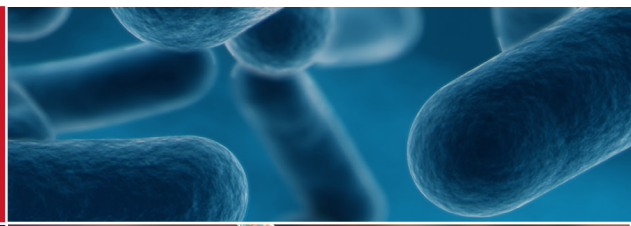
AAF INTERNATIONAL

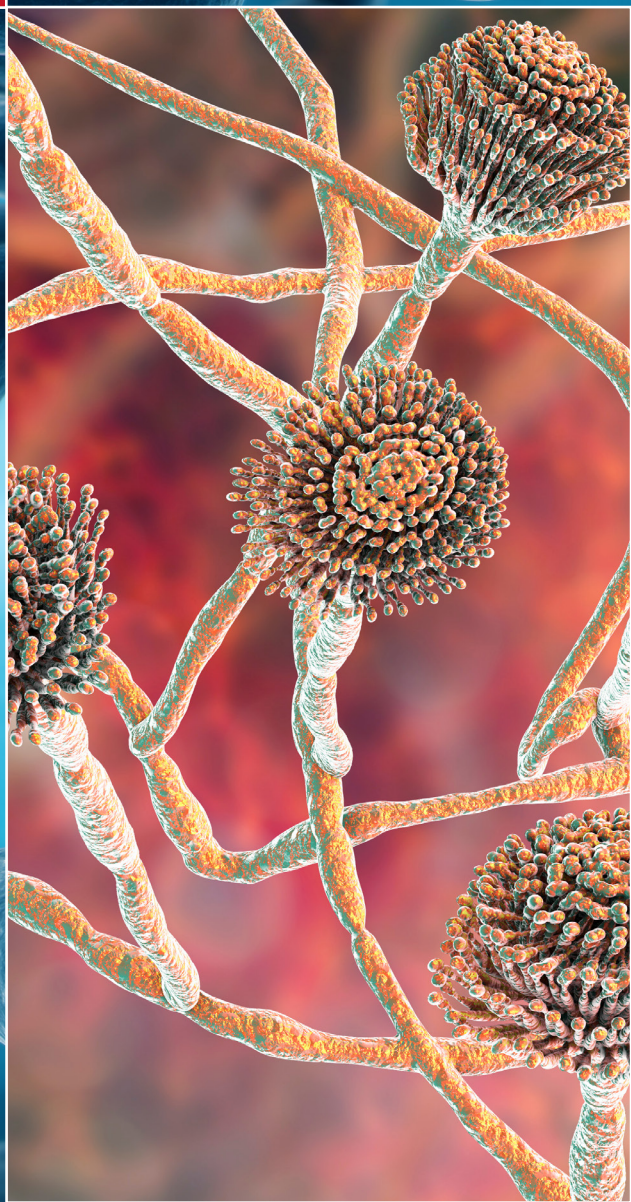
Bringing clean air to life.™

Air Filters with Ultra Treatment

General Information on Bacteriostatic and Fungistatic Air Filters for Improved Indoor Air Quality

When protection counts ask for ULTRA





Air filters with Ultra treatment

General information on biostatic air filters for improved Indoor Air Quality

What is Ultra treatment?

AAF's products of the Ultra product line use especially developed air filter media's to inhibit the growth of fungi and bacteria which can affect Indoor Air Quality levels. They are also effective against some microbially produced odours.

The Ultra treatment of our air filters offers an extra protection step against biological contaminants compared to untreated synthetic or glass media based air filters. This makes our Ultra range of products especially suitable for applications in critical industries such as the Life Science and Food & Beverage industry where highly effective air filters that reduce the levels of micro organisms in the air are of vital importance.

How our Ultra treatment works?

The following four step procedure describes how air filters with an Ultra treatment work:

1. The filter traps both inert and microbe or fungi containing particulates
2. The Ultra treated media inhibits the growth of fungi and bacteria on contact
3. The Ultra treatment reduces the growth potential of microbes or fungi on and through the filter media
4. The combined properties of the filter and the Ultra treatment prevent microbes or fungi from moving downstream of the air filter into the downstream zone thus improving the Indoor Air Quality level.

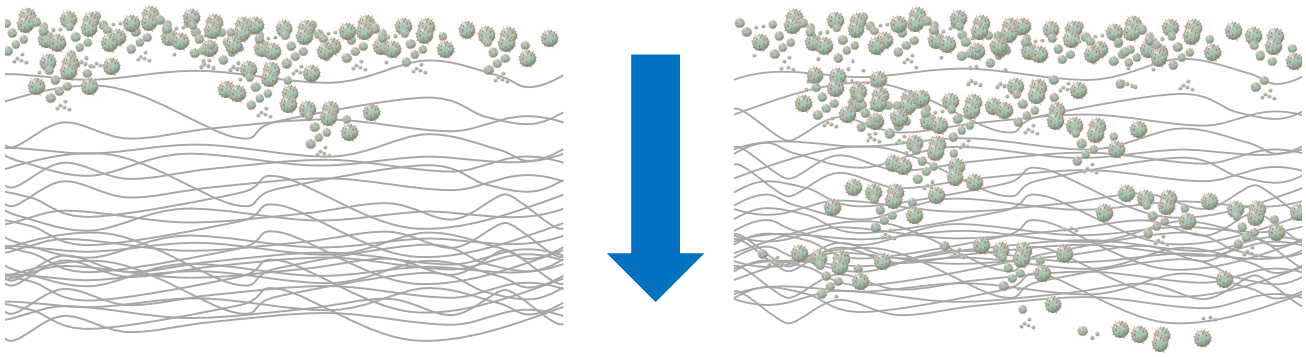
How our Ultra treatment works?

There is and always was a risk when replacing potentially contaminated air filters. Besides using protective clothing, air filters with biostatic treated media give high additional protection for service technicians because:

- They effectively reduce secondary emissions on the clean gas side, that can make their way to downstream areas
- They reduce the risk of direct contact with still active microorganisms when changing and handling used filters.

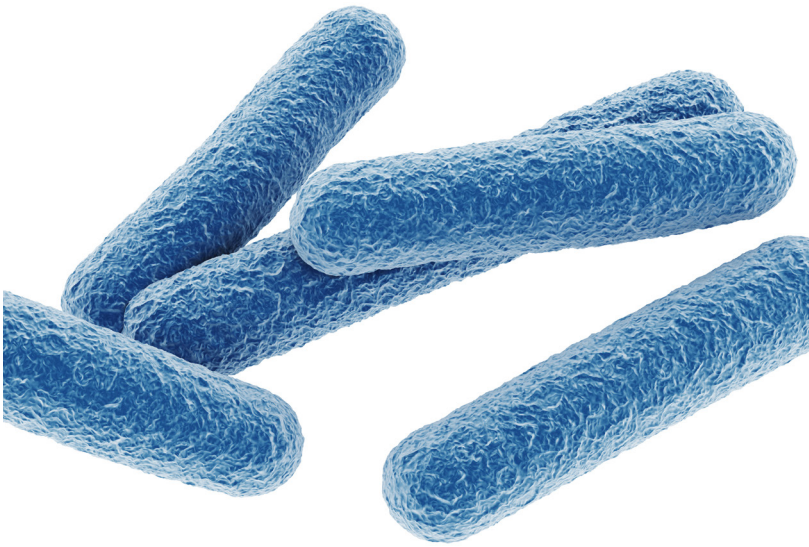
Prevents growths of microorganisms on the filter surface

Prevents growths of microorganisms through the filter media



Bacteria inhibited by Ultra treated air filters

Bacteria are the most prolific life form, dating back over 3 billion years. Though some bacteria are disease producing (pathogens) most are beneficial to mankind. In fact, bacteria are crucial to the human defence system. Some are used in industrial and manufacturing processes such as in the production of antibiotics and pharmaceuticals. Bacteria are found on all surfaces exposed to the environment, including the skin, respiratory, digestive and reproductive tracts. Many studies have been carried out on the size and shape of bacteria and their behaviour in an airstream. Most bacteria are in the size range 0.1 µm to 10 µm. When they become airborne they tend to attach to particles larger than 1 µm. This means they can be captured by a filter on which they can breed and multiply. To address this problem, AAF has treated a wide range of filters with an Ultra treatment. This treatment is effective against a wide range of Gram positive and Gram negative bacteria which have been documented to affect indoor air quality.



Examples of affected Gram positive bacteria (families):

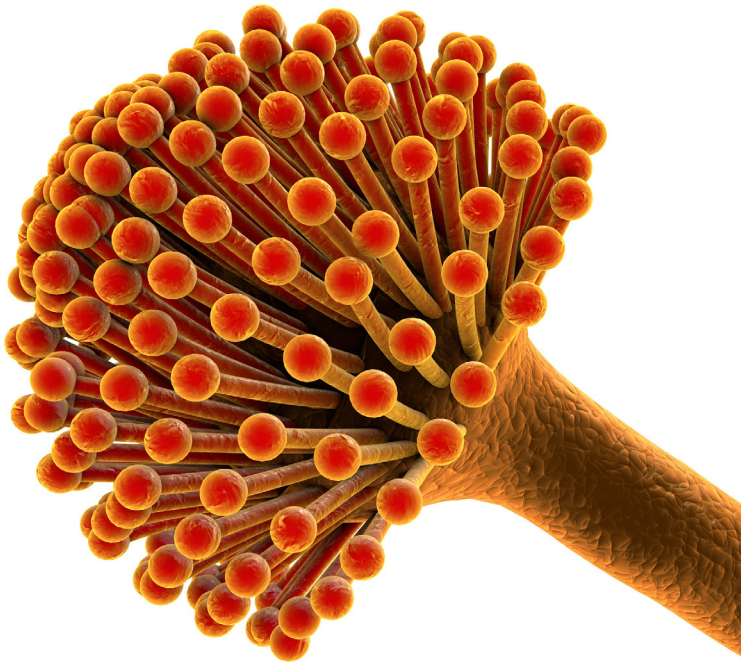
Bacillus, Lactobacillus, Listeria, Sarcina, Staphylococcus, Streptococcus, Streptomyces

Examples of affected Gram negative bacteria (families):

Aeromonas, Escherichia coli, Klebsiella pneumoniae, Legionella pneumoniae, Pseudomonas, Salmonella, Shigella

Fungi inhibited by Ultra treated air filters

There are at least 100,000 known species of fungi. The most widely known are yeasts, mushrooms, moulds and toadstools. Some fungi, such as yeasts, are extremely useful to man. They are used in the production of beer. Others for example are used in the food processing industry in the manufacture of cheese. In the environmen fungi play an important role in maintaining the ecological balance. Unfortunately, what make fungi so useful to nature also make some of them undesirable to humans. Most fungi metabolic products some of which are known to have a detrimental effect on Indoor Air Quality. Mycotoxins are substances produced under specific conditions by certain moulds. These toxins may cause health problems in humans when inhaled. If fungi are allowed to pervade in an HVAC unit their spores can cau infections and disease when they become airborne. In fact, fungi are reported to be one of the main causes of Sick Building Syndrome and Building Related Illness. To address this problem, AAF has treated a wide range of filters with an Ultra treatment. This treatment is effective in inhibiting a wide range of fungi documented to affect indoor air quality.



Examples of affected fungi (families):

Aspergillus Niger, Candida, Penicillium, Trichoderma

Facts about Ultra treatment

Ultra treatment protects IAQ

Air filters outfitted with an Ultra treatment make use of a antimicrobial treatment of the air filter media. The applied bacteriostatic and fungistatic treatment are tested and compliant to the Biocidal Products Regulation No 528/2012/EU.

Furthermore Ultra treated products are tasted according to ISO 20743 (antibacterial activity of antibacterial textile products including nonwovens).

Our Ultra products do not make use of biocidal agents like phenols or heavy metals such as cadmium, lead or mercury or halogenated compounds such as fluorine, bromine or chlorine. Our air filter products with an Ultra treatment do not contain any arsenic or formaldehyde.

The efficacy of Ultra treated products in inhibiting the growth of bacteria and fungi on air filters has been tested and documented by independent test institutes. Results of laboratory testing showed that Ultra treated air filters were more effective in inhibiting the growth of bacteria fungi than untreated air filters.

In this way we make sure that we improve your Indoor Air Quality.

Properties of the Ultra treatment

AAF has carefully developed the Ultra treatment with its suppliers to ensure a good performance of the treated air filters. The Ultra treatment does not affect the filters' efficiency or performance levels.

The treatment has been designed for a long lasting effect during the filters' period of use. The durability of the treatment ensures that treated products retain their perfor mance after many exposures to moisture. AAF air filters with an Ultra treatment are particularly effective in condi-tions of high humidity and regions of climatic change.

There is no detectable off gassing or migration above specific migration limits from the air filters in which the Ultra treatment is applied.

Ultra treated products can be safely disposed

Products with an Ultra treatment can be safely disposed in a landfill or in a municipal incinerator. When landfilled the product will not leach into the environment. Always dispose used air filters according to the local waste disposal regulations.

When protection counts:
Ask for Ultra

Air Filters with Ultra treatment

RedPleat Ultra | **Biocide Agents:** Silver sodium hydrogen phosphate (Bacteriocide)

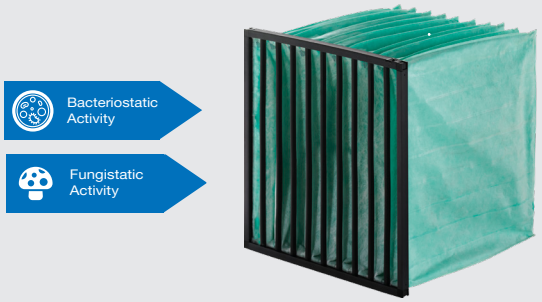
- ISO 16890: Coarse 70%
- Low pressure drop
- High dustholding capacity (DHC)
- Available in Antimicrobial treated media
- Carb filter suited for odor removal

Typical Applications

Commercial Buildings | Data Centers | Hospitality | Industrial | Schools and Universities

DriPak SX Ultra | **Biocide Agent(s):** Zinc pyrithione (Bacteriocide); Thiabendazole (Fungicide)

- ISO 16890: ePM10 70%, ePM2,5 65%
- Filter Class EN779:2012: M5, M6 and M7
- Synthetic media
- Reduced pressured drop for lower energy use
- Fully incinerable

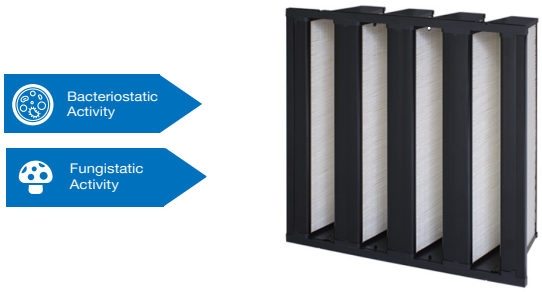


Typical Applications

Commercial Buildings | Food and Beverage | Museums and Historical Storage | Schools and Universities

VariCel V XL Ultra | **Biocide Agent(s):** Zinc pyrithione (Bacteriocide); Thiabendazole (Fungicide)

- ISO16890: ePM10 70%, ePM1 55%, ePM1 75%, ePM1 85%
- Filter class EN779:2012: M6, F7, F8 and F9
- 50% more media area provides greater airflow capacity and low resistance
- Maximum dust holding capacity
- Lightweight and easy to install



Typical Applications

Commercial Buildings | Food and Beverage | Healthcare | Microelectronics | Pharmaceutal

Air Filters with Ultra treatment

VariCel M-Pak Ultra | Biocide Agent(s): Zinc pyrithione (Bacteriocide); Thiabendazole (Fungicide)

- ISO 16890: ePM1 55%,ePM1 65%, ePM1 80%
- Filter class EN779:2012: M6, F7, F8 and F9
- Space-saving design - reduces freight, storage and handling costs
- Fully incinerable

Bacteriostatic Activity

Fungistatic Activity

Typical Applications

Commercial Buildings | Data Centers | Food and Beverage | Healthcare | Museums and Historical Storage | Schools and Universities

VariCel EcoPak Ultra | Biocide Agent(s): Zinc pyrithione (Bacteriocide); Thiabendazole (Fungicide)

- ISO 16890: ePM1 55%,ePM1 65%, ePM1 80%
- Filter class EN779:2012: M6, F7, F8 and F9
- Non-corrosive
- Fully incinerable

Bacteriostatic Activity

Fungistatic Activity

Typical Applications

Commercial Buildings | Industrial

VariCel II Ultra | Biocide Agent(s): Zinc pyrithione (Bacteriocide); Thiabendazole (Fungicide)

- ISO 16890: ePM1 50%,ePM1 65%, ePM1 80%
- Filter class EN779:2012: M6, F7 and F8
- Low depth saves space
- Lightweight and easy to install
- High dust holding capacity

Bacteriostatic Activity

Fungistatic Activity

Typical Applications

Commercial Buildings | Data Centers | Hospitality | Museums and Historical storage | Schools and Universities

VariPak Ultra | **Biocide Agent(s):** Zinc pyrithione (Bacteriocide); Thiabendazole (Fungicide)

- ISO 16890: ePM1 50%,ePM1 65%, ePM1 80%
- Filter class EN779:2012: M6 - F9
- Various media pack depths and cell side combinations available
- Low resistance = long service life

Bacteriostatic Activity

Fungistatic Activity

Typical Applications

Commercial Buildings

Pharmaceutal

Industrial

AstroPak Ultra | **Biocide Agent(s):** Zinc pyrithione (Bacteriocide); Thiabendazole (Fungicide)

- Available in efficiency class H13 (EN1822:2009)
- Individually tested for certified performance
- Hot-melt separator-style glass media pack
- No metal in airstream

Bacteriostatic Activity

Fungistatic Activity

Typical Applications

Food and Beverage

Healthcare

Industrial

Micro-electronics

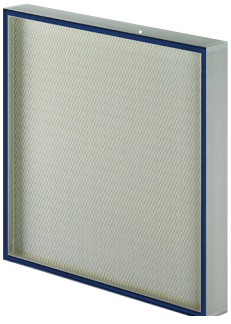
Pharmaceutal

AstroCel II Ultra | **Biocide Agent(s):** Zinc pyrithione (Bacteriocide); Thiabendazole (Fungicide)

- Available in efficiency class H13 (EN1822:2009)
- Individually tested for certified performance
- Reduces operating costs with lowest possible pressure drop from microglass media
- Gasket seal, gel seal and knife-edge designs available
- Lightweight and compact

Bacteriostatic Activity

Fungistatic Activity



Typical Applications

Food and Beverage

Healthcare

Micro-electronics

Pharmaceutal

AAF International Plant Locations

AAF, the world's largest manufacturer of air filtration solutions, operates production, warehousing and distribution facilities in 22 countries across four continents. With its global headquarters in Louisville, Kentucky, AAF is committed to protecting people, processes and systems through the development and manufacturing of the highest quality air filters, filtration equipment, and associated housing and hardware available today.

Contact your local AAF representative for a complete list of AAF Air Filtration Product Solutions.

Americas

Louisville, KY
Atlanta, GA
Ardmore, OK
Bartow, FL
Columbia, MO
Fayetteville, AR
Hudson, NY
Momence, IL
Ontario, CA
Smithfield, NC
Tijuana, Mexico
Votorantim, Brazil
Washington, NC

Europe

Cramlington, UK
Gasny, France
Vitoria, Spain
Ecoparc, France
Trencin, Slovakia
Olaine, Latvia
Horndal, Sweden
Vantas, Finland

Asia & Middle East

Riyadh, Saudi Arabia
Shah Alam, Malaysia
Suzhou, China
Shenzhen, China
Miaoli, Taiwan
Bangalore, India
Noida, India
Yuki, Japan (Nippon Muki)

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