AIR QUALITY EQUIPMENT

Airborne Biological Contaminants and Filtration Efficiencies for Selected Products

November 2001

AmericanAirFilter

Biological Threat	Source	Size (microns)	Type	Contagious	COLLECTION EFFICIENCY — Housing Style: Carbon Filter	AirShelter™ HFS 800F	AirShelter™ HFS 800C	Polyseal	Leverlock	Type S	Bag In Bag Out
Anthrax	Spore	1 - 5	gram+	No	NR	99.999%+(3)	99.999%+(3)	NR	NR	99.999%+(1)	99.999%+(1)
Smallpox(6)	Virus	0.15 - 0.3	NA	Yes(2)	NR	99.94%+(4)	99.94%+(4)	NR	NR	99.9999%+(5)	99.9999%+(5)
Tularemia	Bacteria	0.125 - 0.7	gram-	No(2)	NR	99.94%+(4)	99.94%+(4)	NR	NR	99.9999%+(5)	99.9999%+(5)
Botulism	Bacteria	NA	gram+	No	Airborne transmission not typical						
Pneumonic Plague	Bacteria	0.5 - 2	gram- bacilli	Yes(2)	NR	99.99%+(3)	99.99%+(3)	NR	NR	99.9999%+(5)	99.9999%+(5)
Bubonic Plague(7)	Bacteria	0.5 - 2	gram- bacilli	Yes	Airborne transmission not typical						

NR = Not Recommended; NA = Not Applicable

See reverse side for notes.

Notes For Air Quality Equipment

(1) – Utilizing one 99.97% (on 0.3 micron particles) AstroCel I HEPA filter. The efficiency shown is for the minimum particle size in the range shown.

(2) – Because of risk associated with this pathogen, due to its infectious nature or extremely small size, AAF International suggests using two gel seal 99.99% AstroCels (on 0.3 micron particles) for this application.

(3) – Utilizing one 99.99% (on 0.3 micron particles) AstroCel II HEPA filter. The efficiency shown is for the minimum particle size in the range shown.

(4) – Utilizing one 99.99% (on 0.3 micron particles) AstroCel II HEPA filter. The efficiency shown is for the most penetrating particle size in the range shown.

(5) – Utilizing two (2) 99.99% (on 0.3 micron particles) AstroCel I filters in series. The efficiency shown is for the most penetrating particle size in the range shown.

(6) – Smallpox is a virus that is highly contagious and is of extremely small size. The virus is typically transferred by a larger airborne particle or encapsulated in an aerosol expelled from an infected individual, for example, via coughing, sneezing, etc. Depending on the size of the carrier particles, other high-efficiency filters would be effective in removing the attached virus from the air stream. The CDC recommends handling smallpox cases in the same manner as TB to minimize spread of the disease.

(7) – Fleas carry Bubonic Plague from animal to animal. Infected fleas then bite humans introducing the plague to bloodstream. When near death, humans develop pneumonic plague. At that stage, the plague can be spread to other humans through the expulsion of infected respiratory droplets through coughing.

AIR FILTER PRODUCTS

Airborne Biological Contaminants and Filtration Efficiencies for Selected Products

November 2001

AmericanAirFilter

Biological Threat	Source	Size (microns)	Type	Contagious	COLLECTION EFFICIENCY Filter Elements[a] 90% DriPak 2000 NR[b]	90% VariCel	VariCel V MERV 15	BioCel	BioCel V	AstroCel I	AstroCel II[e]
Anthrax	Spore	1 - 5	gram+	No	99%	98%	97%	99%+	99%+	99.999%+	99.999%+
Smallpox[c]	Virus	0.15 - 0.3	NA	Yes	NR	NR	NR	NR	NR	99.9%+	99.94%+
Tularemia	Bacteria	0.125 - 0.7	gram-	No	NR	NR	NR	NR	NR	99.9%+	99.94%+
Botulism	Bacteria	NA	gram+	No	Airborne transmission not typical						
Pneumonic Plague	Bacteria	0.5 - 2	gram-bacilli	Yes	90%	82%	87%	98%	98%	99.99%+	99.99%+
Bubonic Plague[d]	Bacteria	0.5 - 2	gram-bacilli	Yes	Airborne transmission not typical						

NR = Not Recommended; NA = Not Applicable

See reverse side for notes.

Notes For Air Filter Products

(a) All filters must be installed and mounted in compatible frames and frame systems to attain stated system efficiencies.

(b) **Why are pocket filters not recommended?** Pocket filters are an excellent choice in many applications, but in critical applications such as ones involving public health, the rigid box filters are preferred. The construction of the pocket filters is not as sturdy or rigid as box filters. Also, while the pocket filters will meet their rated efficiency over the life of the filter, under certain conditions, the efficiency of the pocket filters can drop below their initial levels. The paper media used in box filters maintain their initial efficiencies and actually grow more efficient as they load with dirt. Finally, when changing and disposing of the filters, the box filters encapsulate the captured particles within the filter cartridge much better than the pocket filters, making re-entrainment of the captured particles into the airstream less probable.

(c) Smallpox is a virus that is highly contagious and is of extremely small size. The virus is typically transferred by a larger airborne particle or encapsulated in an aerosol expelled from an infected individual, for example, via coughing, sneezing, etc. Depending on the size of the carrier particles, other high-efficiency filters would be effective in removing the attached virus from the air stream. The CDC recommends handling smallpox cases in the same manner as TB to minimize spread of the disease.

(d) Fleas carry Bubonic Plague from animal to animal. Infected fleas then bite humans introducing the plague to bloodstream. When near death, humans develop pneumonic plague. At that stage, the plague can be spread to other humans through the expulsion of infected respiratory droplets through coughing.

(e) When used in the HFS800F and HFS800C Housing.