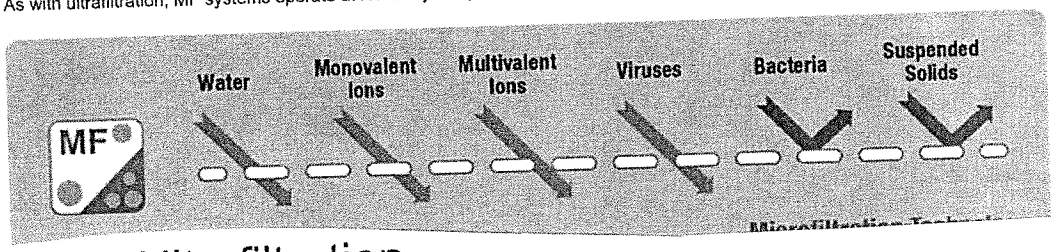
About Microfiltration

Effortless purification of macromolecules

Microfiltration (MF) has significant applications in simple dead-end filtration for water, sterile fruit juices and wine, and aseptic pharmaceuticals. However, not all applications that benefit from MF operate successfully in the dead-end mode, and a large portion of the MF market has been captured by crossflow.

The most common of these is the clarification of whole cell broths and purification processes in which macromolecules must be separated from other large molecules, proteins, or cell debris. Clarification of dextrose and highly-colored fruit juices employ MF extremely well. There are also large markets for MF crossflow filtration in wine production, milk and whey de-fatting, and brewing. As with ultrafiltration, MF systems operate at relatively low pressures and come in a variety of configurations.

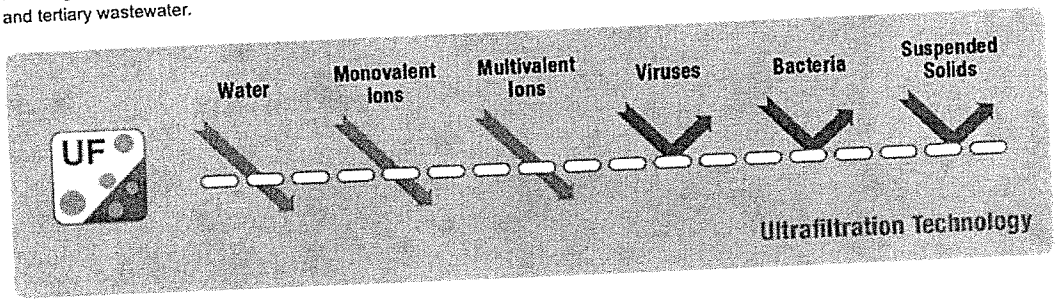


About Ultrafiltration

A versatile and economical solution

Ultrafiltration (UF) is a pressure-driven process that removes emulsified oils, metal hydroxides, colloids, emulsions, dispersed material, suspended solids, and other large molecular weight materials from water and other solutions. UF membranes are characterized by their molecular weight cut-off.

UF excels at the clarification of solutions containing suspended solids, bacteria, and high concentrations of macromolecules, including oil and water, fruit juice, milk and whey, electrocoat paints, pharmaceuticals, poly-vinyl alcohol and indigo, potable water, and tertiary wastewater.



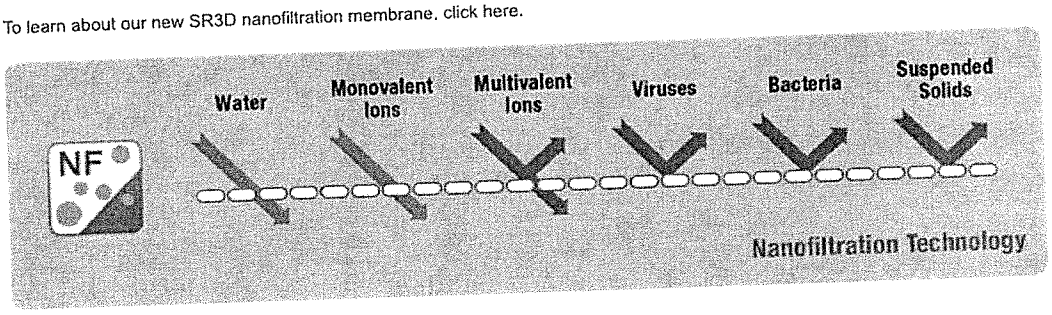
About Nanofiltration

Optimized water recycling

Nanofiltration (NF) functions similarly to reverse osmosis, but is generally targeted to remove only divalent and larger ions. Monovalent ions such as sodium and chloride will pass through a nanofiltration membrane, therefore many of its uses involve de-salting of the process stream.

In the production of lactose from cheese whey, for example, NF concentrates lactose molecules while passing salts, a procedure that purifies and concentrates the lactose stream. In water treatment, NF membranes are used for hardness removal (in place of water softeners), pesticide elimination, and color reduction. It can also be used to reclaim spent NaOH solutions, in which case the permeate stream is purified NaOH, allowing reuse many times over.

To learn about our new SR3D nanofiltration membrane, click here.



About Reverse Osmosis

Fast and continuous filtration

Reverse osmosis (RO) membranes feature the smallest pores and involve, appropriately enough, the reversal of osmotic pressure in order to drive water away from dissolved molecules. Strictly speaking, RO is not a size exclusion process based on pore size; it depends on ionic diffusion to affect separation. One of its common applications is seawater desalination, in which pure water is produced from a highly saline feed stream, similar to evaporation with far better economy.

RO is also used in cheese whey concentration, fruit juice concentration, ice making, car wash reclamation, wastewater volume reduction, and other industrial processes, with the goal of producing a pure filtrate (typically water) or retaining the components. Because the osmotic pressure of many process streams is quite high, RO membranes must operate at pressures of 400-1,200 psi (29-83 bars), which restricts available membrane geometries.