

## WHO WE ARE

Vortex Enterprise is a prominent retailer and exporter of Powdered, Granulated, and Pelleted Activated Carbon from India. With a strong presence in various applications of the activated carbon industry, we have consistently expanded our production and operational capacities to cater to global markets. Our commitment to delivering high-quality Activated Carbon has enabled us to build a strong international footprint across multiple continents.

## CONTACT US

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# LET'S EXPLORE THE GLOBE WITH US



## OUR MISSION

At Vortex Enterprise, we specialize in delivering premium, tailor-made Activated Carbon solutions designed to meet the unique needs of a wide range of industries. Our high-quality products are carefully crafted to ensure superior performance in various applications, including water and air purification, gas processing, gold recovery, food and beverage processing, and more. With a strong commitment to excellence, we provide innovative and efficient solutions that enhance operational efficiency and sustainability for our clients.



## OUR VISION

### INNOVATING SUSTAINABLE CARBON SOLUTIONS.



Our vision is to become a globally leading developer and supplier of activated carbon solutions, renowned for exceeding customer expectations through continuous innovation and an unwavering commitment to sustainability. We aspire to set the industry standard by delivering cutting-edge, eco-friendly products that drive positive environmental impact while addressing the evolving needs of diverse industries worldwide. Through our dedication to excellence and forward-thinking practices, we aim to build a future where Vortex Enterprise is synonymous with quality, innovation, and sustainable progress on a global scale.

**"EMPOWERING INDUSTRIES WITH  
INNOVATIVE, SUSTAINABLE CARBON  
SOLUTIONS FOR A CLEANER TOMORROW."**

# OUR PRODUCTS

Different types of activated carbon are suited for various specialized applications.

- Coconut Shell based Activated Carbon
- Wood based Activated Carbon
- Coal based Activated Carbon
- Pelleted Activated Carbon

## COCNUT SHELL BASED ACTIVATED CARBON

Coconut shell carbons are highly valued for water treatment and air purification due to their extensive internal surface area, defined by micropores, combined with their exceptional hardness and low dust content. These properties make them ideal for use in point-of-use water filters, respirators, and other critical applications in air and water filtration.

- Very high surface area characterized by a large proportion of micropores
- High hardness with low dust generation
- Excellent purity, with most products exhibiting no more than 3-5% ash content.
- Renewable and green raw material.

## SPECIFICATION DETAILS OF COCONUT SHELL ACTIVATED CARBON FOR WATER TREATMENT

| APPEARANCE        | BLACK GRANULES   |           |           |           |           |           |           |
|-------------------|--|-----------|-----------|-----------|-----------|-----------|-----------|
| PARTICLE SIZE     | 6 X 16, 8 X 12 , 8 X16, 8 X 20, 8 X 30 , 12 X 30, 12 X 40 16 X 32, 16 X 40,18 X 40, 35 X 70, 80 X 325, |           |           |           |           |           |           |
| IODINE ADSORPTION | 600 IV   | 700 IV    | 800 IV    | 900 IV    | 1000 IV   | 1100 IV   | 1200 IV   |
| PH                | 9 TO 11  | 9 TO 11   | 9 TO 11   | 9 TO 11   | 9 TO 11   | 9 TO 11   | 9 TO 11   |
| MOISTURE          | 5%   | 5%        | 5%        | 5%        | 5%        | 5%        | 5%        |
| APPARENT DENSITY  | 0.55 ±0.05   | 0.53±0.05 | 0.52±0.05 | 0.51±0.05 | 0.48±0.05 | 0.46±0.05 | 0.45±0.05 |
| BALL PAN HARDNESS | 98   | 98        | 98        | 98        | 98        | 98        | 98        |
| ASH CONTENT       | 5% MAX   | 5% MAX    | 5% MAX    | 5% MAX    | 5% MAX    | 5% MAX    | 5% MAX    |

## SPECIFICATION DETAILS OF COCONUT SHELL ACTIVATED CARBON FOR AIR TREATMENT/ODOUR CONTROL

| APPEARANCE        | BLACK GRANULES |           |
|-------------------|----------------|-----------|
| PARTICLE SIZE     | 4 X 8, 6 X 16  |           |
| CTC               | 60             | 60        |
| IODINE ADSORPTION | 1100 IV        | 1150 IV   |
| PH                | 9 TO 11        | 9 TO 11   |
| MOISTURE          | 5%             | 5%        |
| APPARENT DENSITY  | 0.45±0.05      | 0.45±0.05 |
| BALL PAN HARDNESS | 98             | 98        |
| ASH CONTENT       | 5% MAX         | 5% MAX    |



## SPECIFICATION DETAILS OF COCONUT SHELL ACTIVATED CARBON FOR GOLD RECOVERY

| APPEARANCE        | BLACK GRANULES GOLD CARBON |           |           |
|-------------------|----------------------------|-----------|-----------|
| PARTICLE SIZE     | 6 X 12,8 X 16/GOLD CARBON  |           |           |
| CTC               | 50                         | 55        | 60        |
| IODINE ADSORPTION | 1000 IV                    | 1050 IV   | 1100 IV   |
| PH                | 9 TO 11                    | 9 TO 11   | 9 TO 11   |
| MOISTURE          | 5%                         | 5%        | 5%        |
| APPARENT DENSITY  | 0.48±0.05                  | 0.47±0.05 | 0.46±0.05 |
| BALL PAN HARDNESS | 98                         | 98        | 98        |
| PLATELETS CONTENT | 7% MAX                     | 7% MAX    | 7% MAX    |
| ATTRITION LOSS    | 2% MAX                     | 2% MAX    | 2% MAX    |
| ASH CONTENT       | 5% MAX                     | 5% MAX    | 5% MAX    |



## COAL BASED ACTIVATED CARBON

Coal-based Activated Carbon can be produced from various raw materials, such as bituminous coal, anthracite, and lignite. Among these, bituminous coal is considered the best option due to its relatively higher microporosity and better impact resistance.

While Coal Activated Carbon has lower adsorption properties compared to Coconut Shell or Wood-based Activated Carbon, research has shown that it performs better at higher concentrations, offering greater capacity in such conditions.



| Properties ASTM  | Unit  | Value            |
|------------------|-------|------------------|
| Iodine Value     | mg/gm | 700 - 1000       |
| Apparent Density | Kg/m3 | 490 - 550        |
| Ash Content      | %     | 5 - 8            |
| Hardness %       | %     | 99               |
| pH               |       | 8 - 10           |
| Sieve size       |       | 6×12, 8×16, 8×20 |

## WOOD BASED ACTIVATED CARBON

Wood-based Activated Carbon is known for having one of the highest purity levels among adsorbent carbons, as it is produced from carefully selected wood through controlled carbonization and activation processes. This quality makes it an ideal adsorbent for use in water filtration systems, as it doesn't release harmful substances into drinking water, and it is also widely used in the food and beverage industry for ingredient purification and deodorization.

Wood Activated Carbon is recognized for its large surface area and pore volume, which boosts filtration efficiency by ensuring high water purity while reducing filtration time. Its large pore structure, along with its non-toxic nature, makes it a preferred adsorbent in filtration systems used in pharmaceutical and synthetic chemical industries.

| Properties ASTM  | Unit  | Value       |
|------------------|-------|-------------|
| Iodine Value     | mg/gm | 700 - 1000  |
| Apparent Density | Kg/m3 | 280 – 320   |
| Ash Content      | %     | 10 max      |
| Hardness %       | %     | 80 – 85 min |
| Moisture %       | %     | 10 max      |
| pH               |       | 9 - 11      |
| Sieve size       |       | 4×8, 8×16   |



## PELLETED ACTIVATED CARBON

Pelletized Activated Carbon is extensively utilized for purifying exhaust gases, chemical raw material gases, synthetic gases, pharmaceutical industry gases, carbon dioxide used in beverages, and for purifying gases like hydrogen, nitrogen, hydrogen chloride, and ethane. It is also effective in separating and purifying exhaust gases from atomic facilities. There are specialized impregnated activated carbons, such as KOH-activated carbon, NaOH-activated carbon, Sulphur-impregnated activated carbon, and acid-washed activated carbon, designed for removing specific harmful gases, including those used for desulfurization and denitrification.

Applications of pelletized activated carbon also include:

- Gas filtration
- Purification of H<sub>2</sub>S and other waste gases
- Sewage treatment
- Drinking water purification
- Odor control in wastewater
- Automotive carbon canisters
- Pressure swing adsorption for nitrogen production
- Smoking room filtration
- Painting workshop air purification
- VR units in petroleum refineries
- Use as a desiccant material
- Respirators for industrial protection
- Ammonia gas removal
- Gasoline vapor recovery at refineries, gas stations, and oil tanks
- Air conditioning systems
- MTBE (methyl tert-butyl ether) purification

| Properties<br>ASTM         | Pellet Activated Carbon |              |              |              |        |
|----------------------------|-------------------------|--------------|--------------|--------------|--------|
| Iodine Value<br>(mg/gm)    | ≥700                    | ≥800         | ≥900         | ≥1000        | ≥1100  |
| Apparent Density<br>(gm/l) | 600 -<br>650            | 550 -<br>600 | 500 -<br>550 | 450 -<br>520 | 430    |
| CTC                        | ≥30                     | ≥40          | ≥50          | ≥60          | ≥90    |
| Hardness (%)               | 98 min                  | 98 min       | 98 min       | 98 min       | 98 min |
| Moisture (%)               | 5 min                   | 5 min        | 5 min        | 5 min        | 5 min  |
| Sieve size                 | 4mm, 6mm                |              |              |              |        |



## COMPARATIVE STUDY OF ACTIVATED CARBONS

In water treatment applications, all three varieties of activated carbon—Coconut Shell Activated Carbon, Coal Activated Carbon, and Wood Activated Carbon—are used depending on the nature of treating potable water and wastewater. Hence, there is a need for a comparative study of various types of carbon based on their specifications.

| Sr. No. | CHARACTER         | COCNUT SHELL ACTIVATED CARBON | COAL ACTIVATED CARBON            | WOOD ACTIVATED CARBON       |
|---------|-------------------|-------------------------------|----------------------------------|-----------------------------|
| 1       | Density (gm/cc)   | 0.48 to 0.58 (Very High)      | 0.38 to 0.48 (High)              | 0.25 to 0.30 (Low)          |
| 2       | Hardness (%)      | 98% min (Very High)           | 90 – 95% (High)                  | 85% min (Low)               |
| 3       | Ash (%)           | 3 % max (Very Low)            | 10 % max (High)                  | 15 % max (Very High)        |
| 4       | Porosity          | More Micropores               | More Mesopores & Less Micropores | More Mesopores & Macropores |
| 5       | Operation Cost    | Low                           | Normal                           | High                        |
| 6       | Best Suitable for | Dechlorination                | Odour removal                    | Decolorization              |
| 7       | Applications      | Water Treatment               | Effluent Treatment               | ETP                         |



## Choosing the Best Solution

Porosity plays a vital role in choosing the right type of carbon. While Coconut Activated Carbon contains many micropores, Coal Activated Carbon contains mainly mesopores as well as micropores, whereas Wood Activated Carbon contains mesopores and macropores only. If the molecular size of the impurities is less than 100 angstroms, Coconut Carbon can be preferred. Likewise, if the molecular size of the impurities is between 100 and 1000 angstroms, Coal Carbon can be used. And if the molecular size of the impurities is greater than 1000 angstroms, Wood Carbon can be considered.

### In General

Wood Activated Carbon is most suitable for decolorization in powder form.

Coal Activated Carbon is suitable for odor removal.

Coconut Activated Carbon is suitable for dechlorination.

Coconut Shell Activated Carbon is ideal for drinking water and RO applications due to its high density, durability, and low ash content. Although pricier than Coal and Wood types, it reduces operational costs with minimal material loss during backwashing and is favored for its renewable nature.

Coal Activated Carbon is commonly used in drinking water projects, as well as in industrial applications like effluent and wastewater treatment. It is particularly effective for odor removal and is a cost-efficient option for various treatment processes.

Wood Activated Carbon is mainly used in powder applications where decolorization plays a vital role.

Choosing the right form of activated carbon products mainly depends upon your applications and cost of operation. Professional guidance is the best way to ensure the right product for a particular application.