OSMOTECH
Membranes Pvt. Ltd.

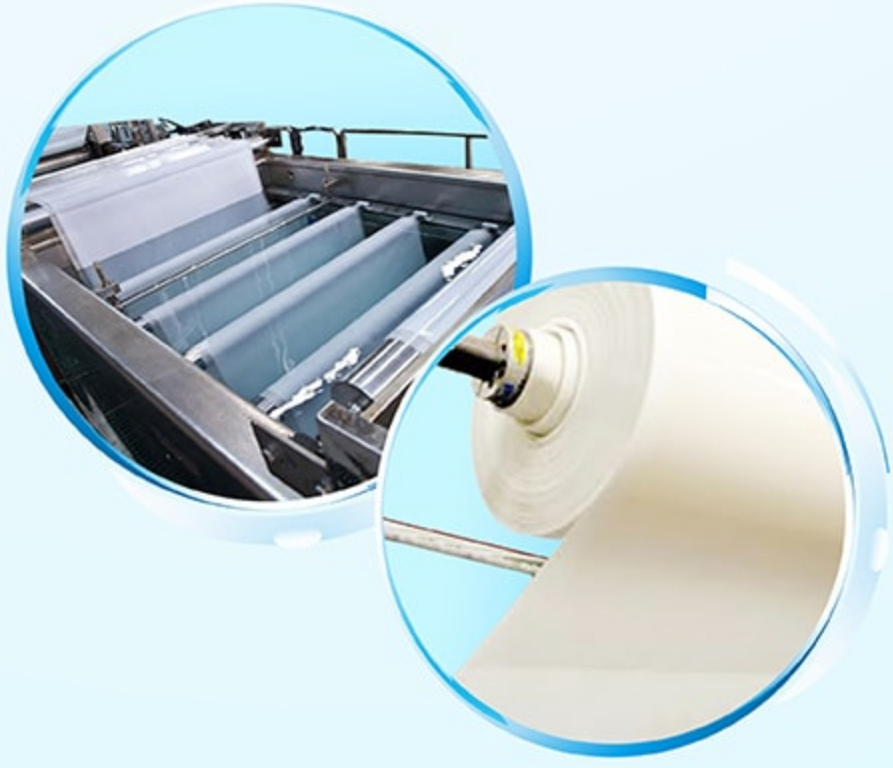
a step towards purity

MANUFACTURER OF FLAT SHEET MEMBRANES FOR

RO (REVERSE OSMOSIS) MEMBRANE
ULTRA FILTRATION MEMBRANE
NANO FILTRATION MEMBRANE
MICRO FILTRATION MEMBRANE

Flat Sheet Membranes Manufacturing Technology

Osmotech ensures to compete your expectations for quality and performance by the advance technology which enhances the quality and performance of flat sheet membrane material production. We continuous try to improvise and bring innovations at our manufacturing platform as it is the most applicable part in production of premium materials.



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Membranes Manufacturing

We are one of the best manufacturing units located at Rajkot-India producing high quality RO, UF, NF Flat Sheet Membranes as well as MF Flat Sheet Membranes for various sectors like industrial, municipal, corporate, commercial and home based drinking water solution. We deliver best quality at most lowest cost.

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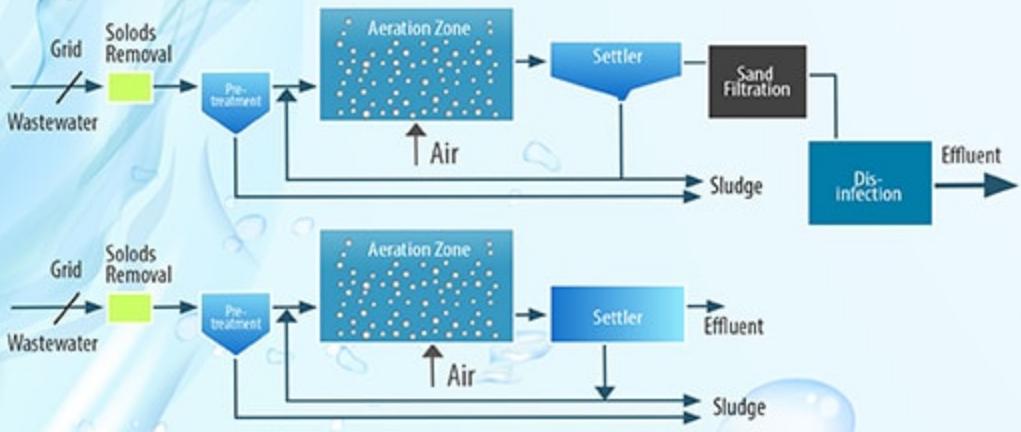

To provide the best possible Flat Sheet Membranes materials solution, we cautiously choose the most advanced technology and material for your specific purpose of membranes. We research on materials, and continue to develop invented materials that exhibit exclusive functionality.

For production of these varieties of Flat Sheet Membranes occupies the fully equipped production unit, advanced machineries, developed technologies and finest raw materials under the supervision of industrial norms and excellences to accomplish the desires of most applicable Flat Sheet Membranes.

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Osmotech produced Flat Sheet Membranes advantages.

1. Excellent chemical resistance, thermal characteristics, Surface treatments.
2. Superior quality product performance
3. Enhance capacity
4. Less investment, operational and manual cost reduction.
5. Consume less time
6. Boost business

Types of Membrane Technology

1. RO (Reverse Osmosis)
2. UF (Ultra Filtration)
3. NF (Nano Filtration)
4. MF (Micro Filtration)

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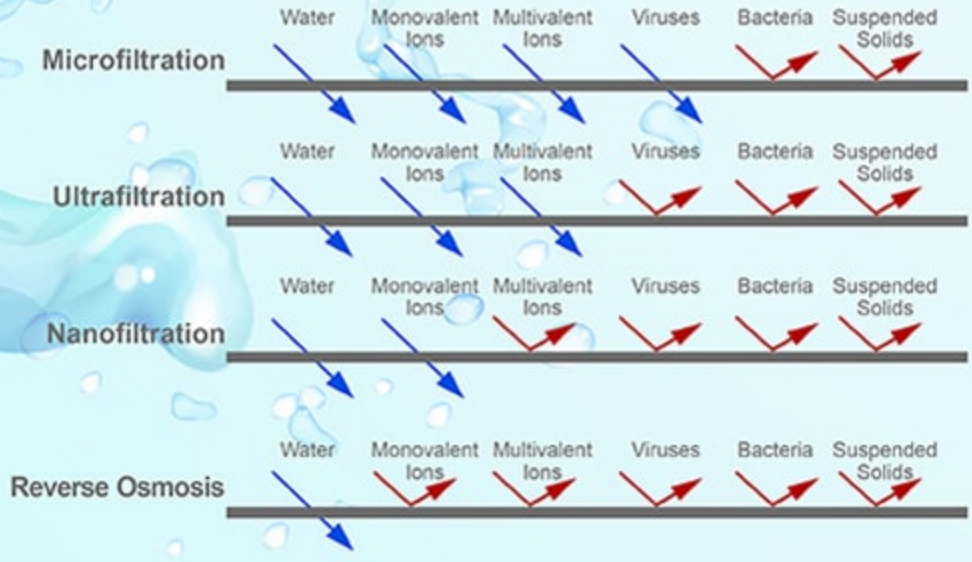
PARAMETER	NANO FILTRATION	MICRO FILTRATION	REVERSE OSMOSIS	ULTRA FILTRATION
Separation principle	Size, charge, similarity	Size	Size, charge, similarity	Size, charge
Size of species separated(µm)	~0.001	0.1-20	<0.001	0.001-0.1
Typical separated species	Sugars, pesticides	Silts, bacteria, cysts, spores	Salts, sugars	Proteins, viruses, end toxins, pyroxenes
Typical recovery (%)	50-95	90-99.99	30-90	80-98
Cross Flow velocity (ms^{-1})	0.1-0.5	1-3	0.1-0.25	0.2-1



Membranes Process Characteristics

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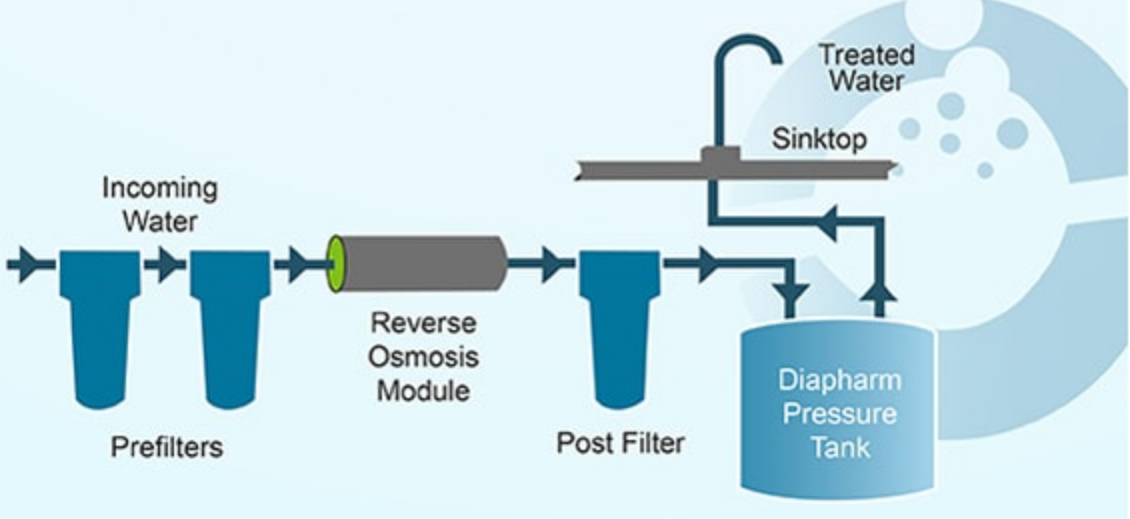
Reverse Osmosis Filtration

Reverse Osmosis removes up to 99% of total dissolved solids. OSMOTECH RO membranes deliver hygienic drinking water by reducing concentration of Arsenic, Barium, Cadmium, Chromium, Chromium (Trivalent), Copper, Cysts, Turbidity, Fluoride, Lead, Radium 226/228, Selenium, and TDS.

RO involves sorting out water from a solution of dissolved solids by forcing water through a semi- permeable membrane. As pressure is applied to the solution, usually by a pump, water and other molecules with low molecular weights (less than about 200 grams per mole) pass through micro pores in the membranes. Larger molecules are hold by the membranes.

Most RO technology uses a cross flow process to allow the membrane to continually clean itself. As some of the fluid passes through the membranes the rest continues downstream, sweeping the rejected species away from the membranes.



Reverse Osmosis Filtration Process

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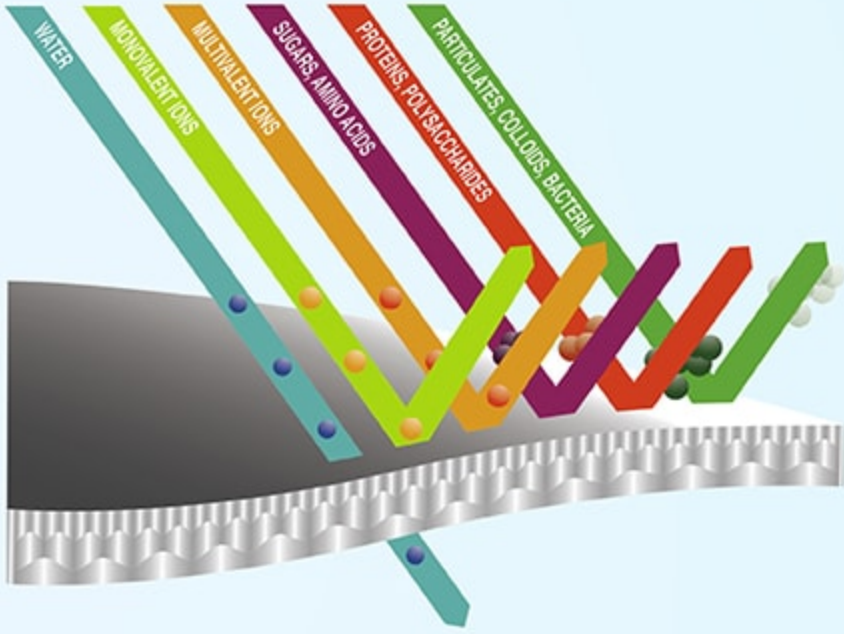

Reverse Osmosis Element

MODEL	ACTIVE MEMBRANE AREA M2	OPERATING PRESSURE BAR	PERMEATE FLOW RATE GPD	STABLE REJECTION RATE %	STABLE REJECTION RATE %	CONCENTRATION OF SOLUTION	TEMPERATURE	PH VALU
RO 1812 - 50	*0.32*	*10*	*50*	*97.8*	*96*	*1000 PPM*	*25°C*	*6.5-7*
RO 1812 - 75	*0.37*	*10*	*75*	*97.8*	*96*	*1000 PPM*	*25°C*	*6.5-7*
RO 2012 - 100	*0.46*	*10*	*100*	*97.8*	*96*	*1000 PPM*	*25°C*	*6.5-7*
RO 2812 - 200	*0.93*	*10*	*200*	*97.8*	*96*	*1000 PPM*	*25°C*	*6.5-7*
RO 3012 - 300	*1.3*	*10*	*300*	*97.8*	*96*	*1000 PPM*	*25°C*	*6.5-7*

Reverse Osmosis Flat Sheet Membrane

NF MEMBRANE	REJECTION RATE %	PERMEATE FLOW GPD	TEST CONDITON	TYPICAL APPLICATION
	97.8	*> 50*	*1. Temerature : 24 - 28 °C* *2. Concentration of Solution NaCl : 2000 ppm* *3. Ph value 7 - 8* *4. Oprating pressure : 10 bar*	*Water treatment, Consentration of SOLUTION, DESALINATION*

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Nano Filtration

Today, nano filtration is majorly functional in drinking water refinement process steps, such as water softening, discoloring and micro pollutant removal. While for industrial processes nano filtration is functional for the removal coloring agents. Nano filtration is a pressure associated procedure, during which separation takes place, based on molecule size. The technique is chiefly applied for the removal of organic solutes, such as micro pollutants and multivalent ions.

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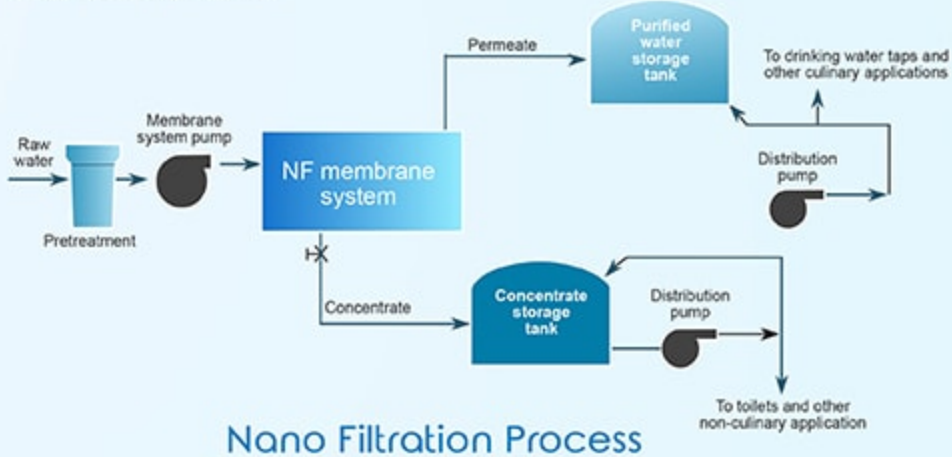
Applications of Nano Filtration

- Removes pesticides from groundwater
- Removes heavy metals from wastewater
- Wastewater recycling in laundries
- Water softening
- Nitrates removal



Nano Filtration Process

Nano Filtration Element

MODEL	ACTIVE MEMBRANE AREA M2	OPERATING PRESSURE BAR	PERMEATE FLOW RATE GPD	STABLE REJECTION RATE %	CONCENTRATION OF SOLUTION	TEMPERATURE	PH VALU
RO 1812 - 75	0.37	10	75	80	1000 PPM	25°C	6.5-7
RO 2012 - 100	0.46	10	100	80	1000 PPM	25°C	6.5-7
RO 2812 - 200	0.93	10	200	80	1000 PPM	25°C	6.5-7
RO 3012 - 300	1.3	10	300	80	1000 PPM	25°C	6.5-7

Reverse Osmosis Flat Sheet Membrane

NF MEMBRANE	REJECTION RATE %	PERMEATE FLOW GPD	TEST CONDITON	TYPICAL APPLICATION
1	70 - 80	>40	1. Temerature : 24 - 28 °C 2. Concentration of Solution NaCl : 2000 ppm 3. Ph value 7 - 8 4. Oprating pressure : 10 bar	SOFTEND WATER, Removal of heavy Metals

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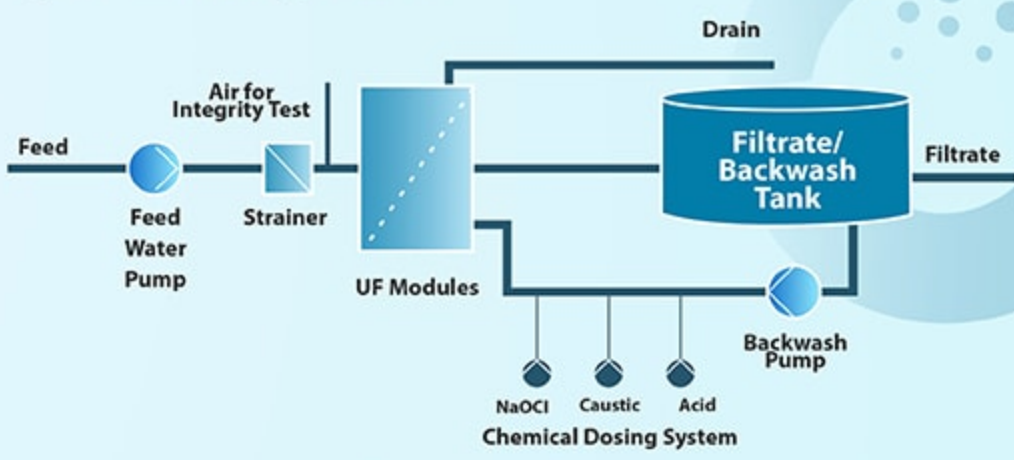
Ultra Filtration

Ultra Filtration technology uses a membrane wall to remove particles as small as 0.01 microns, including bacteria, viruses and colloids, impurities meeting increasingly harsh water quality standards around the world providing purified water.Ultrafiltration (UF) is a pressure-driven purification technology in which water and low molecular weight material pass through a membrane while particles, colloids and macromolecules are rejected, yet does not remove ions and small molecules. Flow through the semi-permeable membrane is achieved by applying a pressure gradient between the outer and inner walls of the membrane structure.

UF membranes typically have pore sizes in the range of 0.01-0.05 µm which contributes to a high removal capability of bacteria, viruses, colloids and impurity thereby producing highly purified water. UF membranes basically have a service life of three to seven years or longer, compared to reverse osmosis membranes. They are commercially available in hollow fiber, tubular, plate and frame, and spiral wound configurations.



Ultra Filtration Process

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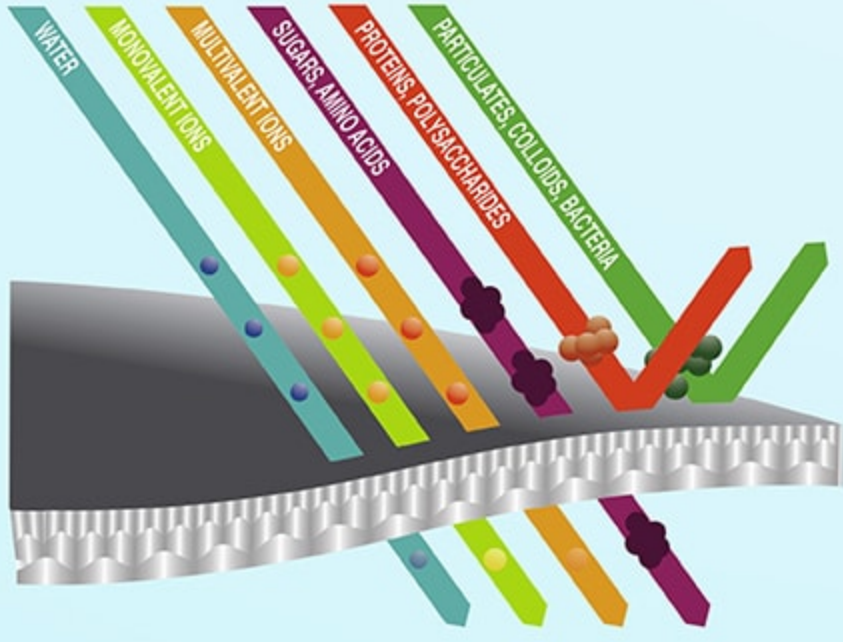
Applications of Ultra Filtration

- Filtration of sewage from paper pulp mill
- Cheese manufacture, see ultra filtered milk
- Removal of pathogens from milk
- Process and waste water treatment
- Fruit juice concentration and clarification
- Dialysis and other blood treatments
- Desalting and solvent-exchange of proteins



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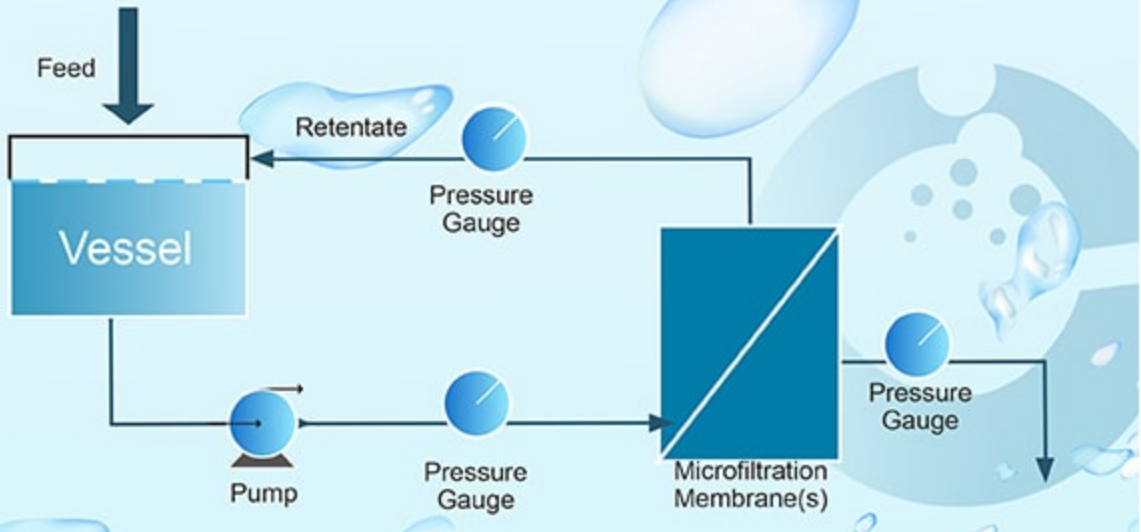
Micro Filtration

Micro Filtration uses membranes with pore size 0.1-10 µm. Microfiltration membranes remove all bacteria. Only part of the viral contamination is caught up in the process. This is because viruses can attach themselves to bacterial bio-film (group of microorganisms in which cells stick to each other on a surface).

Micro filtration can be implemented in many different water treatment processes when particles with a diameter greater than 0.1 mm need to be removed from a liquid.



Micro Filtration Process

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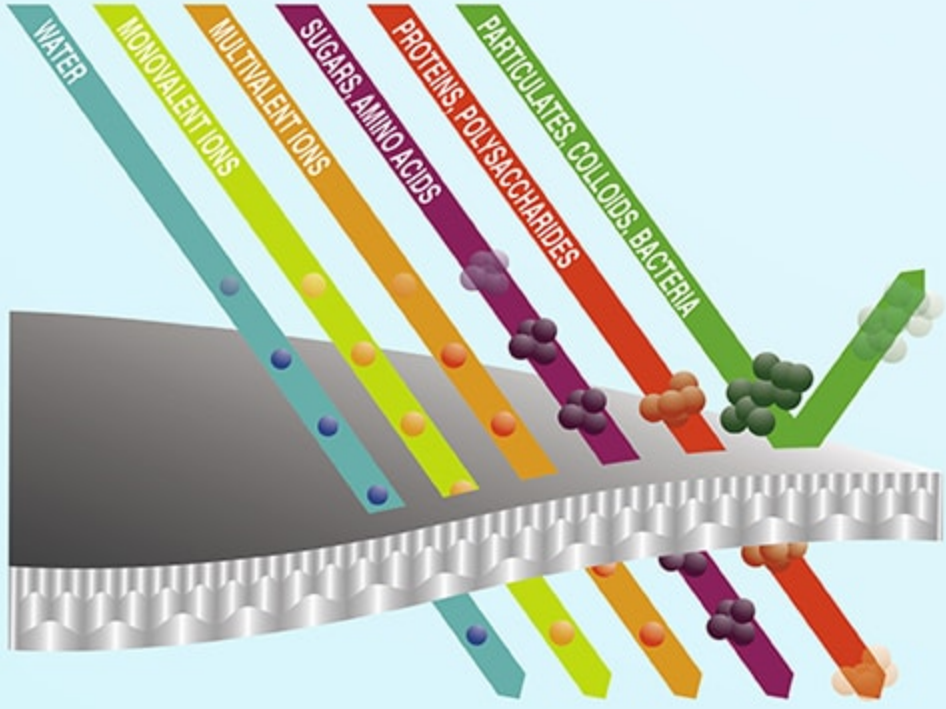
Applications of Micro Filtration

- Water Treatment
- Petroleum Refining
- Sterilization
- Dairy Processing to remove bacteria from milk



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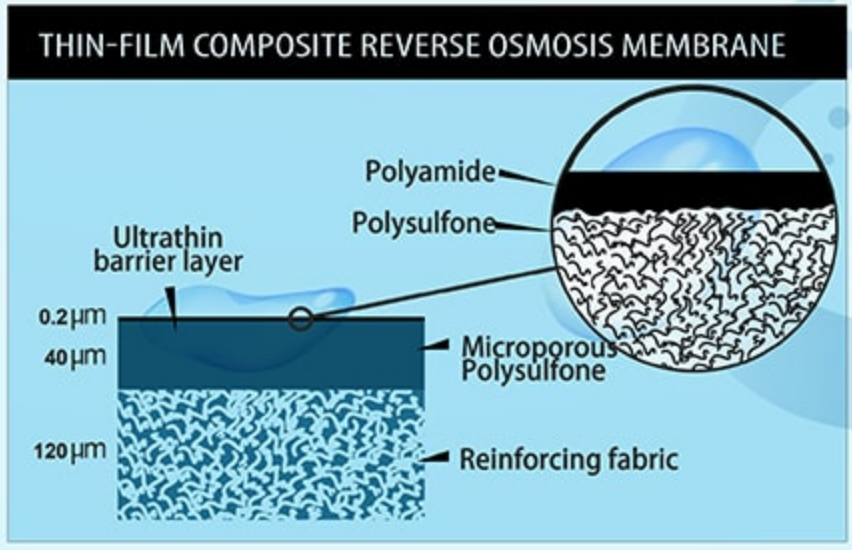
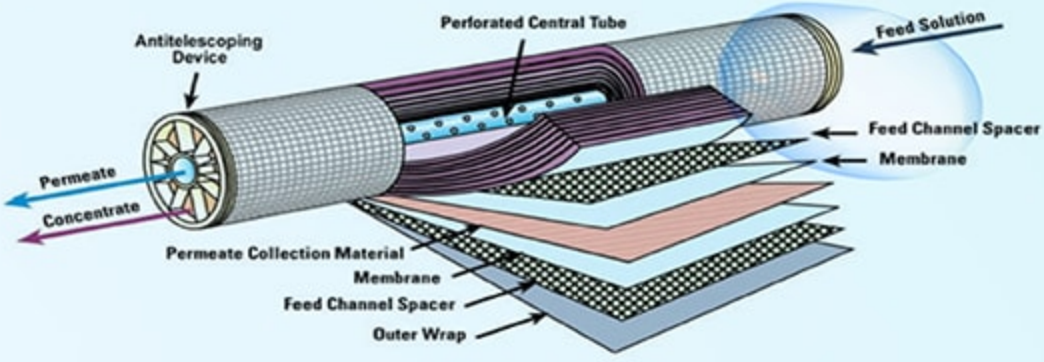
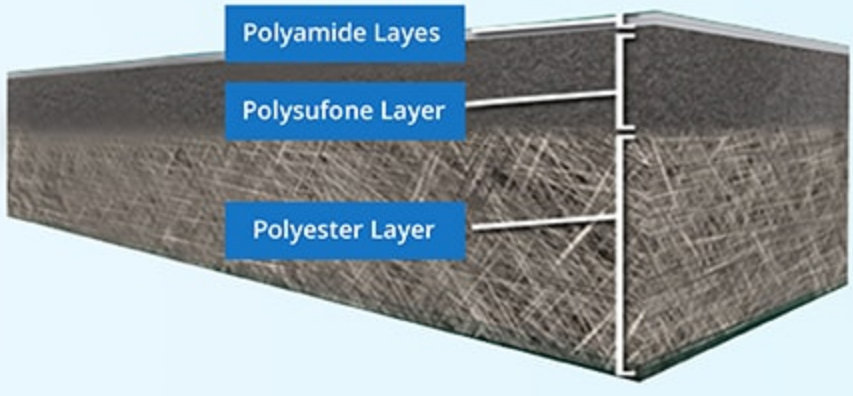
Layers Of Membranes

The membranes is basically made up of 3 thin layers of Polyamide layer at the top, Polysulfone layer at the middle and finally polyester layer at the bottom. Polyamide layer is 0.2 µm, polysulfone layer is 40 µm and polyester layer is 120 µm. The three layer configuration gives the preferred properties of high elimination of undesired materials (like salts), high filtration rate, and good mechanical strength. Depending on the pore size, membrane can be classified as microfiltration (MF), ultrafiltration (UF), nanofiltration (NF) and reverse osmosis (RO) membranes. Membranes can also be of various thicknesses, with homogeneous or heterogeneous structure. Membranes can be neutral or charged, and particle transport can be active or passvie. The concluding can be facilitated by pressure, concentration, chemical or electrical gradients of the membrane process.







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