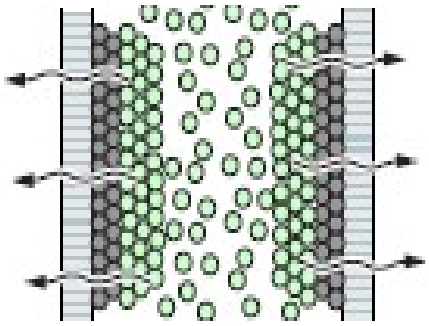
Process

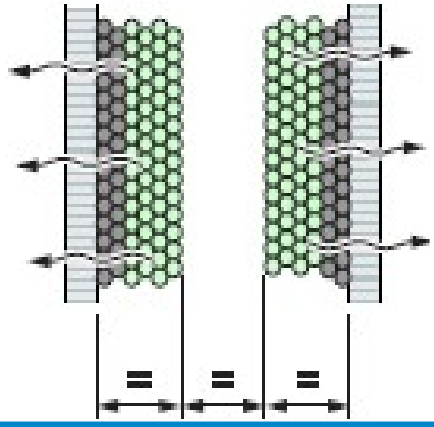
Main process

Start of filtration cycle

The pressure vessel is filled with liquid, surrounding all filter leaves with liquid.
The liquid is pressurized and is pushed through the filter leaves.

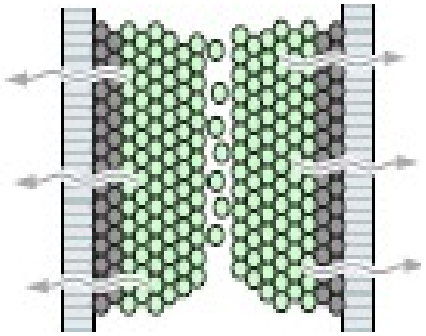


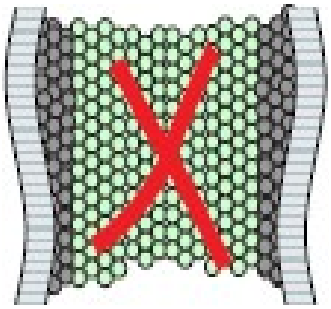
- The filtrate flows out of the filter through the filter outlet.
- The solid particles remain on the leaves as a filter cake.
- A filter cake is necessary to get a clear filtrate.
- The first filtrate will not be clear.
- Keep supplying liquid to start building a filter cake.
- Filtration starts when the filter cake is of sufficient thickness and the filtrate becomes clear.



The cake gets its maximum thickness when it fills 1/3 of the area between the filter leaves.
This keeps sufficient space for the liquid to go through.

If the filter cake is too thick there is not enough space for the liquid to flow between the filter leaves.
Filtration is no longer satisfactory.





Bridging

If filtration continues the cakes will touch each other.
The pressure will increase and the filter leaves will bend.
This can make a filter element unserviceable.

End of filtration cycle

A filtration cycle ends when one of these criteria's are met:

- maximum permitted pressure difference
- maximum pressure inside the filter vessel
- maximum cake thickness.

Note:

If you get to the maximum pressure difference between the inlet and the outlet of the filter before you get to the maximum cake thickness the filtration run ends.

At the end of a filtration cycle the contents of the pressure vessel are removed.

Dry cake (vibrator)
The cake is dried with air, an inert gas or steam.
After the pressure is released the bottom valve is opened.
The vibrators start and shake the cake loose from the filter leaves.

Wet cake (sluice pipe)
After the pressure is released the bottom valve is opened.
Start the motor of the sluice pipe.
The liquid sprays the filter cake from the leaves
The wet cake goes through the bottom valve.

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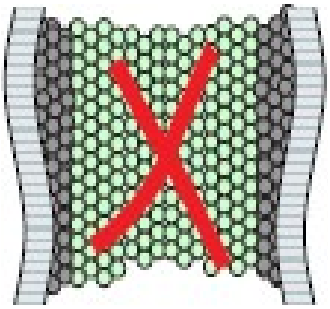
Process

Over filtration

While the filter cake becomes thicker during filtration, bridging between two leaves begins.

Caused by to much solids in the filter due to :

- Too high solids concentration in suspension
- Too Long filtration time



Over filtration examples

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