



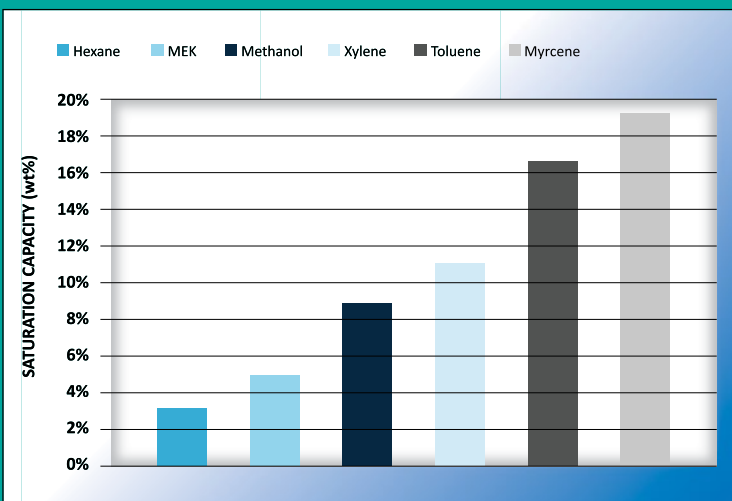
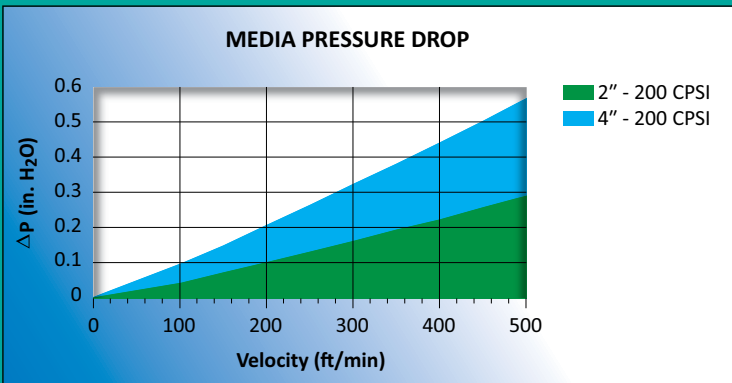
ACTIVATED CARBON MATRIX SYSTEMS

For Precise Control of Gas Phase Contaminants without the Energy Penalty

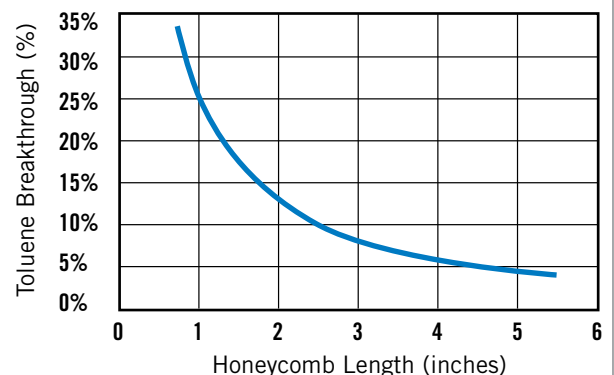
- The next generation of carbon filtration
- Can be engineered for the application to meet specific performance requirements for contaminants, removal rates, and pressure drop
- Provides protection from acid gases in mission critical applications
- Will not degrade in damp or high temperature conditions
- No dusting or need for post filters
- Half the size and a fraction of the weight of a pellet based system
- Up to a 60% lower pressure drop than pellet systems, reducing blower horsepower by up to 50%
- Properly rotated ACM systems provide virtually 100% utilization of the carbon versus pellets that typically break through after about 66%

Air Velocity		Dwell Time (seconds)	Removal (%)
fpm	"w.g.		
78	0.040	0.090	99.9
99	0.050	0.070	99.5
113	0.055	0.062	99.0
207	0.110	0.034	90.0
276	0.160	0.025	80.0

The chart above shows removal of Xylene which is has similar representative characteristics of vehicle exhaust emissions and common VOCs.



Performance at 175 ft/min and 500 ppb toluene



The graph above shows VOC removal using 500 ppb toluene at 175 ft/min. Toluene is a good indicator of VOCs with a vapor pressure <26 mmHg.

Specifications for Dynamic Activated Carbon Matrix (ACM)

- 1.0 General:** Activated carbon filtration systems for the removal of harmful odors and chemical gases.
- 1.1 Pre-filters:** The pre-filters shall be 25-30 % ASHRAE-rated pleated disposable filters or Dynamic polarized-media air cleaners. They shall be sized as noted on the drawings.
- 1.2 Activated Carbon Matrix System:**
- 1.2.1 Performance:** Ceramic carbon material construction shall be moisture resistant and able to withstand humid conditions up to 99% RH. It shall be dust-free under normal operation. It shall have a minimum crush strength of 300 psi. It will have removal capacities (by weight) of 40% for Hydrogen Sulfide, 15% for Sulfur Dioxide, 13% for Xylene and 16% for Toluene.
- 1.2.2 Construction:** Carbon filtration media is housed in either a plastic or metallic frame & is available in nominal depths of two inches as standard. Modules are designed to fit in a side-access filter track or a Type 8 filter frame, and are available with or without a header.
- 1.2.3 Filter Media:** In composition, the material is composed of a carbon/ceramic mixture that is extruded to produce a variable number of channels (cells) through which air can pass and cured to provide strength.

Mesoporous Activated Carbon Honeycombs		
Untreated	Acid Targeted	Caustic Targeted
VOCs Hydrocarbons Tobacco Odor General Odors	Hydrogen Sulfide Sulfur Dioxide Carbonyl Sulfide Mercaptans Sulfides Hydrocarbons VOCs Diesel Fumes Vehicle Exhaust	Ammonia Amines

Applications for Dynamic ACM

- Corrosion control in data centers, clean manufacturing and water treatment plants.
- Outdoor air contaminant and odor control in museums, airports, hospitals, labs and office buildings.
- Exhaust air odor control in agricultural growing operations.
- Can help implement the IAQ Procedure of ASHRAE Standard 62 to possibly reduce outdoor air.

