Established in 1926, Toray is a worldwide leader in chemical manufacturing and related products. Leveraging decades of experience in synthetic fibers and textiles, Toray has expanded into many other fields such as carbon fiber and its composites, plastics, fine chemicals and innovative water treatment technologies.

Toray is committed to achieving sustainable growth and environmental preservation, while meeting the diverse needs of its customers worldwide. Toray constantly strives to contribute to the countries and communities in which it operates, not only through superior products and services, but by acting as a concerned corporate citizen. In this way, Toray seeks to play its part in building a better society for all the people of the world.

About Toray
Toray’s Innovative Separation Technology Offers Competitive Solutions.

Toray’s PVDF hollow fiber membrane module, a pressured type hollow fiber UF (ultra filtration) membrane module, effectively removes suspended solids and microorganisms such as pathogens, when used for various types of water treatment. This innovative membrane module was developed with polymer science and the membrane fabrication technologies accumulated in Toray Industries, Inc. for more than 30 years.

Toray PVDF Hollow Fiber Membrane

Outside-to-Inside Flow Direction

The flow direction is outside-to-inside, which is suitable for high turbidity water treatment, because an air-scrubbing method can be adopted to remove suspended solids effectively.

High Chemical Resistance with Polyvinylidene Fluoride (PVDF)

PVDF is one of the best membrane materials that allows using chlorine and strong acid for chemical cleaning of the membrane, resulting in better cleaning effect and longer sustainable flux rates.

High Mechanical Strength with High Filtration Flux

Toray’s special spinning method with PVDF enables high mechanical strength without reinforcement and high filtration flux at the same time. Additionally, the spinning method achieves high-precision small pore size control with uniform diameter distribution, providing high fouling resistance.

Two Membrane Types for Various Applications

Toray provides two types of PVDF hollow fiber membranes to meet the requirements on various applications with many kinds of untreated water.

<table>
<thead>
<tr>
<th>Membrane Module Type</th>
<th>H30 series</th>
<th>H50 series</th>
</tr>
</thead>
<tbody>
<tr>
<td>MMCO or Nominal Pore Size</td>
<td>150,000 Da (UF)</td>
<td>0.02 micrometer (UF)</td>
</tr>
<tr>
<td>Pure Water Flux [m³/h at 100 kPa]</td>
<td>0.8</td>
<td>1.6</td>
</tr>
</tbody>
</table>

Recommended Applications

- Drinking Water Production
- Industrial Water Treatment
- Seawater Desalination (for RO pretreatment)
- Wastewater Tertiary Treatment

Advantages of Toray PVDF Hollow Fiber Membrane Modules

Safe Water Provided

Toray membrane modules are made of reliable materials and manufactured under our rigorous quality control. Model HFS-2020 is certified for drinking water production.

- ANSI/NSF 61
- AMST (Association of Membrane Separation Technology of Japan)
- CDPH (California Department of Public Health)

Large Size Module with Large Membrane Area

Module Type 2020 has 72 m² of membrane area that provides large amount of filtration flow continuously. Such a large size module is suitable for large-scale water treatment plants.

Examples of Actual Plants

Toray’s membrane modules provide high-quality water on a daily basis for drinking, RO pretreatment, water reuse and other applications.

- Drinking Water Production
- Seawater Desalination (for RO pretreatment)
- Industrial Water Treatment
- Wastewater Tertiary Treatment

Filtration Process Flow

Toray provides two types of PVDF hollow fiber membranes to meet the requirements on various applications with many kinds of untreated water.