

UF Membrane Filter



Characteristics of Ultrafiltration Membrane

UF membrane with pore sizes in the range of 0.03 to 0.05 micron typically remove high molecular-weight substances, colloidal materials, and organic and inorganic polymeric molecules, bacteria except minerals. Low applied pressures are sufficient to achieve high flow rates from an ultrafiltration membrane. Flow rate of a membrane is defined as the amount of permeate produced per unit. Our UF filter shows excellent water permeability. The flow rate varies between 50 and 200 GPD at operating pressure of about 50psig in contrast, Reverse osmosis membranes only produce between 10 to 30GPD at 200 to 400psig. Quality properties of resistance to acid and alkali, high flow-rate, non-toxicity, no-taste and stable performance.

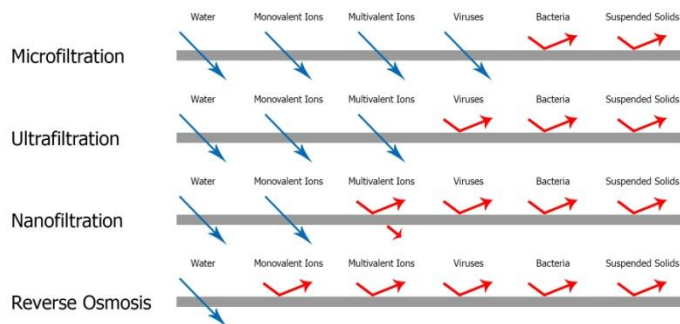
Advantages:

1. High through put of product
2. Low process cost
3. Ease of scale-up

Application

1. Fraction nation of protein sand nucleic acids
2. Concentration of macro molecules
3. Desalting, i.e. removal of salts and other low molecular weight compounds from solution of macromolecules
4. Removal of cells and cell debris from fermentation broth
5. Virus removal from therapeutic products

Specification of UF Membrane Filter



	UF Membrane Filter
Max Flow Rate	0.5 GPM(1.9L)
Working Pressure	14 ~ 57 psi (1 ~ 4kgf / cm ²)

Temperature	33 ~ 100°F (4 ~ 38°C)
Capacity	5,000 Gal (18,900L)
Service Life	12 months
Evaporated remains	Below 500 ppm or less

- If the water pressure over 57 psi, have to install

Ultrafiltration Membranes

Basically UF membrane modules come in plate and frame, spiral wound, and tubular configurations.

All configurations have been used successfully in different process applications. Each configuration is specially suited for some specific applications and there are many applications where more than one configuration is appropriate. For high purity water, spiral wound and capillary configurations are generally used. The configuration selected depends on the type and concentration of colloidal material or emulsion.

Factors Affecting the Performance of Ultrafiltration.

© Flow Across the Membrane surface.

The permeate rate increases with the flow velocity of the liquid across the membrane surface. Higher flow also means higher energy consumption and larger pumps. Increasing the flow velocity also reduces the fouling of the membrane surface. Generally, an optimum flow velocity is arrived at by a compromise between the pump horsepower and increase in permeate rate.

© Operating Pressure.

Permeate rate is directly proportional to the applied pressure across the membrane surface. However, due to increased fouling and compaction, the operating pressures rarely exceed 100psig and are generally around 50psig. In some of the capillary-type ultrafiltration membrane modules the operating pressures are even lower due to the physical strength limitation imposed by the membrane module.

© Flow Across the Membrane Surface.

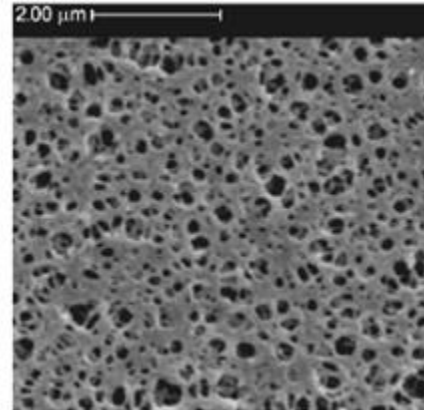
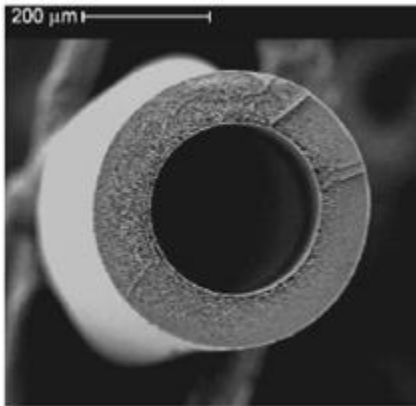
Permeate rates increase with increasing temperature. However, temperature generally is not a controlled variable. It is important to know the effect of temperature on membrane flux in order to distinguish between a drop in permeate due to a drop in temperature and the effect of other parameters.

Membrane Materials

A variety of materials have used for commercial ultrafiltration membranes, but polysulfone and cellulose acetate are the most common. For high purity water applications the membrane module Materials must be compatible with chemicals such as hydrogen peroxide used in sanitizing the membranes on a periodic basis.

Specification of UF Hollow Fiber Element Material

Parameter	Specifications	Conditions
Material	Polysulfone	
Outer Diameter	450+_20 um	
Inner Diameter	270+_15 um	
Particle Size cut off	< 0.03 um	20°C, 1kg/cm ²
Pure water Flux	50L / min.m ²	20°C, 1kg/cm ² , initial rate
Operation Pressure	0.5-0.4kg/cm ²	20-30°C
pH range	1-14	20-30°C

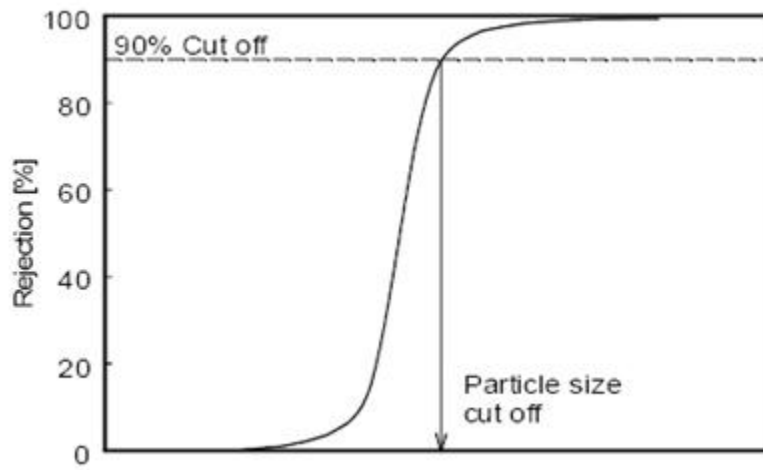


© Pressure Resistance

1. Applied pressure: 0.5~4 kgf/cm²
2. Resident time at each pressure: 5 minutes
3. Maximum operating pressure: 4 kgf/cm²

© Particle Size cut off Character

1. Standard particles: Polystyrene latex bead(Sigma, Mean dia.: 0.03, 0.05um)
2. Pressure : 1 kgf/cm²
3. Analysis : UV Spectrometer ($\lambda=320$ nm)
4. Influent : 100 ppm aqueous suspension
5. Effluent: 7.5 ppm for 0.03 um(92.5% rejected), 1.5 ppm for 0.05um (98.5% rejected)



© Bacteria Reduction

1. Bacteria : E. Coli
2. Influent: 725 CFU/ml
3. Effluent: Negative (0 CFU/ml, 100% Reduced)

• Certified by KOTRIC (Korea Testing & Research Institute for Chemical Industry)

