbon for Purification of Chemicals:** For purification of chemicals Dye Intermediates, Electroplating bath solution, plasticizers EDTA, And Acetic acid etc.

# ACTIVATED CARBON – POWDER (UNWASHED)

(Wood charcoal base or Coal base)

## SPECIFICATION OF THE PRODUCT:- (REF.NO. AU)

1	NAME OF THE PRODUCT	ACTIVATED CARBON POWDER (UNWASHED)						
2	GRADE	AU-150	AU-200	AU-250	AU-300	AU-350	AU-400	AU-450
3	DESCRIPTION	Black fine powdered form						
4	SOURCE OF MATERIAL	Soft wood charcoal base						
5	M.B VALUE mg/gm	150	200	250	300	350	400	450
6	pH OF 1% WATER EXTRACT	9 to 11	9 to 11	9 to 11	9 to 11	9 to 11	9 to 11	9 to 11
7	% ASH CONTENT	12 to 15	10 to 12	10 to 12	10 to 12	10 to 12	10 to 12	10 to 12
8	IRON (ppm) Max	1000-1200	1000	1000	1000	800	700	650
9	% MOISTURE	5	5	5	5	5	5	5
10	ACID SOLUBLE % Max	5	5	5	5	4.5	4	4
11	WATER SOLUBLE % Max	4 to 4.5	4	3.5	3.5	3	3	3
12	L.O.D % Max	8	8	8	8	5	5	5
13	CL & SO <sub>4</sub> Max	USP	USP	USP	USP	USP	USP	USP
14	% KMnO <sub>4</sub> ADSORPTION	40 to 45	55 to 60	70 to 75	80 to 85	85 to 90	90 to 95	90 to 95
15	IODINE VALUE mg/gm	550 to 650	750 to 800	1000 to 1050	1150	1150 to 1200	1200 to 1250	1200 to 1250
16	PARTICLE SIZE	85 % Passing through 250 mesh size						
	PACKING	25/40-50 Kg HDPE woven sacks with inside of polyethylene bag.						
	PRICE Rs. Per kg.							

**AU- 400 & AU-450 Can be quoted subject to availability**

### Terms:

- (1) Excise Duty: presently not applicable. If applicable in future, it will be extra.
- (2) VAT @ 5% (Currently)/CST @ 2% against form 'C'. (3) Delivery: Ex-works, Gorwa, Baroda
- (4) Others: Freight, insurance extra, & other levies, if applicable, it will also be extra.
- (5) Minimum quantity: 500 Kg. (6) Delivery period: 8 to 10 days.

## **DETERMINATION OF M.B. VALUE OF ACTIVATED CARBON**

### **REAGENT:**

Methylene Blue Solution – Dissolve 0.15 gram of methylene blue confirming to IS: 2230-1962 in 100 ml of Distilled Water (Distilled water having pH value 7.0).

### **PROCEDURE :**

Weigh accurately about 0.1 gram of the material, as received, with accuracy of 0.01 gram and transfer to 50 ML Glass stoppered flask. Add from a burette 10 ml of methylene blue solution and shake for 5 minutes. After the first 10 ml are decolorized continue to add methylene blue solution (1 ml at a time) till the blue colour disappears for 5 minutes. Decolorizing power of Activated Carbon is expressed in terms of milligrams of methylene blue adsorbed by 1 gram of activated carbon. (This value is MB value).

### **CALCULATION :**

$$\text{DECOLOURIZING POWER} = \frac{15 \times V}{10 \times M}$$

Where V = volume in ml of methylene blue solution consumed, and  
M = mass in gram of the material taken for the test.

(Use methylene blue of any standard company to prepare solution and compare solution with standard solution of methylene blue as it does vary batch to batch).