Activated Carbon Efficiency

Particle Air Filters (including HEPA) do not filter gases. A Particle Air Filter may capture particles that are out-gassing odors. ALL odors are gasses. How do we filter most gases? With adsorption or chemisorption filters

**Adsorption**

Activated Carbon is the most common media of adsorption filters

**Why?** Because activated carbon has a tremendous surface area and can adsorb most organic chemicals. Van der Waal’s Forces include the attraction and capture of gas or liquid molecules to the surface of a solid.

**Surface area is critical.**

1 gram of activated carbon has over 5382 ft² of surface area. Just 3 lbs has over 160 acres of surface area.

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**Activated Carbon Efficiency**

**Excellent Adsorption - 25-50% of weight**

**Types of Odors:**

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**Some Specific Chemicals & Compounds:**

- B - Benzene, Bromine, Butanone, Butyl Acetate, Butyl Alcohol, Butyl Cellosolve, Butyl Chloride, Butyl Ether, Butyric Acid.
- C - Camphor, Caprylic Acid, Carbolic Acid, Carbon Disulfide, Carbon Tetrachloride, Cellosolve, Cellosolve Acetate, Chlorobenzene, Chlorobuadiene, Chloroform, Chloronitropropane, Chloropierin, Creosote, Cresol, Crotonaldehyde, Cyclohexane, Cyclohexanol, Cyclohexanone, Cyclohexene.
- D - Decane, Dibromoethane, Dichlorobenzene, Dichlorodifluoromethane, Dichloroethane, Dichlorodifluoroethane, Dichloromethane, Dichloroethylene, Diethyl Ether, Dichlorotetrafluoroethane, Diethyl Ketone, Dipropyl Ketone.
- F - Heptane, Heptylene.
- G - Indole, Iodoform, Isophorone, Isopropyl Acetate, Isopropyl Alcohol, Isopropyl Ether.
- H - Heptane, Heptylene.
- I - Indole, Iodoform, Isophorone, Isopropyl Acetate, Isopropyl Alcohol, Isopropyl Ether.
- K - Kerosene.
- L - Lactic Acid.
- M - Menthol, Mercaptans, Mesityl Oxide, Methyl Acrylate, Methyl Butyl Ketone, Methyl Cellosolve, Methyl Cellosolve Acetate, Methyl

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### Effectuve Odor and Gas Removal

**Carbon - Potassium Permanganate Filters**

**Activated Carbon Efficiency**

<table>
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<th>Specific Chemicals &amp; Compounds:</th>
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**Type of Odors:** Animals, Anesthetics, Bleaching Solutions, Coal Smoke, Combustion, Corrosive Gases, Film Processing, Inorganic Chemicals, Mold, Solvents, Volatile Chemicals.

Activated Carbon is not effective on glycols, strong acids and bases, metals and some inorganics, such as lithium, sodium, iron, lead, arsenic, fluorine, and boric acid.

Chemisorption is a kind of Adsorption which involves a chemical reaction between the surface and the adsorbate. **Chemically bonded Adsorption.**

Potassium Permanganate is an inorganic chemical compound that is a strong oxidizing agent that doesn't have a toxic end product.

**Excellent Chemisorption**

Acetic Acid, Aldehydes, Ethylene, Formaldehyde, Gluteraldehyde, Hydrogen Cyanide, Hydrogen Sulfide, Mercaptans, Nitric Oxide, Nitrogen Dioxide, Sulfur Dioxide, Sulfur Trioxide.

The combination of Activated Carbon and Potassium Permanganate provides the widest range of odor removal.

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**Good Adsorption:** 10-25% of weight

**Chemisorption** is a kind of Adsorption which involves a chemical reaction between the surface and the adsorbate. **Chemically bonded Adsorption.**

Potassium Permanganate is an inorganic chemical compound that is a strong oxidizing agent that doesn't have a toxic end product.