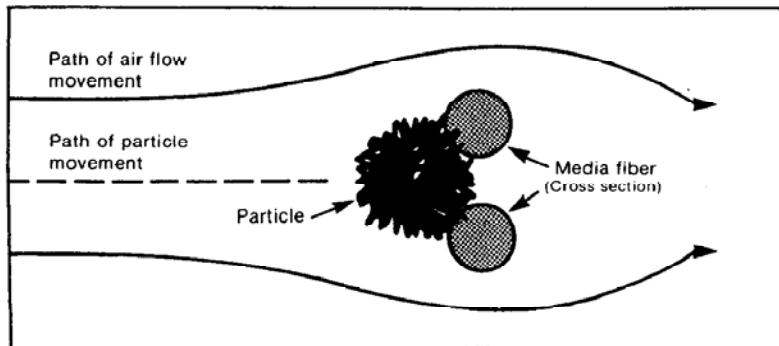
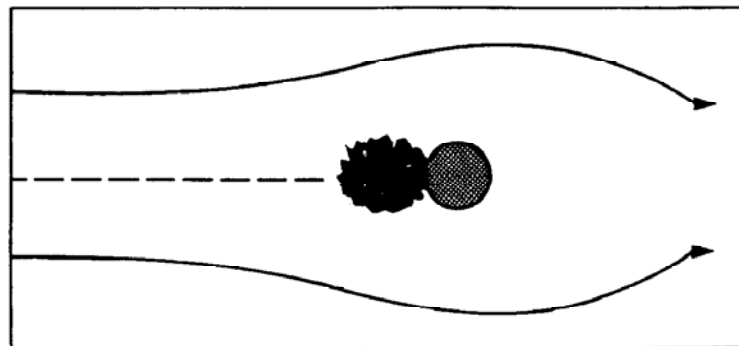


METHODS OF FILTRATION (Mechanical)



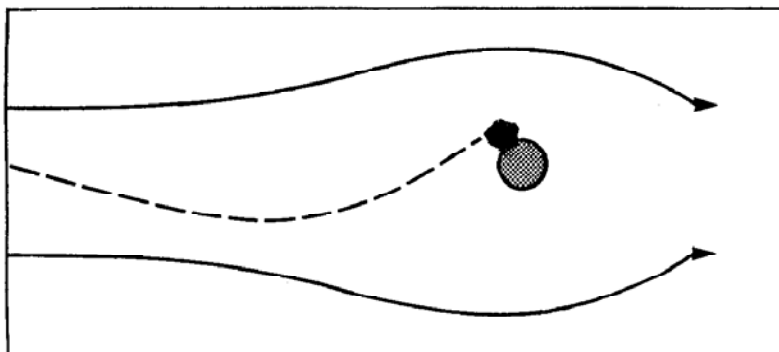
Straining

Straining occurs when a particle is larger than the opening between fibers and cannot pass through. It is a very ineffective method of filtration because the vast majority of particles are far smaller than the spaces between fibers. Straining will remove lint, hair, and other large particles.



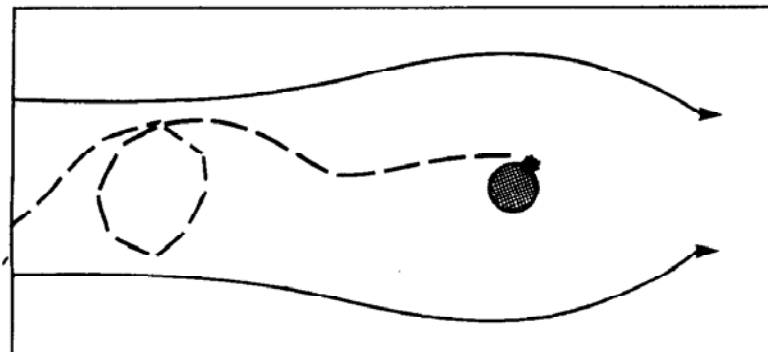
Impingement

As air flows through a filter, it makes repeated changes in direction as it passes around each fiber. Dirt particles, especially larger particles, cannot follow the abrupt changes in direction because of their inertia. As a result, they do not follow the airstream, and they collide with a fiber. Filters using this method are often coated with an adhesive to help retain particles on the fibers.



Interception

Interception is a special case of Impingement where a particle follows the airstream, but because of its size in relation to the fiber, it comes in contact with the fiber. It is not dependent on the inertia of the particle to bring it into contact with a fiber. The particle is retained by the inherent adhesive forces between the particle and fiber, called "van der Waals" forces.

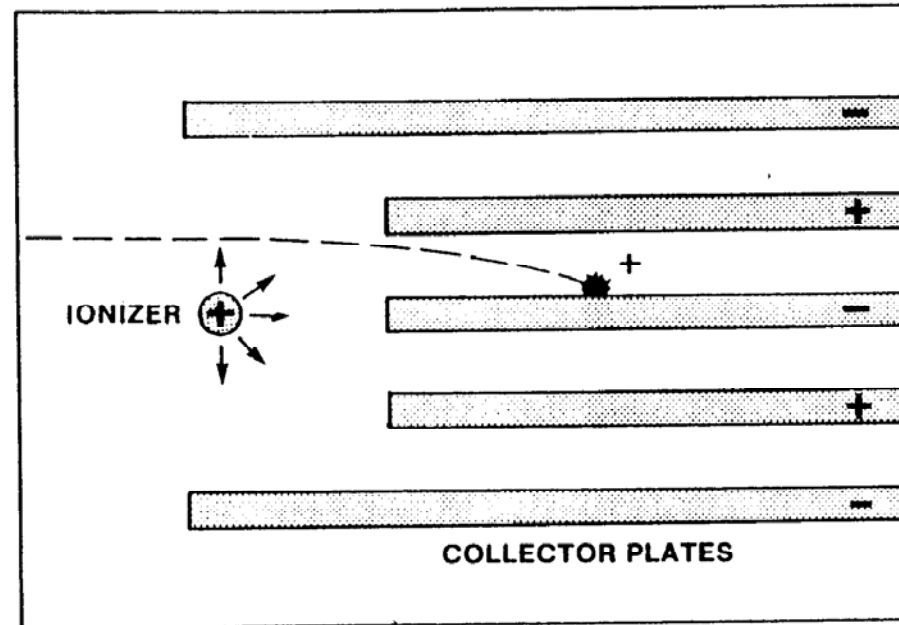


Diffusion

Diffusion takes place on particles so small that their direction and velocity are influenced by molecular collisions (called "Brownian movement"). They do not follow the airstream, but behave more like gases than particulate. They are battered across the direction of flow in a random "helter skelter" fashion. When a particle strikes a fiber, it is retained by the adhesive forces (van der Waals forces) between the particle and fiber.

METHODS OF FILTRATION

(Electrostatic)



The electrostatic method of filtration is based on the principle that objects carrying opposite electrical charges are attracted to one another. As particles enter the filter they pass through the "ionizer" section where a field with an intense positive charge has been created which is imparted to the particles. The particles are then carried by the airstream into the "plate" area, consisting of alternately charged collection plates. Positively charged particles are attracted to the negatively charged plates.

The accumulated dust load is removed from the plates in one of two fashions. Either the plates are periodically washed, or the dust load is left to "agglomerate" on the plates until the enlarged particles are blown off the plates into the "storage section". The storage section consists of either an automatic roll filter or extended surface filters.