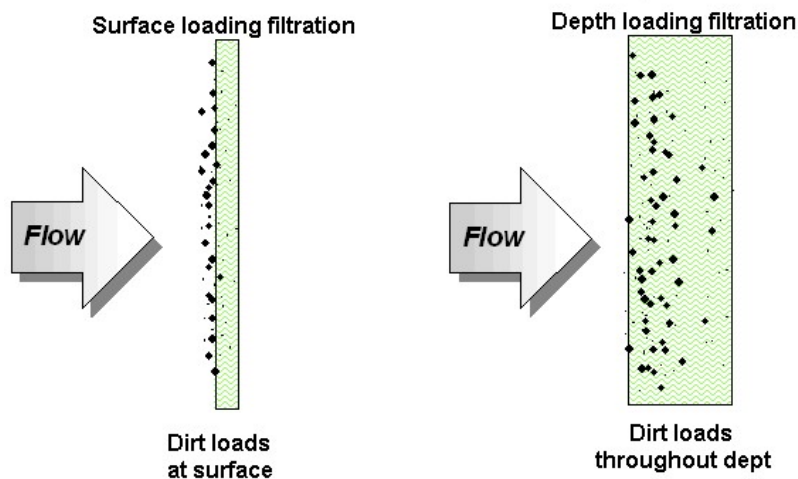




Depth loading filtration

The difference between surface filtration and depth filtration is shown on this page. You can see the difference between those two methods on the picture below.

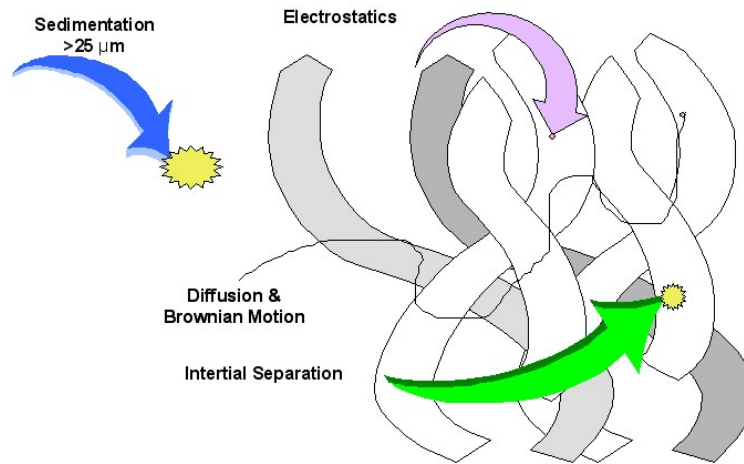


The advantage of surface filtration is the very easy technology that is involved. On the other hand, the advantage of depth filtration is the ability to filtrate biological and chemical. However, the technology behind depth filtration is more complicated than the technology of surface filtration. The decision which technology to use is mainly based on those facts.

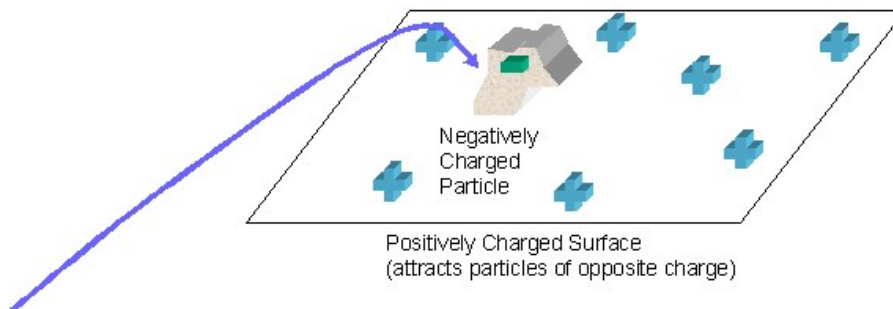
[Overview filtration-subjects](#)



On the picture below, the following principles are shown:



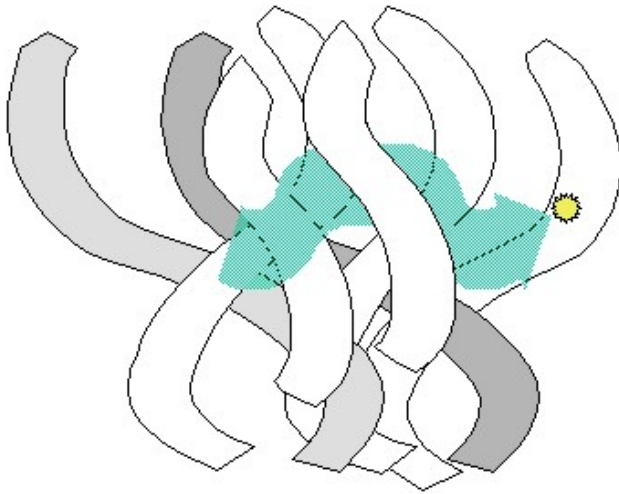
This page contains a short clarification about electrostatic separation in the wassertreatment.



- Particles can carry a charge acquired from their motion or from the process.
- Surfaces also can carry a charge acquired from friction or from material properties.
- Opposite charge causes the particles to be attracted to the surface.
- Important in limited number of liquid applications



This page contains information about inertial separation.

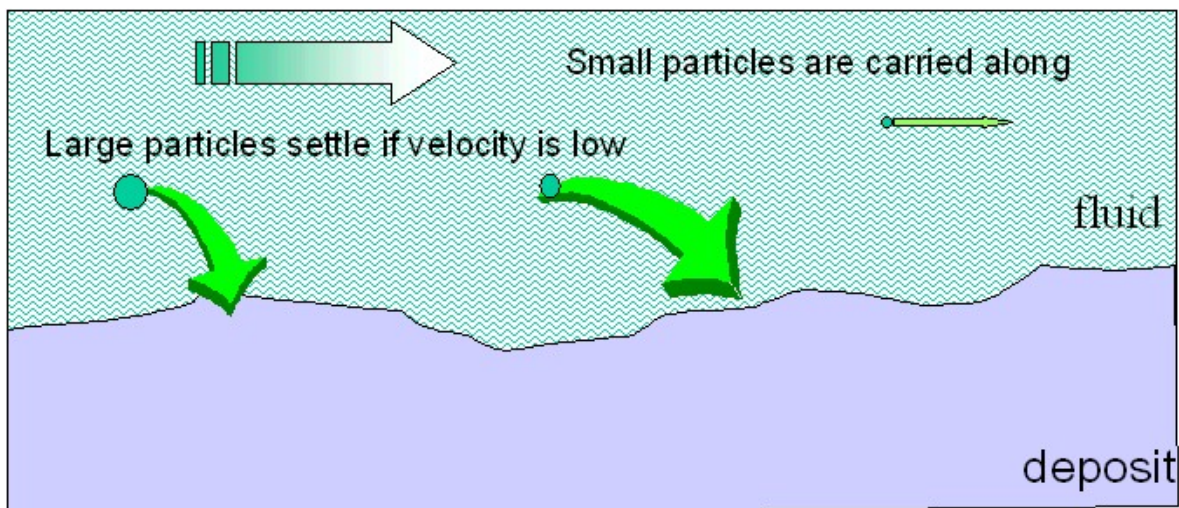


- Heavier particles are carried along by the fluid stream.
- As they enter the forest of fibers, they attempt to pass through without striking.
- Eventually, if the particles are heavy enough, they strike a fiber and are removed.
- This is the most used separation mechanism for particles 5-25 mm and for all depth-loading filter media.

Sedimentation

The small parts have a high velocity so they won't settle. The bigger parts do have the ability to deposit because those particles have a heavier weight and are able to settle easier than the small ones.

This principle separates the big particles from the smaller particles in a fluid.





- Brownian Motion
- Diffusion

Three principles which are not shown in the picture below but are discussed on this site are:

Adsorption:

The separation of one phase from a mixture by attaching it to a surface.

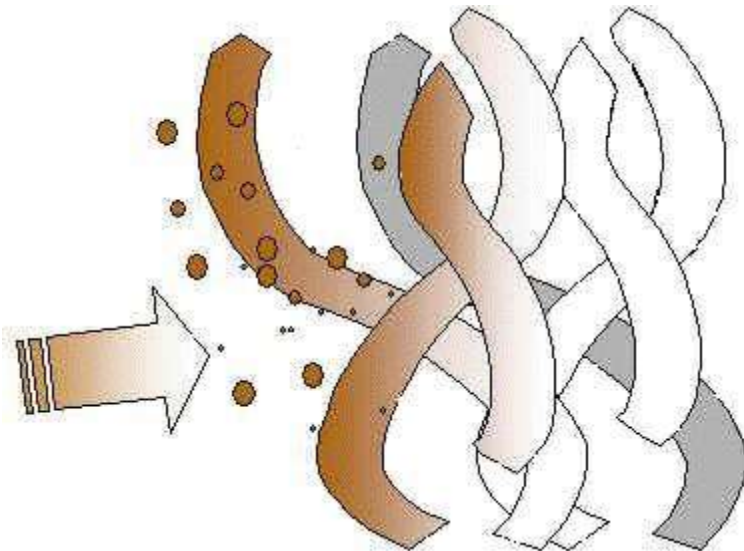
Examples

- Activated carbon for removal of organics from liquids or gases.
- Hydrophobic action of polypropylene for removing oils from aqueous.

Key to function

Two key parameters:

- Amount of the surface area. The more the merrier.
- "Residence time" of fluid within adsorbing media

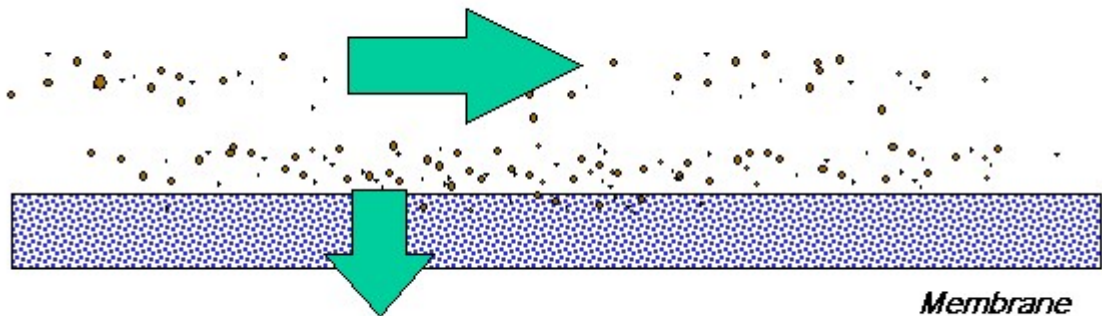


Cross-flow filtration is explained on this page.



The picture underneath shows that particles with a high velocity go with the flow. However, particles with a low velocity are passing through the membrane so the membrane will not be clogged.

High velocity across membrane to prevent plugging

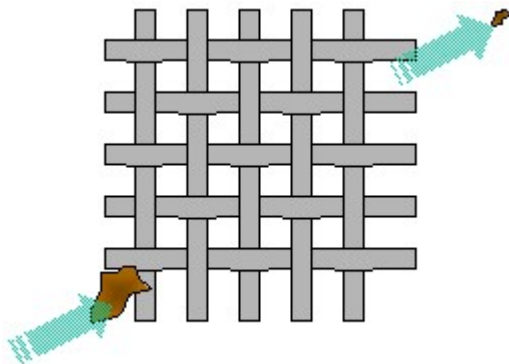


Low velocity through membrane

Interception is a process which can separate particles from a waterstream.

A description of the working of interception is given underneath.

- The holes in the filter surface are smaller than the particles.
- Larger particles are stopped, smaller particles are able to pass through.
- Once the holes are blocked by the large particles, the filter is plugged and needs to be cleaned.



The technologies on this page which are coloured blue, do have a page of their own. The technologies are explained in more detail on these pages.

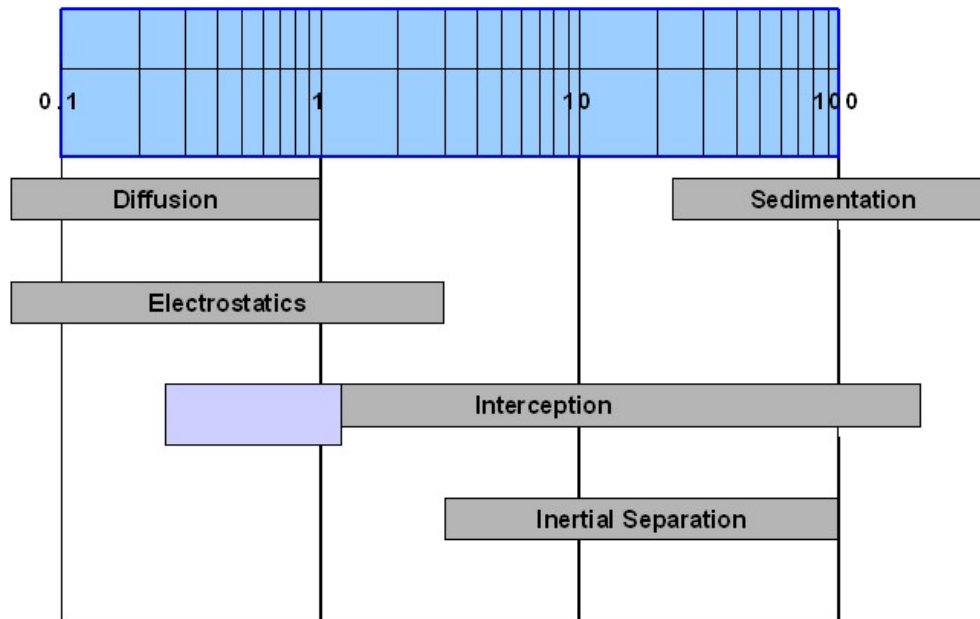
On this page you can find an overview of some application areas from filtration principles in the water treatment.

The page about application areas contains an overview of when which technology should be used.



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On the image below you can see which principle can be used for each situation.



The upper part of the image tells how big the particles can be for the type of filtration which is required.