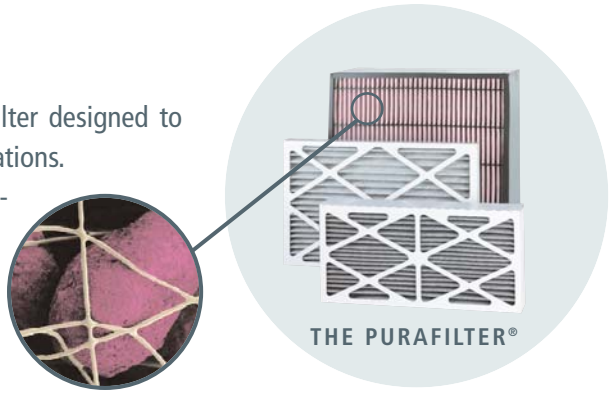
PRODUCT BULLETIN 4

THE PURAFILTER® FFU

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.



STANDARD FEATURES

- 500 g/m² of Purafil engineered media
- Users choice of Purafil PSAM, SPB or PSPB media types
- 17 pleats per linear foot
- Bi-component fiber matrix
- Anodized aluminum frame
- Approach velocity: 80-100 FPM (0.4-0.5 M/S)
- Temperature Rating: -4° F to 125° F (-20° C to 51° C)
- Constructed of cleanroom-compatible materials
- Packaged individually and sealed in a non-porous bag

OPTIONAL FEATURES

- Particulate overlay, 85% ASHRAE efficiency
- Stainless steel frame

PRODUCT DESCRIPTION

The Purafilter-FFU is a combination chemical and particulate filter designed to remove airborne molecular contaminants (AMC) in FFU applications upstream of HEPA/ULPA filters. Available in all standard sizes, the Purafilter-FFU uses our patented dry-chemical media to target specific groups of gases in specific areas of cleanrooms.

The Purafilter-FFU comes in three media types: SPB, PSAM, and PSPB. These media permanently remove AMC by transforming gases into harmless solids.

Chemical filtration systems utilizing sodium permanganate remove a broader range of contaminants than carbon-only filters and exhibit higher efficiencies.

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.

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

SYSTEM ADVANTAGES

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

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

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

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

PRODUCT BENEFITS

- **TARGETED GAS CONTROL:** By using different media types, the Purafilter-FFU removes a wide range of gases in multiple areas of your facility.
- **WILL NOT OFF-GAS:** Our media permanently removes AMC through an irreversible chemical reaction. Unlike activated carbon filters, the Purafilter-FFU turns gases into harmless solids and will not desorb.
- **VARIETY OF SIZES:** Since no two cleanrooms are exactly alike, we manufacture a variety of sizes of the Purafilter-FFU to suit your facility's needs.
- **TOTAL AIR PURIFICATION:** Not only does the Purafilter-FFU remove a broad spectrum of gases, it can also remove particulate contamination.

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PURAFILTER® FFU

SIZES AVAILABLE:

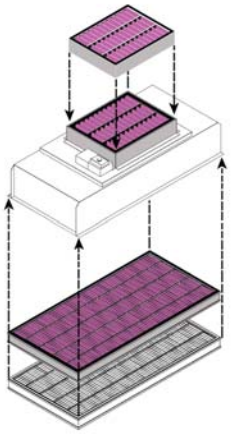
SIZE (inches)	(millimeters)
24 x 24 x 3	(610 x 610 x 76)
24 x 48 x 3	(610 x 1219 x 76)
20 x 20 x 3	(508 x 508 x 76)
24 x 24 x 6	(610 x 610 x 152)
24 x 48 x 6	(610 x 1219 x 152)
20 x 20 x 6	(508 x 508 x 152)

MEDIA WEIGHT BY FILTER SIZE:

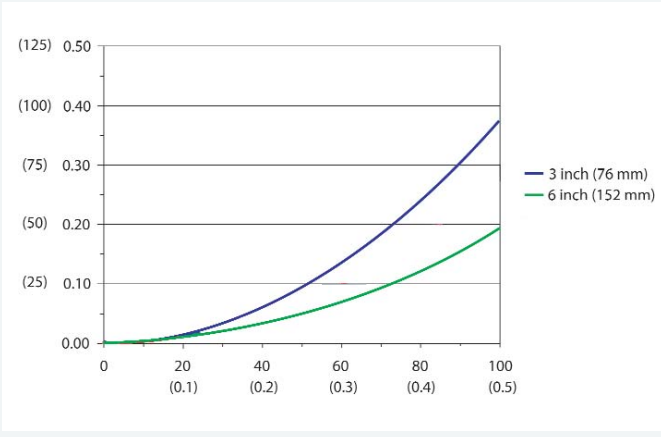
SIZE (inches)	WEIGHT (lbs/kgs)
24 x 24 x 3	2.97/1.35
24 x 48 x 3	6.19/2.81
20 x 20 x 3	2.05/0.93
24 x 24 x 6	6.54/2.97
24 x 48 x 6	13.63/6.18
20 x 20 x 6	4.53/2.05

PURAFILTER® FFU PLACEMENT

Purafilter-FFU may be installed in the fan filter unit inlet or above your HEPA/ULPA filter



PURAFILTER® FFU PRESSURE DROP WITH 85% INTEGRAL PARTICULATE FILTER



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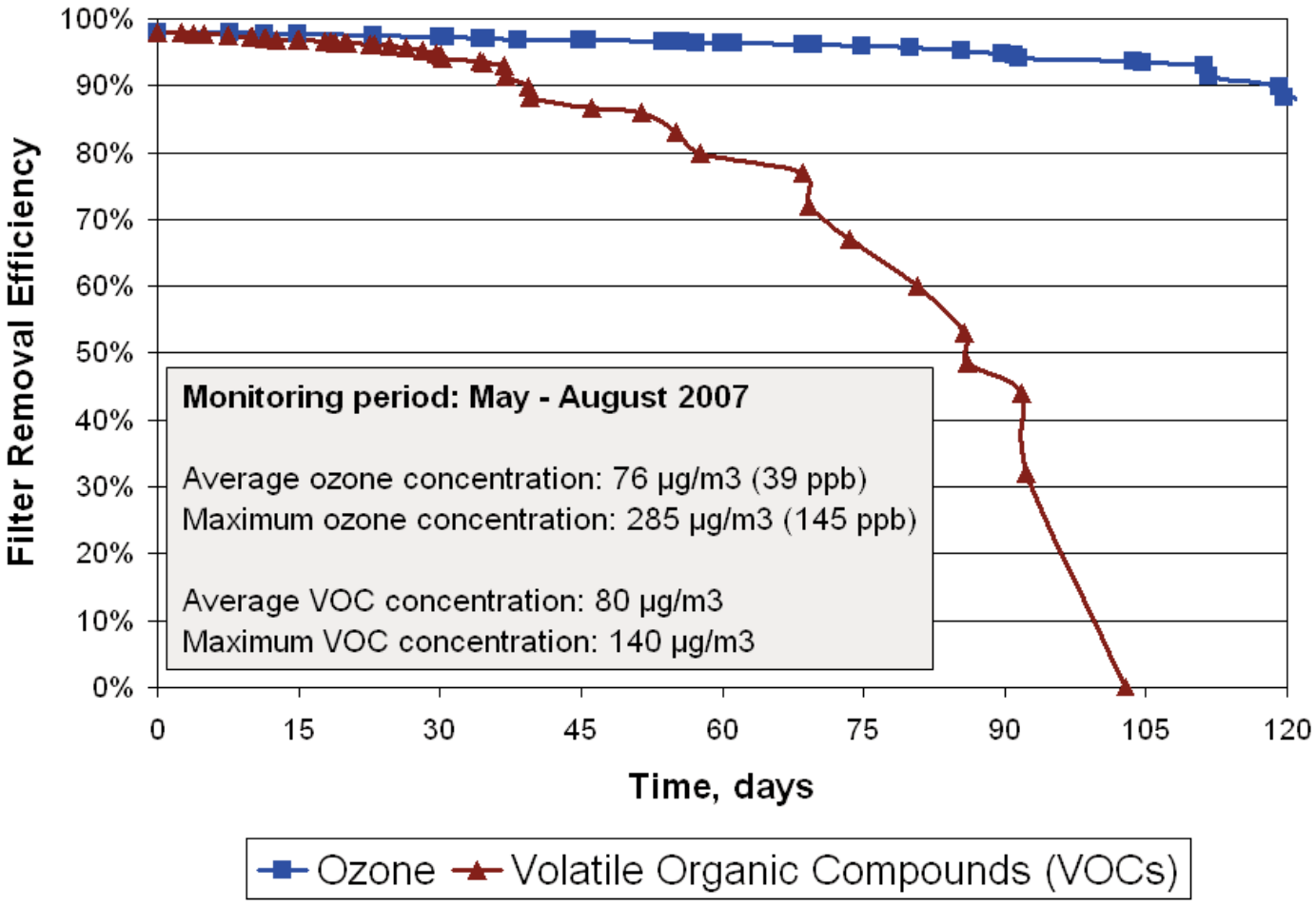
PURAFILTER CASE STUDY: OZONE AND VOC EFFECTIVENESS

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 µg/m^3) with peaks up to 150 ppb (300 µg/m^3) and VOC levels ranged from 80-150 µg/m^3 with peaks as high as 210 µg/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 ≥50% removal for VOCs and ≥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 ~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.



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