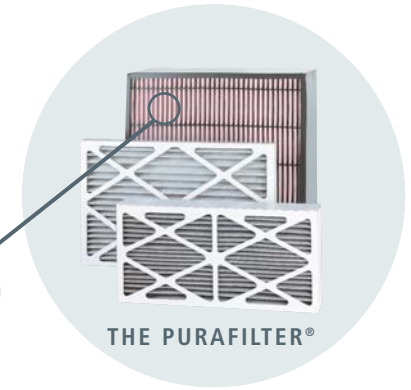
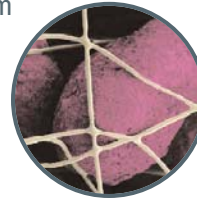


PRODUCT BULLETIN 4 THE PURAFILTER®



THE PURAFILTER® is a combination chemical and particulate filter designed to replace existing particulate filters in retrofit or rework applications. Purafil engineers are the first to successfully suspend sodium permanganate adsorbents in a bi-component fiber matrix.



PRODUCT BENEFITS

- Contains up to 10 times the media of activated carbon filters.
- Removes more gaseous chemicals and odors than activated carbon.
- Removes gaseous chemicals and solid particulates.
- Adhesive-free filter design.
- Minimized by-pass and high removal efficiency.
- Purafil SP Media will not desorb.
- Low pressure drop.
- Long filter life.
- Reduced maintenance.
- Improved IAQ.

PRODUCT DESCRIPTION

Chemical filtration systems utilizing sodium permanganate remove a broader range of contaminants than carbon-only filters and exhibit higher efficiencies. Because of the Purafil's broad-spectrum removal capabilities, it is the only chemical filter capable of meeting the stringent requirements of ASHRAE 62's Indoor Air Quality Procedure.

The bi-component fiber matrix, or filter, does not require the use of adhesives, so adsorbents are fully exposed for reaction with gaseous chemical contaminants and odors.

Purafil offers two grades of the Purafil: Purafil-Commercial Grade for light to moderate duty applications and Purafil-Heavy Duty for high contaminant load applications. All standard sizes are available.

Adsorbents are evenly distributed throughout the filter structure to assure the highest filtration efficiencies. The Purafil offers a higher media loading than other chemical filters, allowing for a longer service life and reduced maintenance.

PRODUCT APPLICATIONS

Commercial environments, including hotels, airports, office buildings, schools, casinos, restaurants, museums, and athletic stadiums.

SYSTEM ADVANTAGES

LONGER SERVICE LIFE: The Purafil offers a higher media loading capacity and up to ten times the removal capacity of other chemical filters.

SUPERIOR EFFICIENCY: The Purafil removes a broader range of odors and common indoor pollutants than activated carbon alone.

EASY LIFE TESTING: The Purafil can be tested to determine remaining service life.

Purafil's filter monitoring program assures ongoing compliance with ASHRAE 62's Indoor Air Quality Procedure.

PERMANENT ODOR REMOVAL: The Purafil will not desorb like traditional activated carbon filters and removes gases through an irreversible chemical reaction process.

STANDARD FEATURES

- Purafil SP (sodium permanganate) and Purakol® (activated carbon) media
- Bi-component fiber matrix filter
- Paperboard, Galvanized, or Aluminum frames
- Factory sealed filter to insure integrity
- Highest available removal efficiencies
- Particulate removal efficiency: Commercial-Grade MERV 8, Heavy-Duty: ≤ MERV 15.
- Airflow: up to 500 ft./min (2.54 m/sec)
- Temperature Rating: -4° F to 125° F (-20° C to 51° C)
- Filter weight: dependent upon filter
- All filter sizes available

OPTIONAL FEATURES

- Purafil media types
- Filter size
- Media loading
- Frame type
- Pleat count
- Particulate filter efficiencies



PURAFILTER®



MEDIA WEIGHTS *

2-INCH COMMERCIAL GRADE FILTERS:	
SIZE	LBS OF MEDIA
24 x 24"	1.63 lbs
20 x 24"	1.34 lbs
20 x 20"	1.08 lbs
16 x 25"	1.09 lbs
16 x 20"	0.89 lbs

4-INCH COMMERCIAL GRADE FILTERS:	
SIZE	LBS OF MEDIA
24 x 24"	2.66 lbs
12 x 24"	1.33 lbs

12-INCH COMMERCIAL GRADE FILTERS:	
SIZE	LBS OF MEDIA
24 x 24"	5.65 lbs
12 x 24"	2.81 lbs

12-INCH HEAVY-DUTY GRADE FILTERS:	
SIZE	LBS OF MEDIA
24 x 24"	12.60 lbs
12 x 24"	6.14 lbs

* Media weights with a 50:50 volume blend of Purakol and Purafil SP Media. Call factory for weight using other Purafil-brand patented media.

PRESSURE DROP *

	COMMERCIAL GRADE		HEAVY-DUTY GRADE	
Size	2-inch	4-inch	12-inch	12-inch
Filter type	MERV 8	MERV 8	MERV 15	No particulate overlay
Pressure drop/IWG*	0.51 iwg	0.43 iwg	0.47 iwg	0.30 iwg

* Pressure drop at 500 feet per minute.

PURAFILTER CASE STUDY: OZONE AND VOC EFFECTIVENESS



An office building located in the southeastern United States was going “green” in order to attract and hold tenants. Part of this effort included the use of enhanced air cleaning for both indoor and outdoor air. The primary contaminants of concern in the outdoor air were ozone and volatile organic compounds (VOCs). Historically, ozone had averaged 30-50 ppb (60-100 $\mu\text{g}/\text{m}^3$) with peaks up to 150 ppb (300 $\mu\text{g}/\text{m}^3$) and VOC levels ranged from 80-150 $\mu\text{g}/\text{m}^3$ with peaks as high as 210 $\mu\text{g}/\text{m}^3$ during the months of May – September (GA DNR 2009).

MERV 6 and MERV 11 particulate filters were already in use in building’s air handling equipment and there was no room for additional hardware to accommodate the use of media modules, so 4” (100 mm) combination particulate / chemical filters were recommended. These were accepted as replacements for the MERV 6 filters with conditions that a minimum 90-day filter life was achieved. If these filters proved effective, meaning $\geq 50\%$ removal for VOCs and $\geq 40\%$ removal for ozone, they would be used on a continuing basis from April to September and then replaced with the MERV 6 filters from October to March.

Upstream and downstream ozone and VOC concentrations were measured nearly daily from May to September of 2007 to gauge the effectiveness (efficiency) of these filters. At the end of 90 days the VOC efficiency had dropped to $\sim 45\%$, but the ozone removal was still above 95% (Figure 1). This convinced the owner that these combination filters were effective and their use would result in improved IAQ. It was felt that the very high effectiveness for these filters against ozone – even as the effectiveness for VOCs approached zero – meant that the potential for adverse respiratory health effects due to ozone would be significantly reduced or eliminated. Also, the formation of new chemical species due to reactions between VOCs and ozone, many of which would be considered highly irritating, would be similarly reduced or eliminated.

