Pure reliability.

3M™ Liqui-Flux™ W-Series Ultrafiltration Modules

Advanced membrane technology that helps purify wastewater for reuse and reduces contamination and consumption for industrial processes.
Clean and clear.

Advanced membrane technology for economical, reliable water treatment.

From drinking water for entire communities to industrial facilities that put water to work, our world depends on a steady supply of clean water.

Advanced membrane technology from 3M provides effective and economical ultrafiltration treatment to help restore water for reuse ... and to help responsibly manage our planet’s most precious resource.

A growing global population, the needs of industry and a changing climate all place enormous demands on the limited global supply of fresh water. As a result, many industries and communities are turning to alternative water sources and economical purification methods to support today’s consumption needs – and ensure a steady supply of safe, clean water for tomorrow.

Membrane technology has become integral to sustainable water use. In wastewater treatment and drinking water systems around the world, filtration membranes efficiently and cost-effectively remove many particles – helping purify and reuse the water we already have.

Proven technology for water treatment

3M has been a technological leader in membrane development and manufacturing for over 40 years. Our flat sheet and capillary membranes meet high technical and hygienic standards for applications with stringent water purity requirements. In high-technology industries, 3M™ Liqui-Flux™ Ultrafiltration Modules help ensure the usage of quality water in multiple industrial processes. Closer to home, Liqui-Flux ultrafiltration modules help meet the needs of communities around the world that lack access to potable water and reduce water consumption by making wastewater safe for use in industrial applications.
A leader in membrane technology

We are dedicated to the continued development and advancement of membrane technology. We also offer our technical expertise to support our customers from initial system design through module start-up and optimization.

3M Membrane Technology Selection

- **3M™ Membrana™** Hollow Fiber and Flat Sheet Membranes for medical applications
- **3M™ Flat Sheet Microfiltration Membranes** for process filtration
- **3M™ Liqui-Cel™** Membrane Contactors for degassing
- **3M™ Liqui-Flux™** Microfiltration Modules for beverage clarification
- **3M™ Liqui-Flux™** Ultrafiltration Modules for water treatment

3M™ Liqui-Flux™ W-Series Ultrafiltration Modules

Ultrafiltration (UF) membrane technology offers an economical and reliable alternative to conventional treatment steps such as flocculation, sedimentation and multi-media filtration. Even when contamination levels in the water source fluctuate, 3M™ Liqui-Flux™ W-Series Ultrafiltration Modules reliably achieve high quality due to turbidity reductions.

Liqui-Flux ultrafiltration modules have demonstrated reliable operation and sustained membrane integrity in a variety of applications:

- Removing pathogens, turbidity and suspended solids from fresh water
- Improving effluent quality of wastewater
- Pre-treating water for desalination processes
- Provide water with low turbidity
- Reducing the amount of chemicals needed for disinfection
Treating water right.
From high-technology industries to your own home.

Applications for 3M™ Liqui-Flux™ W-Series Ultrafiltration Modules

Drinking water

As part of public water treatment, Liqui-Flux ultrafiltration modules provide a barrier to pathogens. They operate automatically and consistently achieve high-quality outlet – unlike conventional treatments that require adaptation of chemical dosage.

In many regions of the world, bottled water is the only safe drinking water available. Liqui-Flux ultrafiltration modules offer an economic alternative to the final disinfection step and can replace single-use cartridge filters. Liqui-Flux ultrafiltration modules can also be used in combination with in-line coagulation to help remove arsenic compounds and color from groundwater or deep well water.

Process water

Manufacturing plants worldwide rely on a continual supply of purified water and liquids in their processes. Effective filtration upstream helps control contamination, scaling and corrosion downstream – helping protect both critical equipment and end product quality.

Liqui-Flux ultrafiltration modules offer a cost-effective way to treat and re-use water from existing process. They not only allow for a reduction of consumption of fresh water, but also lower sewage costs. The small footprint, low energy consumption and low maintenance of Liqui-Flux modules further contribute to long-term sustainable operations.
Reverse osmosis pre-treatment

Desalination systems using reverse osmosis (RO) can recover significant amounts of usable – or even drinkable – water from salty sources like seawater, river estuaries or brackish wells. Also used in recycling, energy production and wastewater treatment, RO systems have become integral to high-efficiency desalination processes.

Liqui-Flux ultrafiltration modules are used to pre-treat feed water to help prevent severe fouling of RO membrane modules. Compared to flocculation, sedimentation and sand filtration, Liqui-Flux ultrafiltration modules can filter out smaller particles, providing excellent filtrate quality regardless of inlet water variations. In addition, pre-treatment with Liqui-Flux ultrafiltration modules can reduce the amount of sludge for disposal, helping reduce operating costs.

Wastewater reuse

As the tertiary step in the wastewater treatment process, Liqui-Flux ultrafiltration modules improve water quality for reuse or safe discharge by significantly reducing the remaining bacteria and particulate matter. The filtered water may be used for irrigation, in industrial process water or cooling water, or discharged directly into freshwater reservoirs.

Liqui-Flux ultrafiltration modules provide effluent quality on par with membrane bioreactors, but can operate at significantly higher flux rates and with lower energy consumption. They can be installed to treat full or partial streams without requiring modifications to existing equipment. In addition, Liqui-Flux modules are designed so that contaminated water flows only inside the capillary membrane lumen.
Inside the Technology

Membranes function as semi-permeable barriers that allow target components to pass through, while retaining others. 3M™ Liqui-Flux™ W-Series Ultrafiltration Modules efficiently separate out microorganisms, suspended solids and other contaminants.

We manufacture one of the largest ultrafiltration modules of its kind, using advanced inside-out ultrafiltration technology with a large effective membrane area, all in a durable module design. Our innovative Variable Connect Concept (VCC) provides design flexibility, making it easier to install Liqui-Flux modules in tight spaces. We offer a variety of sizes and configurations to meet the requirements of both small-scale and large-scale industrial and drinking water applications.

3M™ Capillary Membrane: superior permeability and strength

- Robust asymmetric 3-layer structure
- Narrow pore size distribution
- Excellent permeability
- Reduced fouling potential
- High temperature and chemical resistance (pH 1 – 13)
3M™ Liqui-Flux™ Ultrafiltration Modules consist of a structured membrane arrangement inside a 12-inch housing. This design provides well-defined liquid flow hydrodynamics and long-term durability.

**Multifiber P.E.T.™ technology:** sophisticated membrane support

Hollow fiber membranes are stabilized by 3M’s multifiber P.E.T. technology, where P.E.T. yarn is twisted around and potted with the hollow fibers. This provides excellent mechanical support to the membrane and ensures long-term stability.

**Controlled hydrodynamics:** even flow distribution promotes efficient backwash

The special module design is optimized for favorable hydrodynamic conditions during the backwash procedure.

- The introduction of backwash water through a narrowing annular channel ensures a uniform pressure distribution. This leads to excellent physical cleaning performance.
- No O-ring seal is required to separate the feed from the filtrate side, reducing the potential for microbiological cross-contamination.

For further information visit: 3M.com/Liqui-Flux
Technical Support

From pilot testing to scale-up, our process engineers can help you optimize the design and performance of 3M™ Liqui-Flux™ Ultrafiltration Modules for your specific application. 3M technical experts can review water quality parameters, assist with troubleshooting and conduct detailed membrane module autopsies. Through our laboratories, you have access to sophisticated analytical testing equipment to determine metal and microbiological contamination. We can also transport ultrafiltration test units to your site for feasibility studies or to plan for full-scale implementation.