



FerroCep[®]

Stainless Steel Tubular Membrane

The world's toughest stainless steel membrane that provides superior separation performance under extreme process conditions

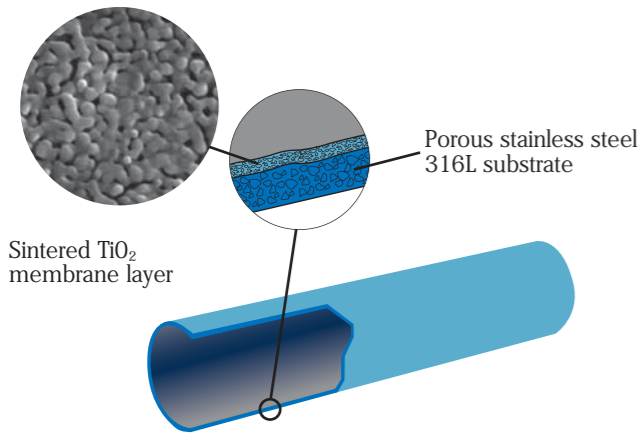
Consisting only of rugged tubes made of stainless steel with a layer of sintered titanium dioxide permanently bonded to it.

Product Features & Benefits

- High temperature tolerance
- High pressure tolerance
- High pH tolerance
- Handles high viscosities
- High solids and lint tolerance
- Unique seamless fabrication

Operation Features & Benefits

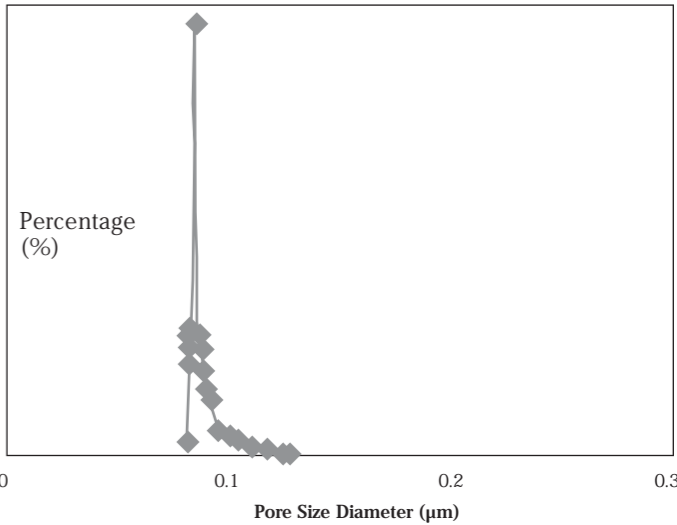
- Easy cleaning
- Proven long service life
- Sterilisable with steam
- Minimum prefiltration required
- High cross flow velocity
- Impervious to mechanical shock
- Chemical compatibility



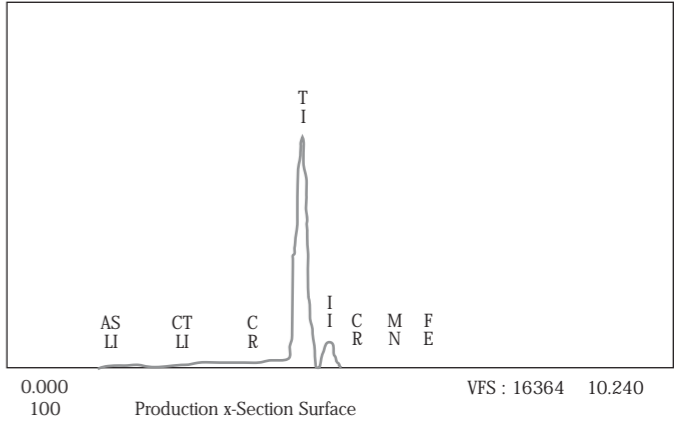
Cross-section of FerroCep® with magnified view of its composite structure



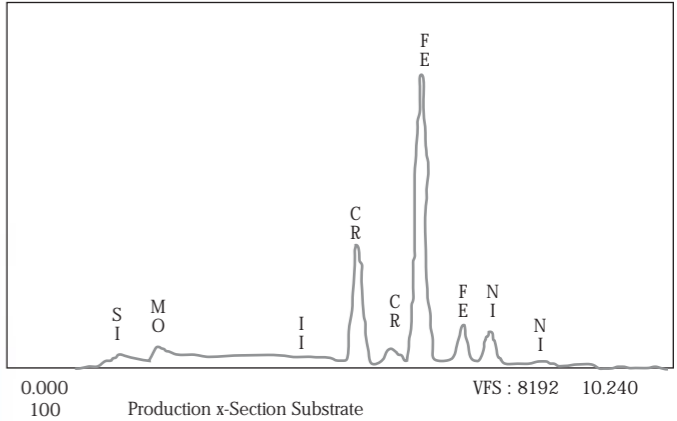
Sharp pore size distribution of FerroCep®



EDX result for titanium coating - High purity of Ti present



EDX result for stainless steel substrate - High purity of Fe present



Membrane Specifications

Pore Size (µm)	0.1/0.02
Tube Length (Nominal) (m)	1.5, 3, 6
OD (mm)	21.5 ± 0.3
ID (mm)	18.2 ± 0.2
Tube Material	316L Stainless Steel
Coating Material	TiO ₂
pH Range	0 - 14
Max Operating Temperature (°C)	315
Recommended Operating Pressure (bar)	4 - 6

Module Specifications

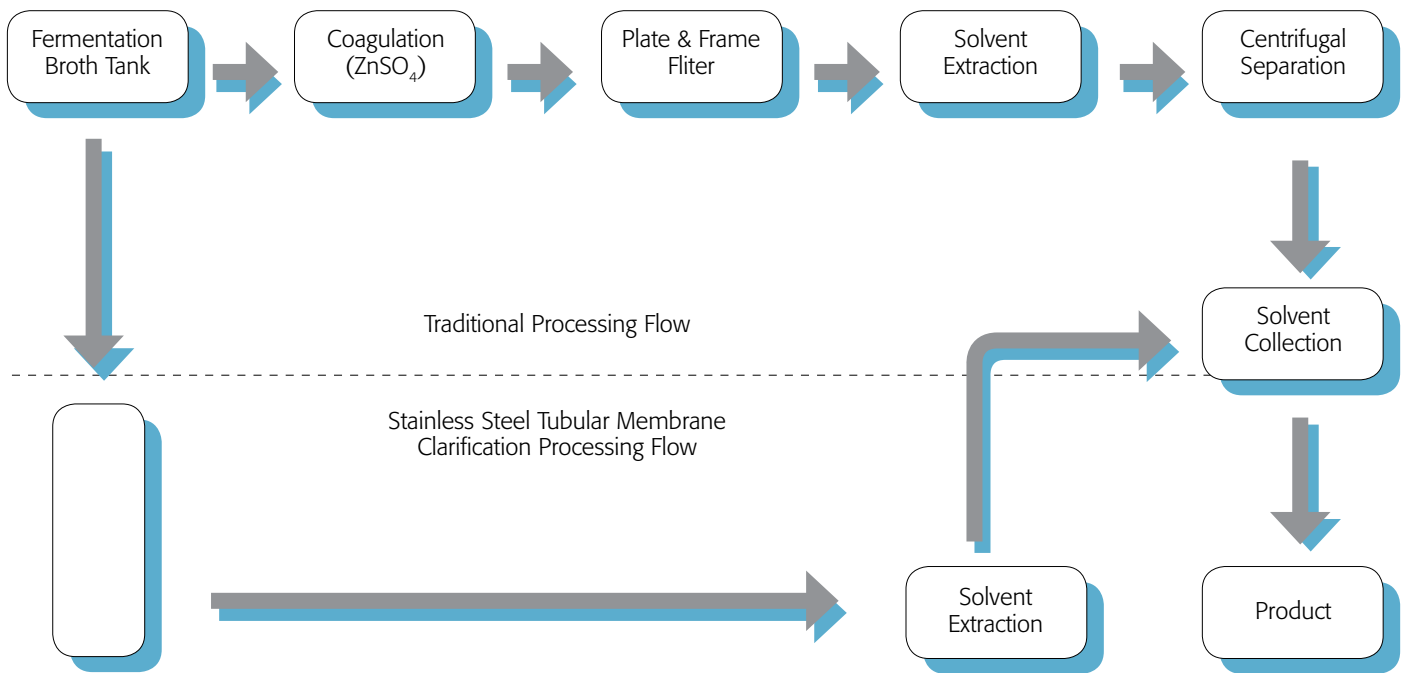
		F2.5-A-0.3M	F4-A-2.4M	F6-A-5.4M	F14-A-60M	F20-A-121M	F26-A-202M
Nominal Module Length (m)		1.5	3		6		
Nominal Pore Size (µm)		0.1/0.02					
Max Tube per Module (pc)		4	14	31	164	346	566
Clean Water Flux (m ³ /module.hr @ 1bar)	MF Membrane	0.4	2.8	6.2	65.6	138.4	226.5
	UF Membrane	0.1	0.9	2.1	22.6	47.7	78.1
Flow Type		Inside - Out					
Tube Pass		1			2		
Feed Connection (mm)		65	100	150	200	250	350
Permeate Connection (mm)		25	38	50	50	100	150
Norminal Module OD (mm)		65	100	150	350	500	650
Permeate Volume (L)		2.3	14	30	209	401	720
Concentrate Volume (L)		1.5	11	25	250	528	864
Max Operating Pressure (bar)		Up to 10.3*					
Max Operating Temperature (°C)		Up to 140*					

*Subject to operating conditions and design requirements

Case Study

Fermentation Broth Clarification

Replaces Conventional Treatment Method - Coagulation and Plate & Frame Filter



FerroCep®

Plant features (handling capacity of ~ 300 tons / day):

- Without adding coagulant (ZnSO₄), **chemical-aid savings of USD ~ 1,300,000 / yr**
- Replace frame filter, filter cloth **savings of the cost of USD ~ 88,000 /yr**
- **Erythromycin yield increased 3 - 5%, income-generation of USD ~ 1,300,000 / yr**
- **Erythromycin end-product selling price increased by 2%**
- Bacteria is filtered normally in batch tank
- Membrane's reject and wastewater generated do not contain ZnSO₄, thus decrease downstream wastewater treatment plant complexity, capacity and footprint

Key Applications

- PVA concentration in textile industry
- Chemical reagent clarification
- Catalyst recovery
- Fermentation broth clarification
- Sugar clarification

About Hyflux

Hyflux is one of the world's leading technology-driven environmental companies, with operations and projects in Southeast Asia, China, India, the Middle East, North Africa and Europe.

Hyflux's spirit of innovation and entrepreneurship drives its technological advancements in membranes, project management, and operations and maintenance.

Hyflux is committed to providing cost-effective, reliable and sustainable solutions to its customers worldwide, from seawater reverse osmosis desalination, water recycling, wastewater and potable water treatment, to renewable resources management in the fields of oil recycling and beer clarification. The company is building the world's largest membrane-based seawater reverse osmosis desalination plant in Magtaa, Algeria.

Hyflux was voted the Water Company of the Year in 2006 by Global Water Intelligence. It was conferred the Forbes Best Companies under One Billion in 2005 and 2006, and won Frost and Sullivan's Technology Innovation of the Year Award 2007- Desalination Technologies (Asia Pacific) and its Technology Innovation of the Year Award 2007- Residential Water Treatment Equipment Market (Southeast Asia).

For more information on Hyflux, please visit <http://www.hyflux.com>

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Other Products



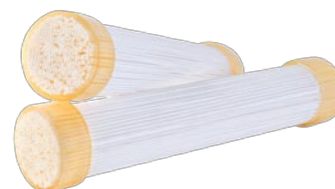
KRISTAL®

The preferred polymeric membrane with unparalleled performance in operational consistency and stability



MES

Compact and flexible platform for membrane evaluation



InoCep®

Long-lasting superior ceramic hollow fibre membrane for extreme conditions

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