RO

NF

UF

MBR

'TORAY'

Innovation by Chemistry

Toray UF

PVDF Hollow-Fiber Ultrafiltration Membrane Module

02-G-MB2-UF-230105

Toray UF

60 years of Pioneering Towards Sustainable Water

Toray Industries, Inc. has been developing water treatment membranes since 1968. Today, we have been offering a full lineup of membranes backed by our sixty years of experience. Our advanced membrane technologies and global operations ensure the success of any project.

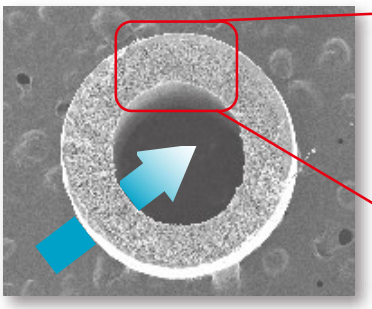
At the Toray Group, we consider sustainability to be the most important global issue of the 21st century. Toray's Sustainability Vision for water treatment aims to triple the water treated annually with our membranes by 2030 (compared to 2013). We will continue to provide advanced membrane technology such as RO membranes, further strengthen our technical services, and contribute to solving water problems worldwide.

Toray UF accumulated plant capacity :

83,000,000 m³/day (March, 2022)

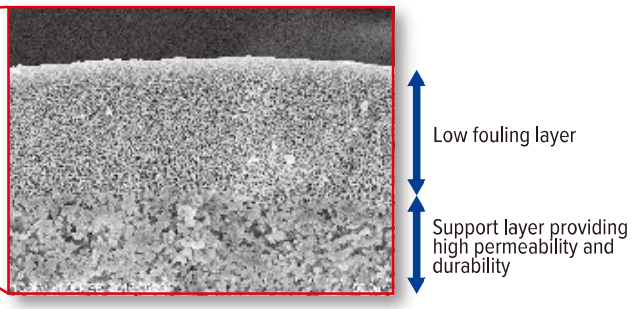
Characteristics

Outside-In Flow

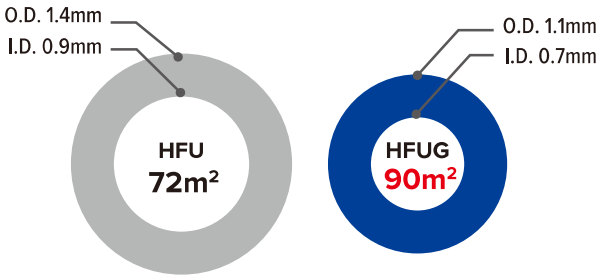


Outside-In flow direction is ideal for treating water with high turbidity. Suspended solids are effectively removed during backwash and air scouring.

Cross-Section of the Composite Membrane



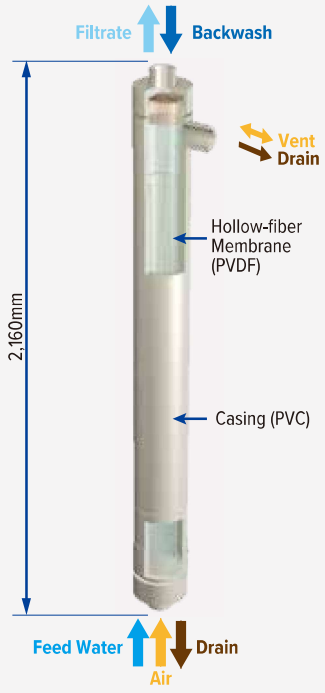
Membrane Area Per Module



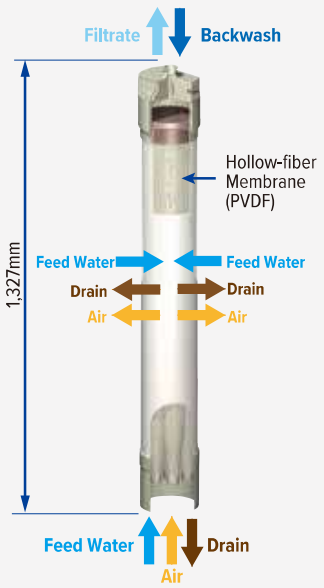
25% Increase

Using Toray's HFUG fiber, the surface area per module is increased by 25% without increasing the packing density. The HFUG fiber maintains the same strength and durability properties characteristic of Toray PVDF membranes.

Pressurized Series (HFUG/HFU)



Submerged Series (HSU)



Materials Change Our Lives

'TORAY'

Specifications

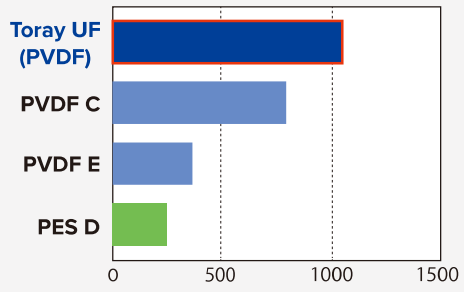
			PRESSURIZED-series			SUBMERGED-series
Model			HFUG-2020AN	HFU-2020AN	HFUG-B2315AN	HSU-1515
Membrane Surface Area		m² (ft²)	90 (969)	72 (775)	75 (808)	20 (215)
Molecular Weight Cut-off		Daltons	150,000			
Dimensions	Diameter	mm (in)	216 (8.50)	216 (8.50)	178 (7.01)	147 (5.79)
	Length	mm (ft)	2,160 (7.09)	2,160 (7.09)	2,332 (7.68)	1,327 (4.35)
Weight	Full of Water	kg (lbs)	92 (203)	92 (203)	65 (143)	14 (31)
	After Draining	kg (lbs)	49 (108)	49 (108)	35 (77)	10 (22)
Material	Membrane		PVDF (Polyvinylidene fluoride)			
	Potting		Epoxy and/or equivalent			
	Other		Casing: PVC (Polyvinylchloride) and/or equivalent			Cap: ABS; Protect Cylinder: PE
Maximum Inlet Pressure		kPa (psi)	300 (43.5)			-
Normal Operating Trans-Membrane Pressure		kPa (psi)	0-200 (0-29.0)			0-100 (0-14.5)
Operating Temperature Range		°C (℉)	1-40 (33.8-104)			
pH Range	During Filtration		1-10			
	During Cleaning		0-12			

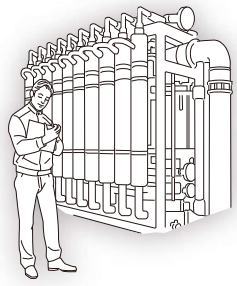
Industry Leading TIPS UF Membrane

Toray's polyvinylidene fluoride (PVDF) hollow fiber membranes are manufactured via a thermally-induced phase separation (TIPS), producing the industry's strongest fiber. Our proprietary manufacturing process carefully controls the distribution and size of the membrane pores, ensuring high filtrate quality and reducing fouling potential.

Toray's PVDF membrane is highly resistant to chlorine and strong acids, allowing for effective chemical cleaning without shortening membrane life. Toray UF Modules effectively remove suspended solids, viruses, and bacteria and are certified for drinking water applications.

Mechanical Strength





Example of UF Module Selection Decision Matrix

	Capital Cost	Operating Cost	Experience	Financial Strength	Customer Service	Reliability	Skid Size / Flexibility	Membrane Pore Size	Membrane Strength	Design Flux	Flux correction in cold waters	Transmembrane Pressure	Cleaning Interval	Volume of Chemicals Used	Organics Removal	Overall Pilot Performance	
Important Factor	5	5	8	6	7	10	5	2	8	3	3	4	6	2	4	6	
Brand A	10	8	6	8	8	8	10	8	8	7	8	10	8	8	9	8	
Brand B	6	10	10	10	8	8	8	10	8	8	6	8	8	8	10	8	
Toray UF	8	9	7	8	8	10	8	10	10	7	8	10	10	10	8	8	
Weighted Score																	**Total**
Brand A	50	40	48	48	56	80	50	16	64	21	24	40	48	16	36	48	685
Brand B	30	50	80	60	56	80	40	20	64	24	18	32	48	16	40	48	706
Toray UF	40	45	56	48	56	100	40	20	80	21	24	40	60	20	32	48	**730**

Reference Case Study

GLOBAL LOCATIONS

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Toray UF Installations

Case Studies ➡

Toray Group

www.water.toray