

# DimplePleat®

## 100% SEPARATORLESS HEPA FILTERS



- Maximum utilization of media for long life
- Minimal offgassing due to elimination of glue, and no particle generation or fraying due to elimination of strings and strips
- Lightweight and easy to handle with a superior appearance
- State-of-the-art testing with low offgassing urethane to seal media pack to the frame

AAF DimplePleat HEPA/ULPA filters are available in efficiencies from 99.99% on 0.30 micrometer size particles to 99.99999% on 0.12 micrometer size particles. They are available in 2", 3", and 4" depths with a complete range of sizes and standard frame styles to meet the needs of critical applications where HEPA/ULPA filtration is required. Individual testing under rigid quality control and modern assembly methods ensures conformance to specifications. DimplePleat HEPA/ULPA filters are used in a variety of cleanroom applications, including:

- Semiconductor fabrication
- Disk drive manufacturing
- Pharmaceutical production
- Biotechnology
- Aerospace
- Food processing
- Compact disc manufacturing

### Construction

The DimplePleat media pack is a completely separatorless media pack and requires no glue, strings, or strips of media to hold adjacent folds of media apart, which gives the media pack its shape and strength. Such materials are potential sources of offgassing and particle generation, and may not meet the stringent smoke and flame requirements of UL 900. They can also block up to 10% of the filter's effective media area. The DimplePleat media pack eliminates these materials as a contamination concern and fully utilizes the available media area, creating a cleaner and aesthetically pleasing appearance.

The DimplePleat filter is available in a variety of depths, depending on the performance requirements. The media pack is sealed to the anodized extruded aluminum filter frame with a fire-retardant solid urethane sealant. The filter frame can be designed with either a gasket on one side, a knife-edge, or a gel-filled channel to seal in the respective grid or equipment. A painted expanded metal faceguard on the downstream side is available as an option to protect the media.

# DimplePleat® Filters

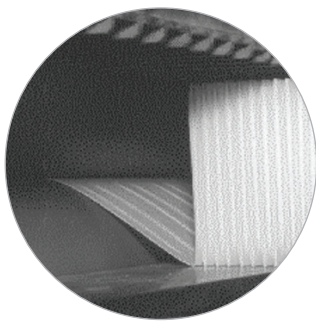
## Application

DimplePleat HEPA/ULPA filters are used in applications that require ultra-clean air. They typically operate at a velocity of 100 FPM, making them ideal for unidirectional (laminar flow) applications in pressurized plenum ceiling grids, downflow hoods, portable cleanrooms, clean benches, fan powered modules, and horizontal flow wall modules. Filters of standard construction may be operated at up to 150 FPM face velocity and to a final resistance of 2.0" w.g. As with all HEPA/ULPA filters, high efficiency ASHRAE-rated prefilters are recommended.

## Media Manufacturing

The ability to conduct in-house research and development on filter media led AAF to the exclusive development of the unique DimplePleat filter.

Filter media is formulated from all-glass microfibers, wet-laid on AAF's dedicated papermaking process. Binding and waterproofing agents are drawn completely through the media while in the wet stage, ensuring maximum tensile strength and protection from humidity. The media is constantly monitored by process controls to ensure correct physical properties.



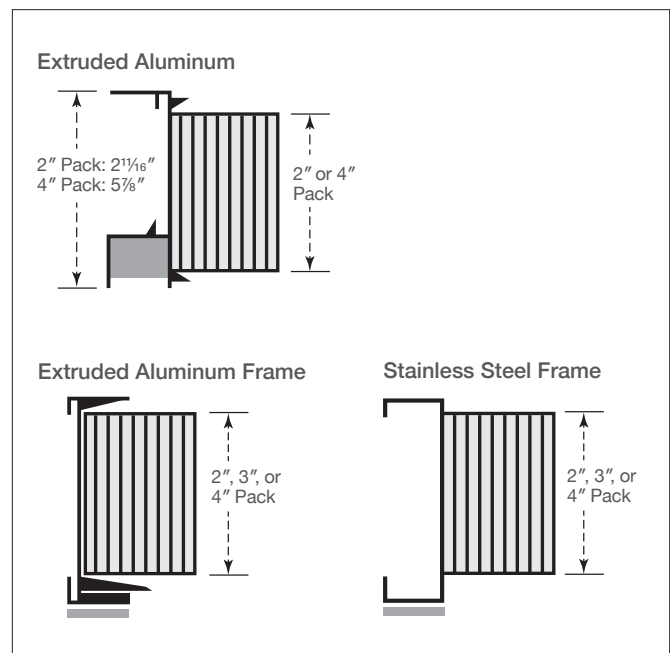
Conventional mini-pleat media packs are produced by taking a roll of media and using either glue, strings, or strips of media as a separator. The media pack is pleated, and the separators give the media pack its shape and strength.

DimplePleat media packs are produced in the final step of the papermaking process by forming dimples in the media. The dimples function as typical separators by aligning against each other at adjacent folds of the pleats and give the media pack its shape and strength. Each ULPA DimplePleat filter is assembled and tested in a cleanroom environment, and sealed in a polybag before leaving the production area.

## Filter Efficiencies

- HEPA: 99.99% minimum removal efficiency on 0.30 micrometer particle size
- ULPA: 99.9995% minimum removal efficiency on 0.12 micrometer particle size

## Gel Seal Frame Types



## HEPA & ULPA Efficiency Testing

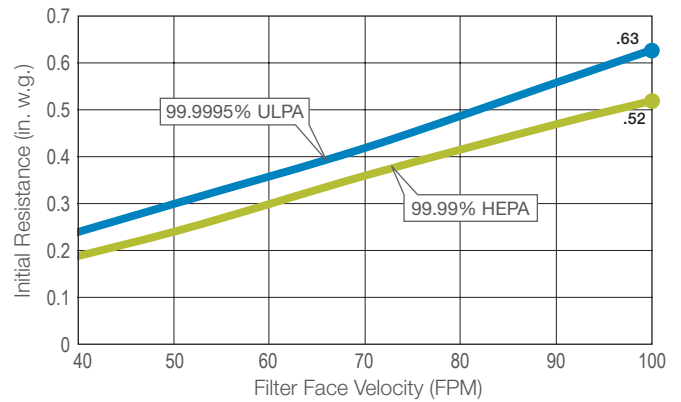
Each HEPA and ULPA filter is tested for efficiency and resistance by Dual Laser Spectrometer. The spectrometer samples simultaneously on the upstream and downstream sides of the filter to determine the percentage of penetration. AAF's standard test challenge is an aerosol of polystyrene latex (PSL) spheres. The laser instrument detects the size of each penetrating sphere in seven particle size classes from  $0.07\mu\text{m}$  to  $1.0\mu\text{m}$ . Resistance readings are taken according to volumetric parameters (i.e. – 100 CFM per  $\text{ft}^2$  of media face area) and are expressed in inches of water gauge.



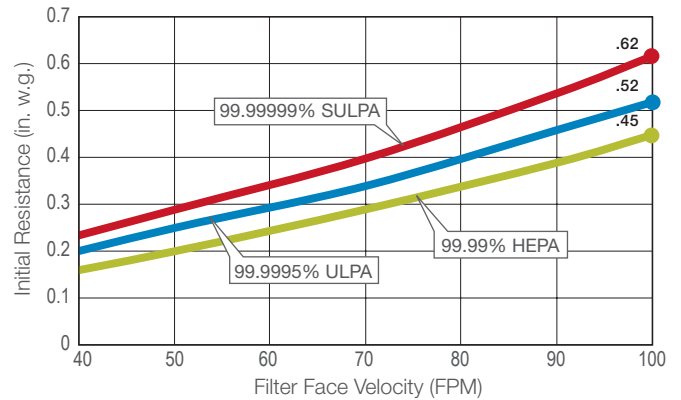
## Performance Data

### Initial Resistance vs. Filter Face Velocity

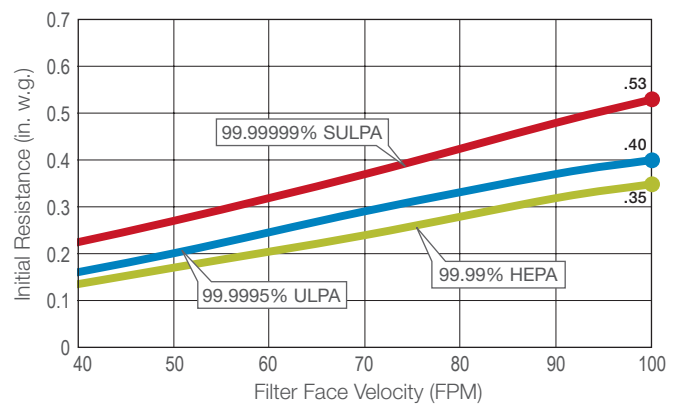
#### 2" Filters



#### 3" Filters



#### 4" Filters



# DimplePleat® Filters

## Product Information

### Resistance & CFM for 3/4" Knife-Edge Filters

Size (inches)	Size Designator	CFM*	99.99% on 0.30 micrometers			99.9995% on 0.12 micrometers			99.99999% on 0.12 micrometers		
			2"	3"	4"	2"	3"	4"	2"	3"	4"
23 x 23	K-GG	325	0.52	0.45	0.35	0.63	0.52	0.40	–	0.62	0.53
23 x 35	K-GP	505	0.52	0.45	0.35	0.63	0.52	0.40	–	0.62	0.53
23 x 41	K-GH	595	0.52	0.45	0.35	0.63	0.52	0.40	–	0.62	0.53
23 x 47	K-GQ	685	0.52	0.45	0.35	0.63	0.52	0.40	–	0.62	0.53

### Resistance & CFM for 2" Knife-Edge Filters

Size (inches)	Size Designator	CFM*	99.99% on 0.30 micrometers			99.9995% on 0.12 micrometers			99.99999% on 0.12 micrometers		
			2"	3"	4"	2"	3"	4"	2"	3"	4"
23 x 23	K-GG	325	0.52	0.45	0.35	0.63	0.52	0.40	–	0.62	0.53
23 x 35	K-GP	505	0.52	0.45	0.35	0.63	0.52	0.40	–	0.62	0.53
23 x 41	K-GH	595	0.52	0.45	0.35	0.63	0.52	0.40	–	0.62	0.53
23 x 47	K-GQ	685	0.52	0.45	0.35	0.63	0.52	0.40	–	0.62	0.53

## Filters For Gel Seal Cleanroom Ceiling Grids

DimplePleat filters are available with knife-edge frames designed for installation into AAF's open-plenum cleanroom ceiling systems. In addition to the sizes listed below, many other standard and special sizes are available to accommodate the needs of a room's design.

### Resistance & CFM for Roomside Replaceable Ducted Modules

Size (inches)	CFM*	99.99% on 0.30 micrometers			99.9995% on 0.12 micrometers		
		2"	3"	4"	2"	3"	4"
21¾ x 20	235	0.52	0.43	0.35	0.63	0.52	0.40
21¾ x 44	560	0.52	0.43	0.35	0.63	0.52	0.40
22 x 22	275	0.52	0.43	0.35	0.63	0.52	0.40
22 x 46	610	0.52	0.43	0.35	0.63	0.52	0.40

## Gel Seal DimplePleat® Filters

Gel seal DimplePleat filters have a channel provided on the downstream perimeter of the filter frame and are factory-filled with AAF BluJel® sealant. A knife-edge flange located in the hood or module is sized to mate into the channel. When the filter is lifted into place, the knife-edge submerges into the gel to effect a leak-tight interface between the filter and the equipment. The filter is held in place with simple retainers at each corner.

### Resistance & CFM for Gasket Seal Application Filters

Size (inches)	CFM*	99.99% on 0.30 micrometers			99.9995% on 0.12 micrometers		
		2"	3"	4"	2"	3"	4"
12 x 12	75	0.52	0.43	0.35	0.63	0.52	0.40
24 x 12	165	0.52	0.43	0.35	0.63	0.52	0.40
24 x 24	350	0.52	0.43	0.35	0.63	0.52	0.40
24 x 30	445	0.52	0.43	0.35	0.63	0.52	0.40
24 x 36	540	0.52	0.43	0.35	0.63	0.52	0.40
24 x 48	725	0.52	0.43	0.35	0.63	0.52	0.40
24 x 60	915	0.52	0.43	0.35	0.63	0.52	0.40
24 x 72	1100	0.52	0.43	0.35	0.63	0.52	0.40

## Filters For Gasket Seal Applications

Gasket seal DimplePleat filters are typically installed in equipment like clean benches. A closed cell neoprene gasket is attached to one or both faces of the filter where it mates to sealing surfaces in the equipment. Fasteners or clamping devices are provided to hold the filter in place. Standard frame materials for gasketed DimplePleat filters are extruded anodized aluminum and stainless steel.

\*CFM based on 100 FPM velocity per sq. ft. net media face area.

**Note:** Values shown may be averages or estimates typical of product styles.

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