ABReX Activated Carbons

Energizing Chemistries'

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The key to making water potable

Activated carbon is a porous material consisting mainly of elementary carbon modified to have a large internal surface area: typically 500 up to 1500 m2/g. Activated carbon is available in two forms: • Powdered Activated Carbon (PAC): particle size 1-150 µm • Granular Activated Carbon (GAC): particle size 0.5-4 mm

How does activated carbon work? Due to its large surface area and specific surface chemistry, activated carbon can adsorb large quantities of organic pollutants from water. The compounds are adsorbed into the internal pores. A general rule of thumb to determine the adsorbability is the more hydrophobic (or less soluble in water), the more adsorbable the compound.

Powder Activated Carbon

Product purified One or more than One

Carbon dosing unit (slurry premix tank, filter)

No effect in Feed Quality

Granular/Extruded Carbons

Process type Batch Continuous

One or several columns equipment –Fixed or Pulse

Some effects

ABReX Activated Carbons

Granular Activated Carbon from Coal, Coconut

Powder Activated Carbon from Pine Wood

Extruded Activated Carbon from Coal

Carbon Blocks from Coconut Shell

Briquitted Low Density Coal Carbons

Applications

Coal Carbons for Waste Water Treatment

Coconut Carbons for Potable Water Treatment

Extruded Coal Carbons for CO2 Purification

PAC for Bulk & Intermediate Ingredients

PAC/GAC for Food & Beverage , Fine Chemicals

GAC/Extrudate /Impregnated for Gas & Air

ABReX Carbon Production Route

Steam Activated Carbons GAC/PAC

Phosphoric Acid Activated Carbons PAC Mainly

Washed High Purity Carbons PAC/GAC

Low Silica Leaching Carbons GAC

Production Standards

ASTM / Standard & Custom Sieves

Virgin Raw Materials

High Purity Grades

Food Grade Carbons , UL Certified for Potable Water

Technical Support

Start up support / Carbon Selection/Column Design/Operational Guidelines/ Dose Optimization/Onsite & Remote Trouble Shooting

Activated Charcoal / Carbon

Production:

Activated charcoal/carbon is usually derived from charcoal or coal. There are two basic activation processes.

1. Charcoal is once again heated to very high temperatures (usually in the temperature range of 600-1200 °C) in the presence of oxidizing gases such a CO_2, steam, or air.
2. Charcoal is impregnated with chemicals such as acids like phosphoric acid or bases like potassium hydroxide, or salts like zinc chloride, and then exposed to temperatures in the range of 450-900 °C. Both the heat activation and the chemical activation are believed to proceed simultaneously. Chemical activation is preferred over heat activation owing to the lower temperatures and shorter time needed for activating material. But there is the potential for contamination from trace residues such as zinc in the end product.

Technical Characteristic:

The surface area for activated carbons range from 500 m^2 to1500 m^2 or more per gram. If one could unfold all the microscopic surfaces in one teaspoon of activated carbon it could add up to the size of a football field. Under an electron microscope (50,000 magnification), the high surface-area structures of activated carbon are more obvious. Individual particles are intensely convoluted with micro porosity in the range of a few nanometers. These microscopic pores are divinely engineered to offer binding sites for thousands of different chemicals.Physically, activated carbon binds materials by electrostatic forces Activated carbon does adsorb iodine very well and in fact the iodine number (mg/g) is used as an indication of total surface area. Since activated carbon does not adsorb inorganic compounds well activated carbons are sometimes “sensitized” with various chemicals to improve the adsorptive capacity for some inorganic compounds such as hydrogen sulfide, ammonia, formaldehyde, radioisotopes, and mercury. This function is Chemisorption. Activated carbon is used to purify a process flow – not to add impurities – so a carbon of the purity required has to be selected