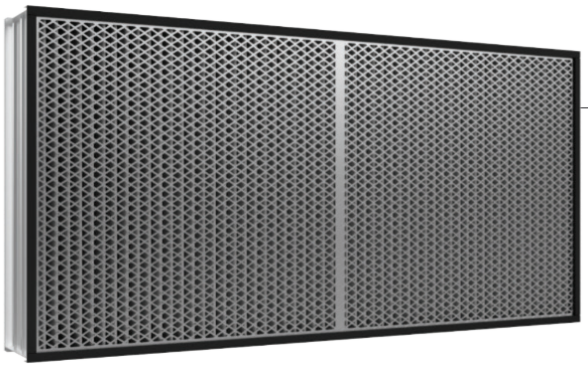


AstroSorb®-P

GAS-PHASE **PANEL** FILTER FOR FFUs

Excellent Performance Against Airborne Molecular Contamination (AMC)

The AstroSorb-P is a chemical filter designed to remove airborne molecular contamination (AMC) in fan-filter units (FFUs) upstream of HEPA/ULPA filters, in cleanroom ceilings, reticle and wafer stockers, minienvironments, and process equipment. Available in all standard sizes, the AstroSorb-P uses proprietary chemical filtration media to target specific AMC or multiple AMC in semiconductor and microelectronic manufacturing cleanrooms.

Product Overview

- Removal of airborne molecular contamination in cleanroom environments. Target gases: ammonia and amines, acids (HF, HCl, Cl2, NOx, SOx, H2S), VOCs (toluene, PGME, PGMEA, siloxanes), ozone, others.
- High adsorption capacity and high removal efficiency
- Single or multi-sorbent filters are available
- No particle generation and no out-gassing properties
- Easy to install; flat panel design for FFUs and minienvironments
- Low pressure drop, energy efficient

Typical Applications

- Wafer manufacturing
- Semiconductor device fabrication
- Microelectronics component assembly
- TFT/LCD manufacturing
- LTPS OLED manufacturing
- Hard disk drive manufacturing
- Biopharmaceuticals
- Genetic engineering

Additional Features

The AstroSorb-P is available as either a panel-type or media pack-type filter with the media pack type differing from the conventional panel-type filter in that it allows the frame and media to be separated for replacement, reducing unnecessary frame replacements and offering economic and environmental advantages.

Each filter is individually sealed in a polybag to prevent exposure to fugitive gaseous contaminants prior to installation at customer's site.

Construction

The AstroSorb-P chemical filter is constructed with an anodized aluminum frame as standard; stainless steel frames are also available. The filter includes an expanded metal support on the inlet and/or discharge side of filter. Poron or EPDM gasketing is standard, with other materials available as may be specified. Filter construction is with non-emitting materials to ensure that cleanroom environmental conditions are met.

This filter has a flat panel design for low to medium face velocities for applications in pressurized cleanroom ceilings, FFUs, and minienvironments. Aluminum extrusions are fitted with the ALNF media; filter depth depends on face velocity, allowable pressure drop, and available space. Standard and custom sizes are available.

Media

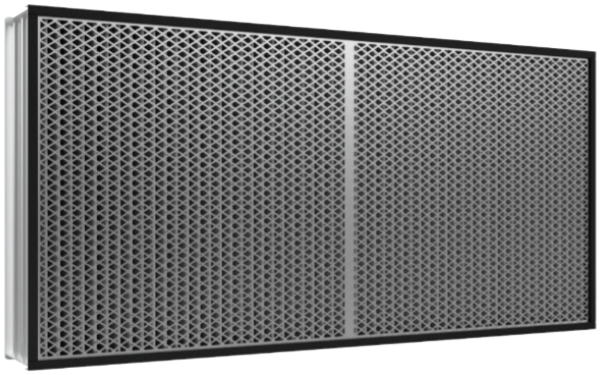
The AstroSorb-P filter is a chemical air filter composed of pleated adsorbent-loaded nonwoven fiber (ALNF) media to control AMC in critical semiconductor fabrication processes and manufacturing applications.

Depending on the target gases, the type and quantity of adsorbents in the media, as well as the pleat configuration, can be adjusted to provide an FFU filter that meets the customer's specific AMC control requirements.

The adsorbent materials used can be tailored to suit specific AMC control applications:

- MA for Acids; a corrosive gas that reacts chemically as an acid (an electron acceptor).
- MB for Bases; a corrosive gas that reacts chemically as a base (an electron donor).
- MC for Condensables; a contaminant whose boiling point is typically above room temperature and is capable of condensing on a (wafer) surface.
- MD for Dopants; a contaminant that modifies the electrical properties of (semiconductor) material.

AstroSorb®-P | GAS-PHASE **PANEL** FILTER FOR FAN FILTER UNITS

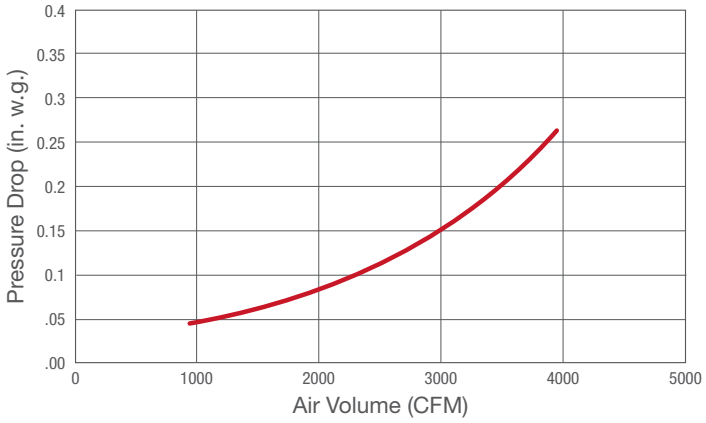


AstroSorb Panel-Type FFU Filter

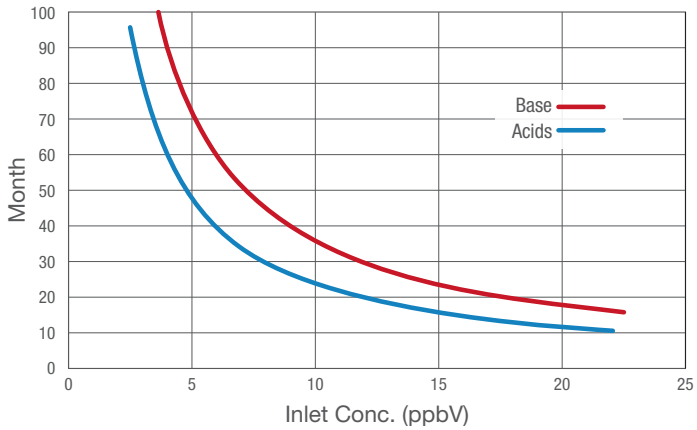
AstroSorb-P Mounted on an FFU

Performance Data

Pressure Drop



Lifespan Curve



General Specification

Panel Filter for FFUs	
Filter type	Panel Type
Application	Fan Filter Unit (FFU)
Adsorbent	Activated Carbon Impregnated Activated Carbon Ion Exchange Resin
Non-woven	Polyethylene Terephthlate (PET)
Binder	Hot Melt
Frame	Anodized Aluminum
Sealant	Urethane
Pleat Separator	Hot Melt
Gasket	Eco EPDM
Temperature (°F)	73 ± 5
Humidity (%)	50 ± 5
Standard Size (in)	49 x 28 x 6 (nom.)
Weight (lb)	48 ± 4
Typical air flow rate (CFM)	0 – 2,900
Target Gases	NH_3, Amines Acids (HF, HCl, Cl_2, NOx, SOx, H_2S) VOCs (Toluene, PGMEA, Siloxane) O_3

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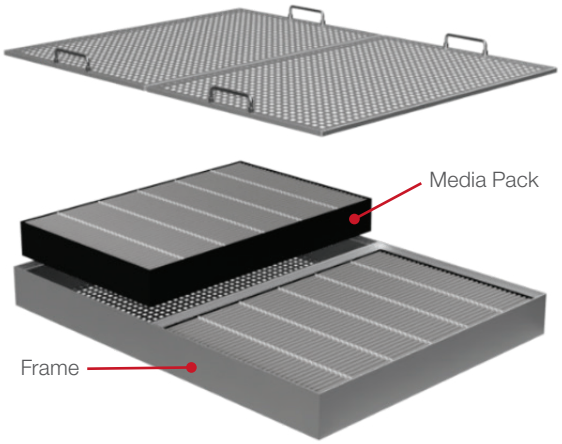
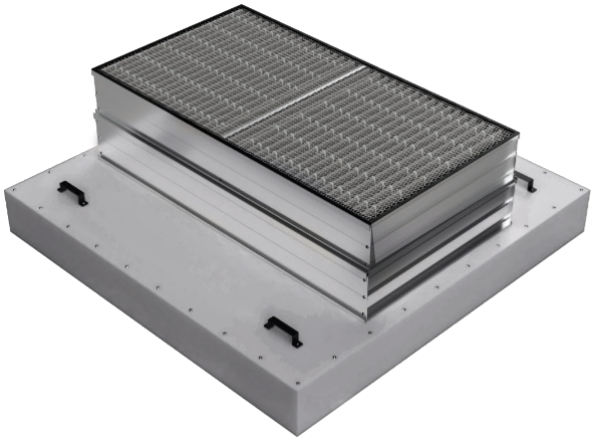
AstroSorb®-P | GAS-PHASE **PANEL** FILTER FOR FAN FILTER UNITS



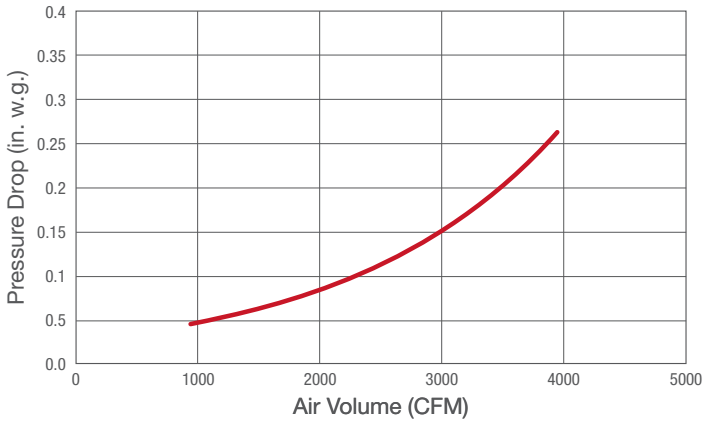
AstroSorb Media-Pack Type FFU Filter



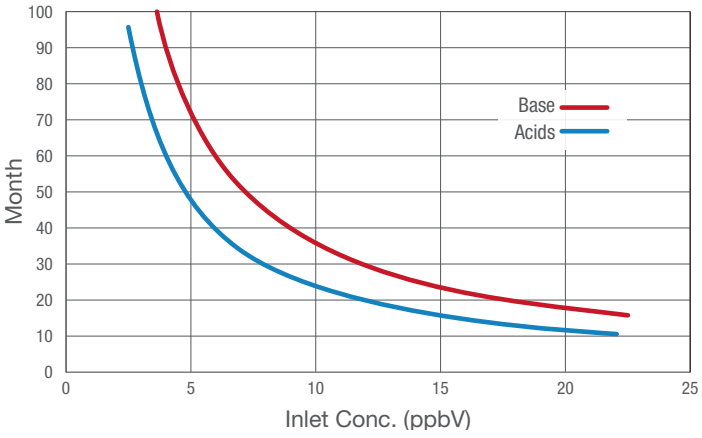
AstroSorb-P Media Pack Mounted on an FFU

Performance Data

Pressure Drop



Lifespan Curve



General Specification

Media-Pack Panel Filter for FFUs	
Filter type	Panel Type
Application	Fan Filter Unit (FFU)
Adsorbent	Activated Carbon, Impregnated Activated Carbon Ion Exchange Resin
Non-woven	Polyethylene Terephthlate (PET)
Binder	Hot Melt
Frame	Anodized Aluminum
Media Sealing	Edge Band
Sealant	Urethane
Pleat Separator	Hot Melt
Gasket	Eco EPDM
Temperature (°F)	73 ± 5
Humidity (%)	50 ± 5
Standard Size (in)	49 x 28 x 6 (nom.)
Weight (lb)	48 ± 4
Typical Air Fow Rate (CFM)	0 – 2,900
Target Gases	NH_3, Amines Acids (HF, HCl, Cl_2, NOx, SOx, H_2S) VOCs (Toluene, PGMEA, Siloxane) O_3

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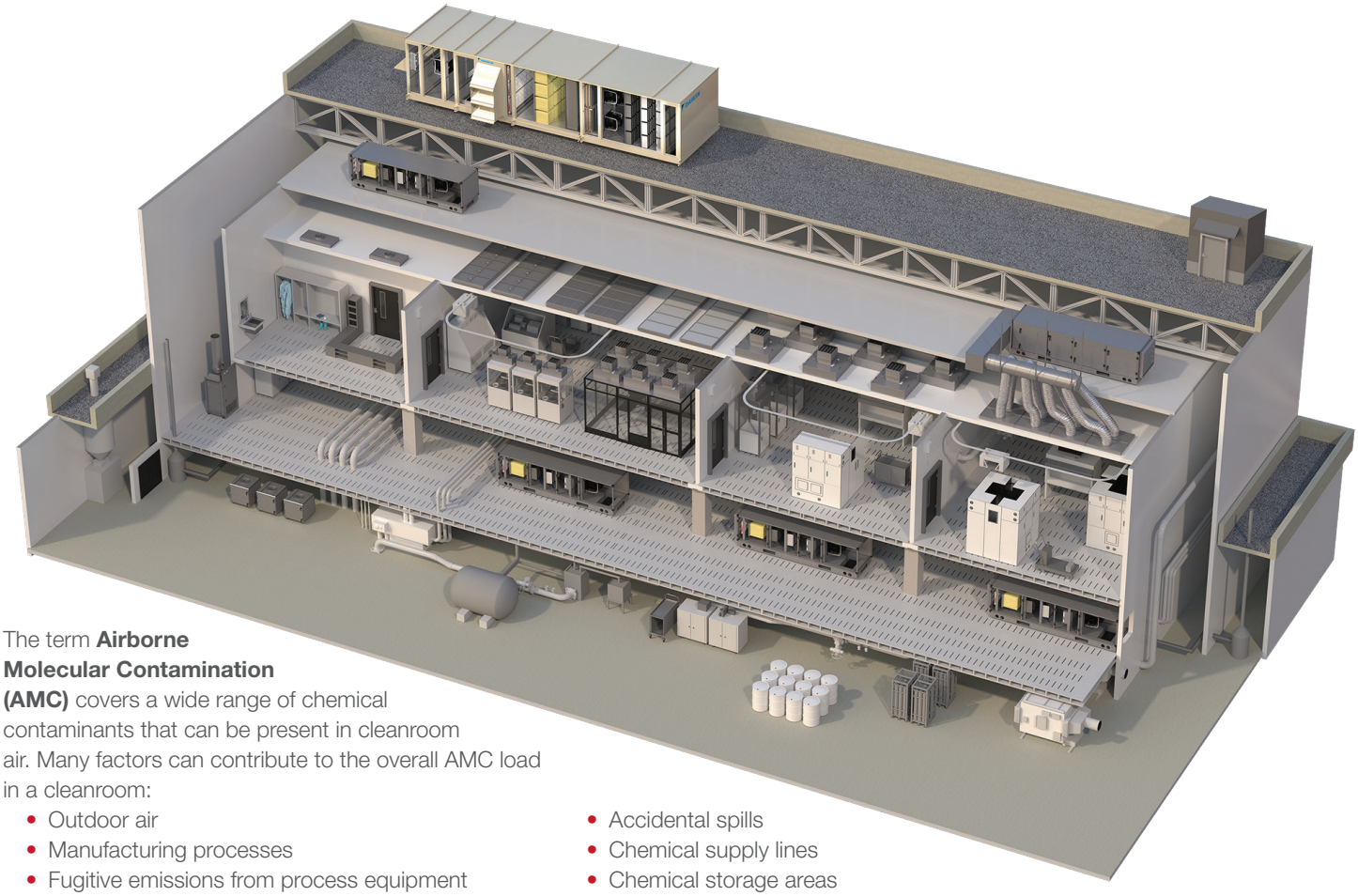
AstroSorb® | CONTROLLING AMC IN MICROELECTRONICS

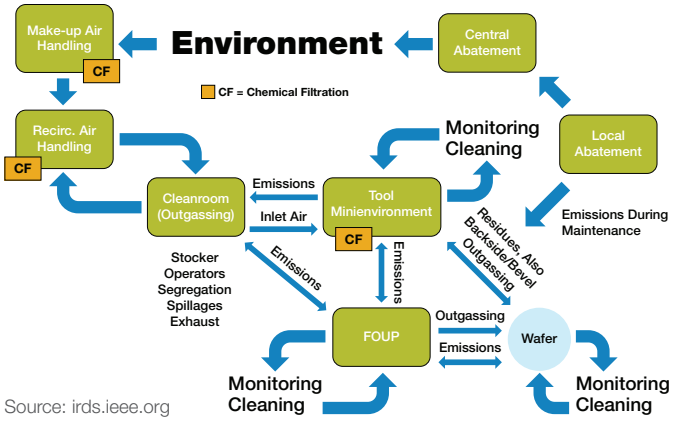


The term **Airborne Molecular Contamination (AMC)** covers a wide range of chemical contaminants that can be present in cleanroom air. Many factors can contribute to the overall AMC load in a cleanroom:

- Outdoor air
- Manufacturing processes
- Fugitive emissions from process equipment
- Off-gassing from building and construction materials
- Cross-contamination between manufacturing areas
- Accidental spills
- Chemical supply lines
- Chemical storage areas
- Bioeffluents from cleanroom personnel

AMC can be detrimental to many processes and products and can also represent considerable health hazards to personnel.

International Roadmap for Devices and Systems (IRDS 2023)

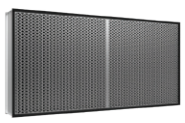


Source: irds.ieee.org

Meeting AMC Requirements: The Total AMC Concept

AAF is involved with ongoing updates to the IRDS in general and more specifically on the topic of AMC control. **The Total AMC Concept** takes into account sources of AMC as well as where local control is required and AAF solutions should be applied.

AAF's complete line of AMC filtration solutions



AstroSorb-P
Panel Filters for Fan Filter Unit Applications

AstroSorb-B
Box Filters for Make-up Air Applications

AstroSorb-V
V-Bank Filters for Make-up Air Applications

AstroSorb-T
Tray Filters for Make-up Air Applications

AstroSorb-C
Canister Filters for Make-up Air Applications

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