

## What odors and/or substances can be adsorbed by Activated Carbon?

Activated carbon found in the filters for HAKKO Fume Extraction Systems and Smoke Absorbers can adsorb a number of substances.

The following capacity index lists substances by both chemical and common name. It is a general list of the most common compounds found in the workplace. The efficiency and capacity of activated carbon that is found in the HAKKO Fume Extraction Systems and Smoke Absorbers to adsorb these substances varies with the concentration found in the airflow that passes through the filtration media with the activated carbon. Other factors that can affect the adsorption of these substances by activated carbon are relative humidity and temperature.

The Capacity Index (CI) numbers are for reference only and may vary under local conditions. Each substance is rated from 1 to 4 as follows:

4. High Adsorption Capacity – Substances are adsorbed very efficiently. Typically, one pound of activated carbon adsorbs approximately 20% to 50% of its own weight (average of approximately 33-1/3%). This category includes most substances that cause odor.
  
3. Satisfactory Adsorption Capacity – Substances are adsorbed well, but not as efficient as substances with a Capacity Index of 4. One pound of activated carbon adsorbs about 10% to 25% of its weight (average of approximately 16.7%).
  
2. Moderate Adsorption Capacity – Substances are not highly adsorbed but might be adsorbed sufficiently to give acceptable results under the particular operating conditions and concentration levels. These will require individual validation through local evaluation.
  
1. Poor Adsorption Capacity – Substances that are not adsorbed by activated carbon are included in this category.

NOTE: Substances that are identified with an asterisk (\*) are not adequately adsorbed by standard activated carbon however specially treated carbon can increase adsorption efficiency. Further evaluation and possible custom filters may be required.

Acetaldehyde*	2	Decane	4	Iodoform	4	Pentylene*	3
Acetic Acid	4	Decaying Substances	4	Irritants	4	Penlyne*	3

What odors and/or substances can be adsorbed by Activated Carbon?

Acetic Anhydride	4	Deodorants	4	Isophorone	4	Perchloroethylene	4
Acetone	3	Detergents	4	Isoprene*	3	Perfumes, Cosmetics	4
Acetylene*	1	Dibromomethane 4	4	Isopropyl Acetate	4	Perspirations	4
Acrolain*	3	Dichlorobenzene Dichlorodifluoromethane	4	Isopropyl Alcohol	4	Persistent Odors	4
Acrylic Acid	4	Dichloroethane	4	Isopropyl Ether	4	Pet Odors	4
Acrylonitrile	4	Dichloroethylene	4	Kerosene	4	Phenol	4
Adhesives	4	Dichloroethyl Ether	4	Kitchen Odors	4	Phoagene	3
Air-Wick	4	Dichloromonofluoromethane	3	Lactic Acid	4	Pitch	4
Alcoholic Beverages	4	Dichloronitroethane	4	Lingering Odors	4	Plastics	4
Amines*	2	Dichloropropane	4	Liquid Fuels	4	Pollen	3
Ammonia*	2	Dichlorotetrafluoroethane	4	Liquid Odors	4	Popcorn & Candy	4
Amyl Acetate	4	Diesel Fumes & Odors	4	Lubricating Oils and Greases	4	Poultry Odors	4

What odors and/or substances can be adsorbed by Activated Carbon?

Amyl Alcohol	4	Diethylamine*	3	Lysol	4	Propane	2
Amyl Ether	4	Diethyl Ketone	4	Masking Agents	4	Propionaldehyde*	3
Animal Odors	3	Dimethylaniline	4	Medicinal Odors	4	Propionic Acid	4
Anesthetics	3	Dimethylsulfate	4	Melons	4	Propyl Acetate	4
Aniline	4	Dioxane	4	Menthol	4	Propyl Alcohol	4
Antiseptics	4	Dipropyl Ketone	4	Mercaptans	4	Propyl Chloride	4
Asphalt Fumes	4	Disinfectants	4	Mesityl Oxide	4	Propyl Ether	4
Automobile Exhaust	3	Embalming Odors	4	Methane	1	Propyl Mercaptan	4
Bathroom Odors	4	Ethane	1	Methyl Acetate	3	Propylene*	2
Bleaching Solutions*	3	Ether	3	Methyl Acrylate	4	Propyne*	2
Body Odors	4	Ethyl Acetate	4	Methyl Alcohol	3	Purifying Substances	3
Borane	3	Ethyl	4	Methyl	3	Putrescine	4

What odors and/or substances can be adsorbed by Activated Carbon?

		Acrylic		Bromide			
Bromine	4	Ethyl Alcohol	4	Methyl Buty Ketone	4	Pyridine	4
Burned Flesh	4	Ethyl Amine*	3	Methyl Cellosolve	4	Radiation Products	2
Burned Food	4	Ethyl Benzene	4	Methyl Cellosolve Acetate	4	Rancid Oils	4
Burning Fat	4	Ethyl Bromide	4	Methyl Chloride	3	Resins	4
Butadiene	3	Ethyl Chloride	3	Methyl Chloroform	3	Reodorants	4
Butane	2	Ethyl Ether	3	Methyl Ether	3	Ripening Fruits	4
Butonone	4	Ethyl Formate	3	Methyl Ethyl Ketone	4	Rubber	4
Butyl Acetate	4	Ethyl Mercaptan	3	Methyl Formate	3	Sauerkraut	4
Butyl Alcohol	4	Ethyl Silicate	4	Methyl Isobutyl Ketone	4	Sewer Odors	4
Butyl Cellosolve	4	Ethylene*	1	Methyl Mercaptan	4	Skatole	4

What odors and/or substances can be adsorbed by Activated Carbon?

Butyl Chloride	4	Ethylene Chlorhydrin	4	Methylcyclohexane	4	Slaughtering Odors	3
Butyl Ether	4	Ethylene Dichloride	4	Methylcyclohexanol	4	Smog	4
Butylene*	2	Ethylene Oxide	3	Methylcyclohexone	4	Soaps	4
Butyne*	2	Essential Oils	4	Methylene Chloride	4	Smoke	4
Butyraldehyde*	3	Eucalyptole	4	Mildew	3	Solvents	3
Butyric Acid	4	Exhaust Fumes	3	Mixed Odors	4	Sour Milks	4
Camphor	4	Fertilizer	4	Mold	3	Spilled Beverages	4
Cancer Odor	4	Film Processing Odor	3	Monochlorobenzene	4	Spoiled Foods	4
Caprylic Acid	4	Fish Odors	4	Monofluorotrichloromethane	4	Stale Odors	4
Carbolic Acid	4	Floral Scents	4	Moth Balls	4	Stoddard Solvent	4
Carbon Disulfide	4	Fluorotrichloromethane	3	Naptha (Coal Tar)	4	Stuffiness	4
Carbon	1	Food	4	Naptha	4	Styrene	4

What odors and/or substances can be adsorbed by Activated Carbon?

Dioxide*		Aromas		(Petroleum)		Monomer	
Carbon Monoxide	1	Formaldehyde*	2	Napthalene	4	Sulfur Dioxide*	2
Carbon Tetrachloride	4	Formic Acid	3	Nicotine	4	Sulfur Trioxide*	3
Cellosolve	4	Fuel Gases	2	Nitric Acid*	3	Sulfuric Acid	4
Cellosolve Acetate	4	Fumes	3	Nitro Benzenes	4	Tar	4
Charred Materials	4	Gangrene	4	Nitroethane	4	Tarnishing Gases*	3
Cheese	4	Garlic	4	Nitrogen Dioxide*	2	Tetrachloroethane	4
Chlorine	3	Gasoline	4	Nitroglycerine	4	Theatrical Makeup Odors	4
Chlorobenzene	4	Heptane	4	Nitromethane	4	Tobacco Smoke Odors	4
Chlorobutadiene	4	Heptylene	4	Nitropropane	4	Toilet Odors	4
Chloroform	4	Hexane	3	Nonane	4	Toluene	4
Chloronitropropane	4	Hexylene*	3	Octalene	4	Toludine	4

What odors and/or substances can be adsorbed by Activated Carbon?

Chloropicrine	4	Hexyne*	3	Octane	4	Trichlorethylene	4
Cigarette Smoke Odors	4	Hospital Odors	4	Odorants	4	Trichloroethane	4
Citrus & Other Fruits	4	Household Odors	4	Onions	4	Turpentine	4
Cleaning Compounds	4	Hydrogen	1	Organic Chemicals	4	Urea	4
Combustion Odors	3	Hydrogen Bromide*	2	Ozone	4	Uric Acid	4
Cooking Odors	4	Hydrogen Chloride*	2	Packing House Odors	4	Valeric Acid	4
Corrosive Gases	3	Hydrogen Cyanide*	2	Paint & Redecorating Odors	4	Valeraldehyde	4
Creosole	4	Hydrogen Fluoride*	2	Palmitic Acid	4	Varnish Fumes	4
Cresol	4	Hydrogen Iodide*	3	Paper Deteriorations	4	Vinegar	4
Crotonaldehyde	4	Hydrogen Selenide*	2	Paradichlorobenzene	4	Vinyl Chloride	3
Cyclohexane	4	Hydrogen Sulfine*	3	Paste & Glue	4	Waste Products	3

## What odors and/or substances can be adsorbed by Activated Carbon?

Cyclohexanol	4	Incense	4	Pentane	3	Wood Alcohol	3
Cyclohexanone	4	Indole	4	Pentanone	4	Xylene	4
Cholohexene	4	Iodine	4				

### Disclaimer:

The data provided in the Activated Carbon Capacity Index lists the relative effectiveness of activated carbon on the various substances listed. It does not imply nor guarantee that the construction materials for HAKKO products and filters are impervious to all the substances shown.

Life expectancy of any purification system is dependent on the concentration of the contaminants ingested into the system. It is reasonable to expect that the filter service life will be shorter as the concentration of contaminants increases. In most real-world cases, the air stream that is ingested into a filtration system contains more than just one substance and is almost always composed of multiple other gases as well as solid particles such as soldering flux smoke.

HakkoUSA Knowledge Base

<http://kb.hakkousa.com/KnowledgebaseArticle10644.aspx>