

General

Flanders Filters offers a complete line of Bio-Hazard HEPA filters to meet the needs of critical applications where HEPA filtration is required. Individual testing, rigid quality control and modern assembly methods are used to ensure conformance to specifications. Bio-Hazard HEPA filters meet the requirements for UL 586. Typical applications for Bio-Hazard HEPA filters include:

- *Hospitals*
- *Biomedical*
- *Pharmaceutical*
- *Biotechnology*
- *Genetic Research*
- *Universities*
- *Laboratories*
- *Food Processing*

Testing

Bio-Hazard HEPA Filters meet the requirements for performance, testing and construction specified in accordance with Section 4.2.5 of IEST-RP-CC001.3 for Type E HEPA filters. These filters are also tested in accordance with MIL-STD-252 while encapsulated at two flows for resistance and penetration at nominal rated capacity, and for penetration at 20% of the nominal rated capacity on a Q-107 Penetrometer. The penetration at both test flows cannot exceed .03% and the filters are labeled and certified to have an efficiency of no less than 99.97% on a challenge aerosol having a homogenous particle size of 0.3 μm .

In addition to the efficiency test, each filter is given a scan or probe test for pinhole and edge leaks greater than .01% of the upstream concentration at 90 fpm (± 10 fpm) face velocity. Scan testing is in accordance with Section 6.2 of IEST-RP-CC034.1, HEPA Filter Leak Tests.

Test results appear on the filter label, carton label, and the Test and Certification of Compliance Report, which is available to the buyer.

Flanders Quality Assurance

Flanders' Quality Assurance Program meets the requirements of ANSI/ASME NQA-1. In accordance with ANSI 45.2, documentation of Flanders' program will be submitted to the customer on request.

Humidity and Water Resistance

HEPA filter media will tolerate high humidity and some direct wetting, but excessive amounts of moisture, either from airborne droplets or condensation, can plug the filter and result in failure by over-pressure.

Wood frames are unsuitable for high-moisture conditions, since wood expands or warps when wet and supports biological growth under humid conditions. Metal frame filters are more suitable for moisture-laden atmospheres. Because aluminum separators can corrode in some environments and slough particles downstream of the filter, separatorless PUREFORM® filters are also recommended for moist conditions, except in high-temperature or caustic applications.



Biological Grade HEPA Filter Dimensions and Capacities

CFM CAPACITIES AND DIMENSIONS						
Frame Depth (Inches)	Filter Size & Frame Depth Designator	Actual Face Size (Inches)	CFM Capacity at Approximate Clean Pressure Drop, inches w.g.			Weight (Lb.) approx.
			.65	1.0	1.35	
11 2	GG-F	24 x 24	665	1000	1315	40
	GC-F	24 x 12	285	440	570	26
	CG-F	12 x 24	275	425	550	31
	CC-F	12 x 12	135	205	265	16
5 c	GG-D	24 x 24	325	500	650	24
	CC-D	12 x 12	70	105	135	9
	BB-D	8 x 8	25	35	45	6

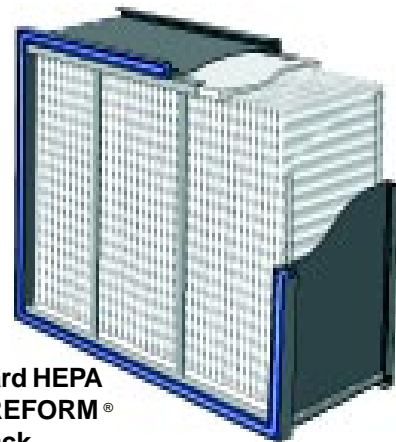
Flanders Filters manufactures both conventional Separator Style and PUREFORM® Separatorless HEPA filters. To make a Separator Style filter, the media is folded over corrugated aluminum separators with hemmed edges to separate the pleats in the filter pack. Flanders Filters manufactures its own filter media, enabling it to develop a unique manufacturing process for the production of PUREFORM® Separatorless HEPA filters. In one manufacturing operation, Flanders Filters produces a self-supporting and self-separating PUREFORM® Media Pack.

The PUREFORM® Filter offers many advantages over conventional Separator-style HEPA filters.

- *More usable media area for longer service life because of higher dust holding capacity*
- *Reduced cost of ownership because of longer service life*
- *Maximum utilization of the media*
- *Can handle some harsh environments which may attack aluminum separators*
- *Media pack can be incinerated*
- *Media is 28 mils thick, which is significantly thicker than conventional 15 mil media used in Separator-style HEPA filters*



**Bio-Hazard HEPA
with Separator-style
Media Pack**



**Bio-Hazard HEPA
with PUREFORM®
Media Pack**

Installation Note

HEPA filters should be installed with the pleats aligned with the vertical axis when the airflow is horizontal, as shown. This prevents sagging and potential tearing of the medium as the filter becomes loaded in service.

Frame Materials

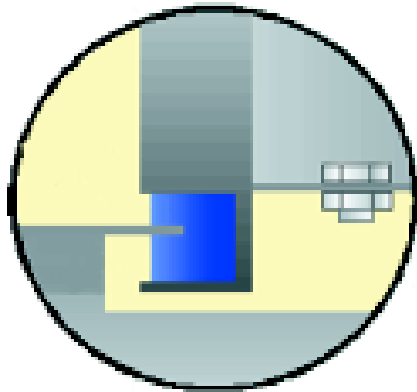
Bio-Hazard HEPA Filters are available in a variety of wood and metal frame materials, such as galvaneal, plywood, and stainless steel.

Gasket and Gel Seal

The standard gasket is 0.75 in. x 0.25 in. neoprene for installation on either the upstream, downstream, or both sides of the filter.

The standard Gel Seal is Flanders Filters Blu-Jel® Seal which is a two-part silicone material suitable for temperatures up to 392°F.

**Blu-Jel®
Seal**



Faceguards

Faceguards are used to protect the filter media from mechanical damage. The usual faceguard material is fiberglass scrim (6 x 6 mesh).

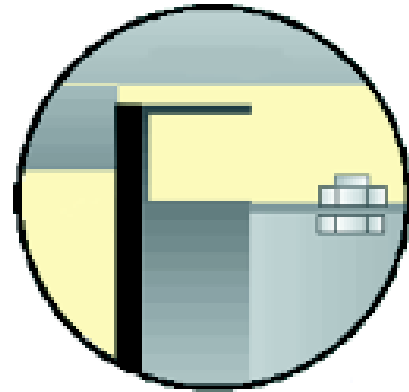
UL Listings

Bio-Hazard Filters are UL 586 listed.

Testing Service Available

Flanders service personnel are available for installation, supervision of installation, filter testing and certification of compliance to industry and government standards, and instruction of owner's personnel in testing and maintenance procedures. Contact the factory for details.

**Gasket
Seal**



Holding Frames and Housings



BF-Series



BG-Series

Side-servicing, containment filter housings are recommended for these applications.

These housings utilize a locking mechanism designed to maintain a leak-tight seal.

Bio-Hazard Component Chart

0-007-W-04-00-BU-12-43-GG-F-U5

Hardware

0 = NONE
T = EXTRACTOR CLIPS

Efficiency

007 = 99.97% DOP on 0.30 micrometers

Capacity/Pack Style

C = SEPARATOR
D = 4 inch PUREFORM®
W = 11 inch PUREFORM®

Frame Material

02 = 16 GA 409 STAINLESS
03 = 16 GA 304 STAINLESS
04 = p inch FIRE RETARDANT PLYWOOD
08 = 16 GAUGE GALVANEAL
12 = 14 GAUGE TYPE 304L STAINLESS
13 = 14 GAUGE TYPE 316 STAINLESS
15 = 14 GAUGE TYPE 316L STAINLESS
42 = 14 GAUGE TYPE 409 STAINLESS
43 = 14 GAUGE TYPE 304 STAINLESS

Frame Style

00 = BOX
03 = DOUBLE-TURNED FLANGE
05 = p inch DEEP CHANNEL
06 = SINGLE HEADER WITH CHANNEL

Sealant Material

BU = FIRE RETARDANT URETHANE (99.97% on 0.30 micrometers)

Filter Size

For Standard sizes use the 3-digit designator, found on Page 2. For odd sizes see Odd Size Designator Chart.

UL Code

FaceGuard Material and

0 = NONE
1 = GALVANIZED
4 X 4 MESH
4 = FIBERGLASS SCRIM
6 X 6 MESH
5 = 23 GA. 22 4 X 4 MESH

Location

0 = NONE
1 = UPSTREAM
2 = DOWNSTREAM
3 = BOTH SIDES

Gasket Material and

0 = NONE
1 = NEOPRENE
5 = BLU-JEL

Location

0 = NONE
1 = UPSTREAM
2 = DOWNSTREAM
3 = BOTH SIDES

Odd Size Designator Height and Width Alpha Functions

A = 0" E = 4" J = 2" N = p"
B = d" F = f" K = ;h" P = j" D = 5 c"
C = 8" G = a" L = b" Q = c" F = 11 2"
D = e" H = g" M = i" R = k"

Depth

Designator

Odd size designators is an Alpha Numeric Description. The first two digits specify the Height Whole Number with an Alpha Designator specifying the Height Fraction. The second two digits specify the Width Whole Number with an Alpha Designator specifying the Width Fraction, and the last Alpha Designator specifies the depth. If the height or width is less than 10 inches, use a "0" in front of the dimension.

Guide Specifications

1.0 General

- 1.1 Bio-Hazard HEPA Filters shall be extended media (separator type) (PUREFORM® separatorless type) filters as manufactured by Flanders Filters, Inc.
- 1.2 Filter sizes, capacities and construction options shall be as scheduled on the drawings.
- 1.3 Filters shall be UL 586 listed.

2.0 Filter Construction

- 2.1 The filter pack shall be constructed by pleating a continuous sheet of non-woven water-resistant fiberglass media around hemmed-edge corrugated aluminum separators. The filter pack shall be constructed by pleating a continuous sheet of formed, corrugated medium so that the pack is self-supporting without the use of spacers of any kind, including separators, tape strings, adhesives or strips of media.
- 2.2 The filter pack shall be sealed into a (select frame material from Bio-Hazard Component Chart above) with urethane sealant.
- 2.3 A 40-durometer closed-cell neoprene gasket or a silicone gel in a channel (choose one) shall be provided on the side to seal the filter in the housing.

3.0 Performance

- 3.1 Initial and final resistances shall not exceed the scheduled values.
- 3.2 Bio-Hazard HEPA Filters shall have a minimum efficiency of 99.97% on 0.30 micrometer particles when tested at rated capacity on a Q-107 Penetrometer. Each filter shall be challenged with an approved nearly monodispersed oil aerosol of 0.30 micrometer size. Measure the upstream and downstream concentration of these particles with a light scattering photometer, determine the penetration and calculate the efficiency. Bio-Hazard HEPA Filters shall also be Scan Tested and shall have a minimum efficiency of 99.97% on 0.30 micrometer particles. Scan Testing shall be in accordance with Section 6.2 of IEST-RP-CC034.1. The scan test shall consist of challenging the filter with a high concentration of an approved oil aerosol. Utilizing a photometer, the media pack and the pack-to-frame seal shall be scanned to insure that there are no leaks greater than .01% of the upstream concentration at 90 fpm (±10 fpm) face velocity.