



Ultrafiltration

Meaningful protection
for your water treatment
processes



Ultrafiltration or UF is a pressure-driven membrane separation process that helps remove particulate matter from aqueous solutions such as water. UF

membranes typically have pore sizes in the range of 0.01 to 0.10 μm and efficiently remove bacteria and most viruses, colloids and silt. The smaller the nominal pore size, the higher the removal efficiency. Most materials that are used in UF are polymeric and are naturally hydrophobic, such as polysulfone (PS), polyethersulfone (PES), polypropylene (PP), or polyvinylidene fluoride (PVDF).

DOW™ UF membrane is made from high-grade polymeric PVDF material to form a hollow fiber membrane that is very durable and less prone to breakage. The hollow fiber has a dense layer or skin on both the inside and outside surfaces, forming a double-walled structure that contributes to its strength. In addition, its fouling resistance is improved by making the membrane surface more hydrophilic than the underlying PVDF polymer. With uniform pore size and outside-in flow, the DOW UF membrane creates a barrier without sacrificing performance.



How DOW™ Ultrafiltration Works

DOW™ UF modules utilize a double-walled hollow fiber H-PVDF membrane with a very small pore diameter for excellent removal of particulate matter and bacteria, and most viruses and colloids. Despite the small pore diameter, the membrane has a very high porosity, resulting in a stabilized flux similar to that of micro-filtration (MF).

Typically, DOW UF is operated at a constant permeate flow. The transmembrane pressure (TMP) will naturally increase over time, and the module can be cleaned by back-washing and air-scouring to remove the fouling layer for longer service life.



Advantages of DOW™ UF Technology

Low fouling: DOW™ UF modules are made from H-PVDF material, which has excellent chemical resistance to strong levels of disinfectants such as peroxide or hypochlorite, allowing sufficient removal of bacterial growth.

Very fine pore diameter: With a nominal pore diameter of 0.03 µm, DOW UF technology effectively removes pathogens, most viruses and bacteria. In addition, the membrane's high porosity allows high flux operation at a given transmembrane pressure.

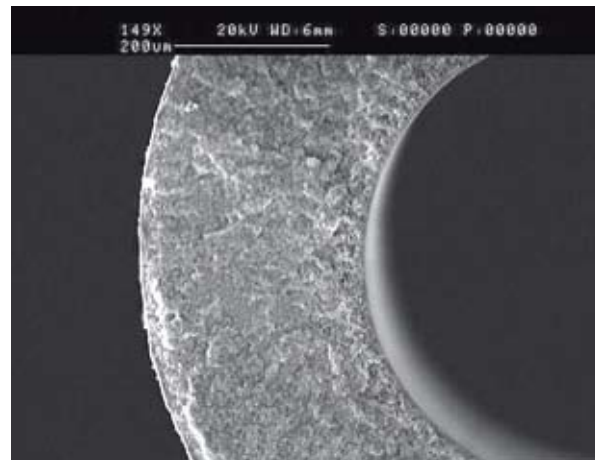
Durable double-walled fiber structure: The distinct structure provides excellent durability and resistance against breakage, even with periodic cleaning procedures to remove fouling.

Outside-in flow configuration: Systems designed with DOW UF use an outside-in flow configuration, which allows for low clogging and high solids loading, high flow area and easy cleaning.

Dead-end or concentrate bleed capabilities: Although the primary flow design is dead-end filtration, modules can be easily adapted to a concentrate bleed mode.

Simple, modular design: DOW UF modules can be configured in a simple modular design providing a compact footprint.

DOW™ UF technology uses double-walled hollow fibers, which are more durable and less prone to breakage than single-walled hollow fibers.

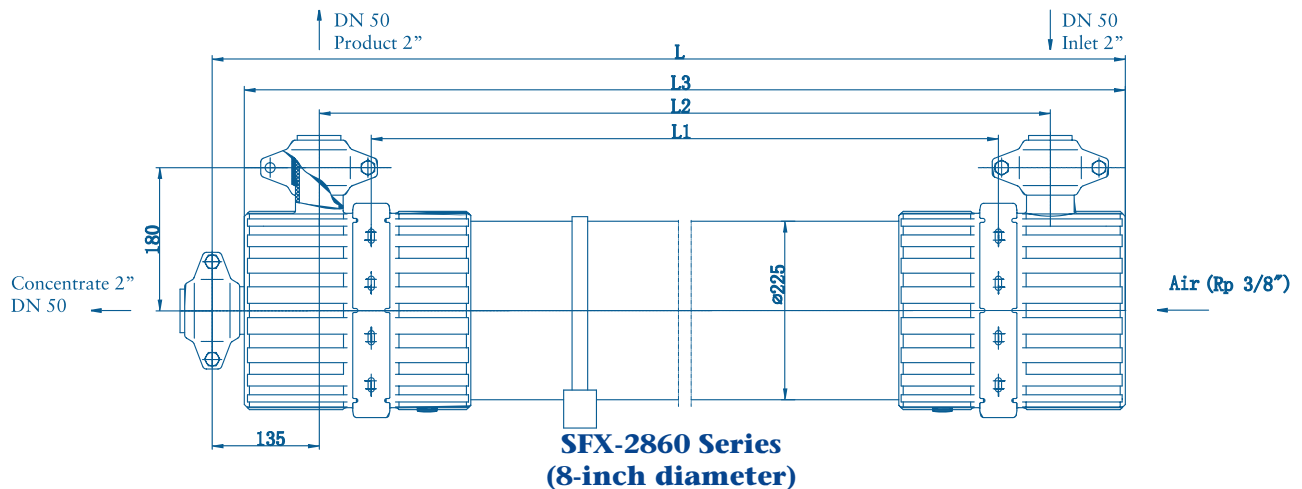
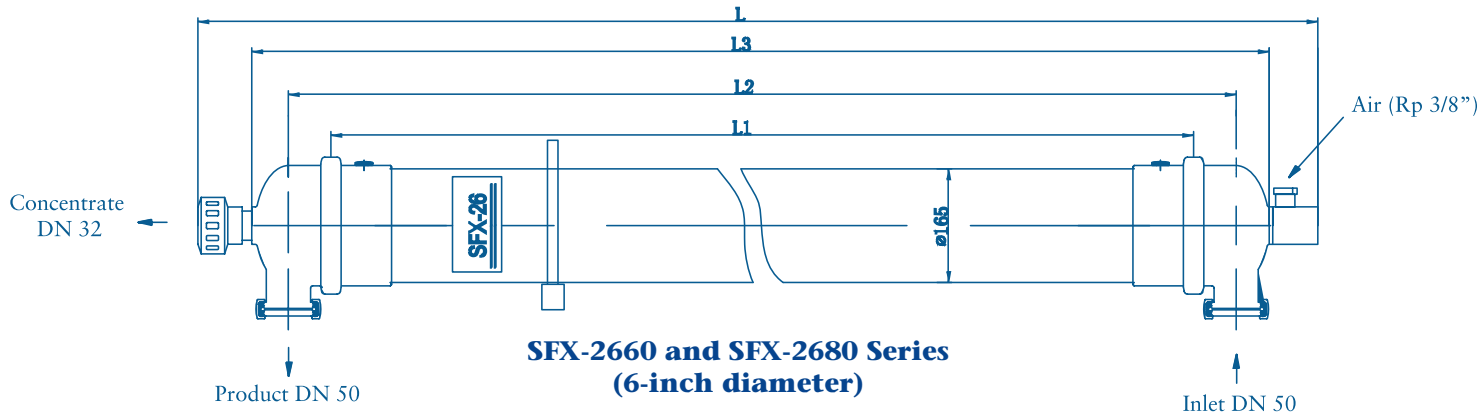


Typical DOW™ UF Operating Specifications

Fiber Physical Properties			Typical Process Conditions		
Configuration (fluid flow)	Hollow Fiber (outside/in)			SI	US
Base Polymer	H-PVDF		Maximum Operating Transmembrane Pressure (TMP)	2.1 bar	30 psi
Nominal Pore Diameter	0.03 microns		Maximum Backwash Pressure	2.5 bar	36 psi
	SI	US			
Hollow Fiber ID	0.70 mm	0.028"	Backwash Flux	100-150 l/m ² /h	59-88 gfd
Hollow Fiber OD	1.30 mm	0.051"		Maximum	Typical
			Total Suspended Solids (TSS)	100 ppm	50 ppm
Operating Ranges			Particle Size	300 µm	<150 µm
	SI	US			
Typical Filtrate Flux Range @ 25°C	40 – 120 lmh	24 – 70 gfd	Backwash Frequency	20 to 60 minutes	
Temperature (limited by UPVC)	1-40°C	34-104°F	Backwash Duration	40 to 120 seconds	
Maximum Inlet Module Pressure	6.0 bar	87 psi	Typical Clean in Place Frequency	1 to 3 months	
pH	2-11		Air Scouring Frequency	0 times per day to Backwash Frequency	
NaOCl, Cleaning Maximum	2,000 ppm		Chemically Enhanced Backwash Frequency	As needed with solutions of NaOCl/ Alkali and/or Acid	
			Cleaning Chemicals	NaOH/NaOCl, HCl, Citric Acid, Oxalic Acid	

Typical DOW™ UF Module Specifications

	SFX-2660 Series (6-inch diameter)		SFX-2680 Series (6-inch diameter)		SFX-2860 Series (8-inch diameter)	
	SI	US	SI	US	SI	US
Length - L	1860 mm	73.2"	2360 mm	92.9"	1860 mm	73.2"
Length - L1	1500 mm	59.1"	2000 mm	78.7"	1500 mm	59.1"
Length - L2	1610 mm	63.4"	2110 mm	83.1"	1630 mm	64.2"
Length - L3	1710 mm	67.3"	2210 mm	87.0"	1820 mm	71.7"
Diameter - D	165 mm	6.5"	165 mm	6.5"	225 mm	8.9"
Width - W	250 mm	9.8"	250 mm	9.8"	342 mm	13.5"
Module Surface Area	33 m ²	355 ft ²	44 m ²	474 ft ²	51 m ²	549 ft ²
Volume per Module	16 L	4.2 gal	20 L	5.3 gal	35 L	9.3 gal
Weight (water filled)	41 kg	90 lbs	53 kg	117 lbs	83 kg	183 lbs
Shipping Weight (w/o packaging)	25 kg	55 lbs	33 kg	73 lbs	48 kg	106 lbs





The design of DOW™ UF modules are engineered to allow system designers flexibility to meet their exact needs from small modular skids to large plants, resulting in an efficient footprint that can be easily expanded.



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WATER SOLUTIONS