

# MONOLITH

## TRIBOELECTRIC FILTER MEDIA



# Why Electrostatic Filtration

High Efficiency

Low Pressure Drop

High Loading Capacity

Commonly seen particle filtration mechanisms such as interception and inertial impaction require a filter media to have relatively small pore size in order to capture small particles with high efficiency. The disadvantage of this type of media is higher pressure drop and lower loading capacity.

An electrostatic filter media utilize the electrostatic deposition mechanism. This mechanism works in two ways: Coulombic Forces and Dielectrophoretic Forces, which is especially effective against small particles ranging from  $0.05\mu$  to  $5\mu$ . Hence, and electrostatic filter media can be very effective in fine filtration, while maintaining low resistance and high loading capacity.

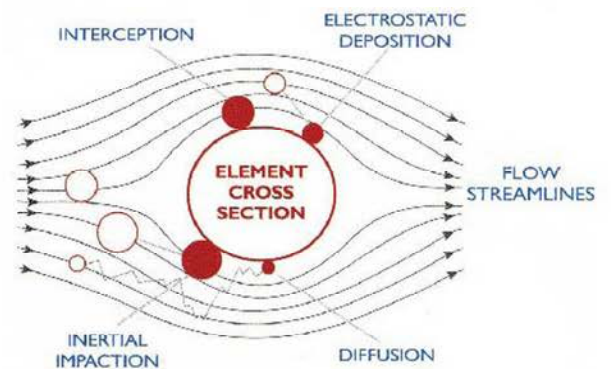
## Different Types of Electrostatic Filter Media

An electrostatic filter media could be produced using one of the following three methods:

- Induction
- Corona Effect
- Triboelectric Effect

Both Induction method and Corona Effect involve impregnating high voltage charge into synthetic fibers. An example of Corona charged filter media would be PP melt blown web. Fine fibers are usually used to increase surface area therefore increase the amount of charge impregnated. The use of fine fibers results in higher resistance and lower loading capacity.

## Basic Mechanisms of Particle Filtration



## Triboelectric Effect

Triboelectric effect is created by placing two polymers with opposite dielectric properties in contact so that they exchange ions and create, once separated, a charge imbalance between the two. This ionic disequilibrium creates a strong electric field at the microscopic level of the filter media.

Because triboelectric charge exists in the microscopic level of filter media, its existence can not be easily detected by instruments such as a voltage meter. However, the existence of static charge in this case, can be measured from the media's increase in filtration efficiency, especially for submicron particles.

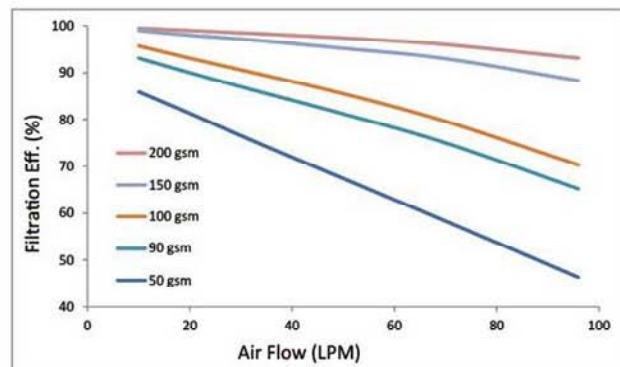
## Media Specifications

- Width:  $\leq 2m$  (can slit into narrower width)
- Media Weight:  $40g/m^2 \sim 300g/m^2$
- Can be treated with antimicrobial agent
- Can be laminated with different wire backing material

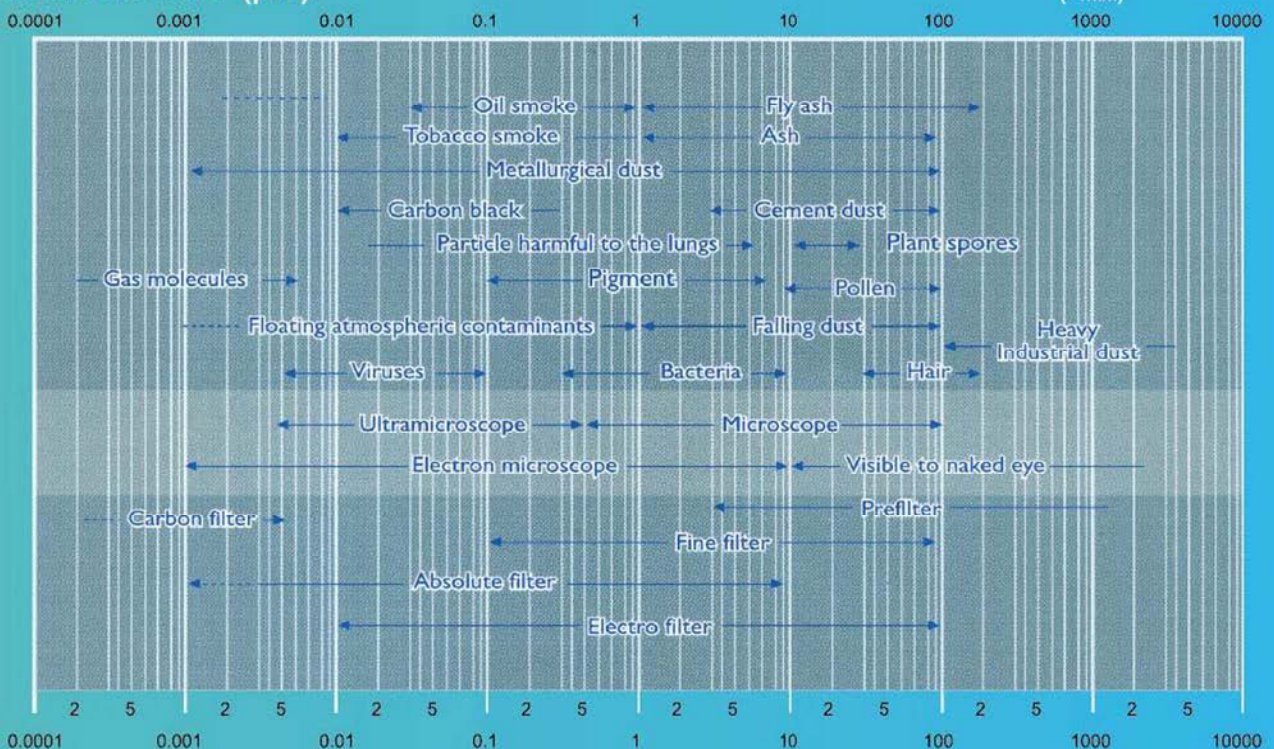
## Application

- Face Masks
- Automotive Cabin Filter
- Room Air Cleaner Filter
- Vacuum Cleaner Filter
- Furnace Filter
- HVAC Filter

0.3 $\mu$  NaCl Particle, TSI 8130



## Particle diameter ( $\mu m$ )





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