



# UF Membrane

## Product Overview

Ultrafiltration (UF) is a type of membrane filtration in which hydrostatic pressure forces a liquid against a semipermeable membrane. A semipermeable membrane is a thin layer of material capable of separating substances when a driving force is applied across the membrane. Once considered a viable technology only for desalination, membrane processes are increasingly employed for removal of bacteria and other microorganisms, particulate material, and natural organic material, which can impart color, tastes, and odors to the water and react with disinfectants to form disinfection byproducts (DBP).

## How It Works

Ultrafiltration uses hollow fibers of membrane material and the feed water flows either inside the shell, or in the lumen of the fibers. Suspended solids and solutes of high molecular weight are retained, while water and low molecular weight solutes pass through the membrane. Ultrafiltration is not fundamentally different from reverse osmosis, microfiltration or nanofiltration, except in terms of the size of the molecules it retains. When strategically combined with other purification technologies in a complete water system, UF is ideal for the removal of colloids, proteins, bacteria, pyrogens, proteins, and macromolecules larger than the membrane pore size from water.

## Benefits

- No need for chemicals (coagulants, flocculates, disinfectants, pH adjustment)
- Size-exclusion filtration as opposed to media depth filtration
- Good and constant quality of the treated water in terms of particle and microbial removal
- Process and plant compactness
- Simple automation
- Environmentally friendly

## Applications

- Laboratory grade water purification
- Wastewater treatment
- Drinking water treatment
- Paint Recovery in the automotive industry
- Desalting and solvent-exchange of proteins
- Dialysis and other blood treatments

## Maintenance

Ultrafiltration systems contain extremely fine membrane filters which need to be properly cleaned. The cleaning process used depends on whether a UF system is being used to remove organic or inorganic contaminants, or even both. To remove **organic contaminants** the general cleaning protocol for the cleaning of tubular membranes is to use a low foam, medium alkaline detergent at 0.6% to 1% for a maximum of 40 to 60 minutes. To remove **inorganic contaminants** the best treatment is with citric acid at a maximum concentration of 3.0 %. The acid should circulate for 1 to 3 hours. Hydrochloric acid can also be used to clean membranes, as can oxalic, sulfuric and nitric acid.

