



Q-SEP®

INSIDE-OUT HOLLOW FIBER ULTRAFILTRATION MEMBRANES

Q-SEP® hollow fiber ultrafiltration modules contain membranes manufactured with QUA's innovative patented "Cloud Point Precipitation" method. This process ensures a high pore density along the length of the fiber and uniform narrow pore size distribution in the membrane.

Q-SEP® modules deliver superior performance characteristics and product water quality that surpass the quality from conventional UF modules. The narrow pore size distribution allows the membrane to produce water with a low silt density index (SDI). The lower product SDI leads to less frequent and easier cleaning of downstream RO membranes. In addition, the Q-SEP® membrane provides an excellent rejection of bacteria and viruses.

Q-SEP® UF membranes are made of modified hydrophilic polyether sulfone (PES) material that offers high fiber strength and excellent low fouling characteristics, resulting in higher membrane productivity. These hollow fiber membranes operate under a low trans-membrane pressure in an inside-out flow configuration for superior performance. Applications of Q-SEP® UF include pretreatment to RO systems (brackish and seawater applications), purification of surface and well water for potable applications, filtration of industrial water, and wastewater recycle and reuse.

Contact QUA for assistance in the selection of Q-SEP® membranes specifically designed for your application.



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TECHNICAL INFORMATION

Operational Instructions	
Filtrate Flux Range	50 to 150 l/mh (30 to 90 gfd)
Maximum Feed Pressure	4.8 bar (70 psig)
Recommended Operating Pressure	Up to 3.0 bar (43 psig)
Trans-Membrane Pressure	0.14 to 1.4 bar (2 to 20 psig max)
pH Range	2 - 12
Operating pH Range	5 - 10
Typical Instantaneous Chlorine Tolerance	100 to 200 ppm
Operating Temperature Range	2 - 45° C (35.6 - 113° F)
Typical Product Turbidity	<0.1 NTU
Maximum Feed Turbidity	Up to 30 NTU
Backwash Flux Range	180 to 250 l/mh (106 - 147 gfd)
Backwash Feed Pressure	0.7 to 2.1 bar (10 to 30 psig max)
Backwash Frequency & Duration	Every 15 - 45 minutes for 30 - 60 seconds
Chemically Enhanced Backwash	
Frequency	Typically 1 to 10 days of operation, depending on operating conditions
Duration	10 to 20 minutes
CEB Chemicals	NaOCl (100-200 ppm), NaOH (pH 11-12), HCl / H ₂ SO ₄ (pH: 2-3), Citric acid
Module Characteristics	
Membrane Material	Modified PES
Housing Material	UPVC
End Cap Material	GRP

Q-SEP[®] 0.8 MM MODULES

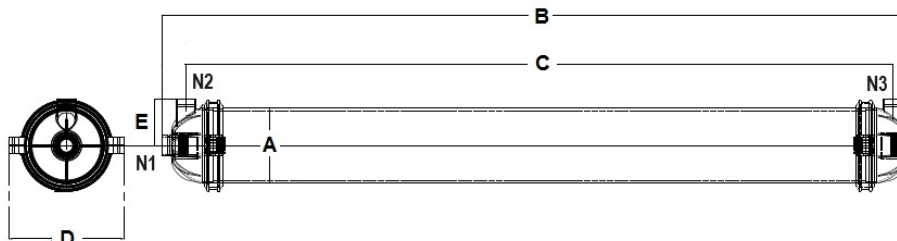
Product Data	UOM	Q-SEP 2008	Q-SEP 4508	Q-SEP 6008
Membrane Area	m ² ft ²	20 215	45 484	60 645
Filtrate Flow Min	m ³ /hr gpm	1.00 4.4	2.25 9.9	3.00 13.2
Filtrate Flow Max	m ³ /hr gpm	3.00 13.2	6.75 29.7	9.00 39.6
Fiber Inside Diameter	mm inch	0.8 0.03	0.8 0.03	0.8 0.03
Fiber Outside Diameter	mm inch	1.2 0.05	1.2 0.05	1.2 0.05
Module Dimensions				
Diameter (A)	mm inch	225 8.85	225 8.85	225 8.85
Length With End Cap (B)	mm inch	1015 39.95	1780 70.1	2230 87.80
Length-Feed Connections (C)	mm inch	900 35.4	1666 65.59	2116 83.3
Distance-Width (D)	mm inch	345 13.58	345 13.58	345 13.58
Distance-Feed To Center (E)	mm inch	140 5.51	140 5.51	140 5.51
Module Weight	Kg lbs.	25 55.1	44 97.0	50 110.2

MODULE SPECIFICATION

Parameter	Description/Information
Configuration	Self-encapsulated hollow fiber ultrafiltration membrane module (inside-out)
Operating Mode	Dead-end or Crossflow, Backwashable
Module Mounting	Vertical
Membrane Pore Size	0.02 micron

MODULE PORT DESCRIPTION

Ports Tag No.	Ports Description	Size & Type
N1	Product	2" Victaulic
N2	Reject	2" Victaulic
N3	Feed	2" Victaulic



US PATENT # 8,424,688 B2

Preparation of High Performance Ultra Filtration Hollow Fiber Membrane