

Degasification Module for Chemicals and Solvents

SEPAREL® PF-F Series



This degasification module uses PTFE for its degassing membrane and fluoroplastic for all surfaces that come into contact with fluids. It can degas a range of fluids including acids, alkali and organic solvents.

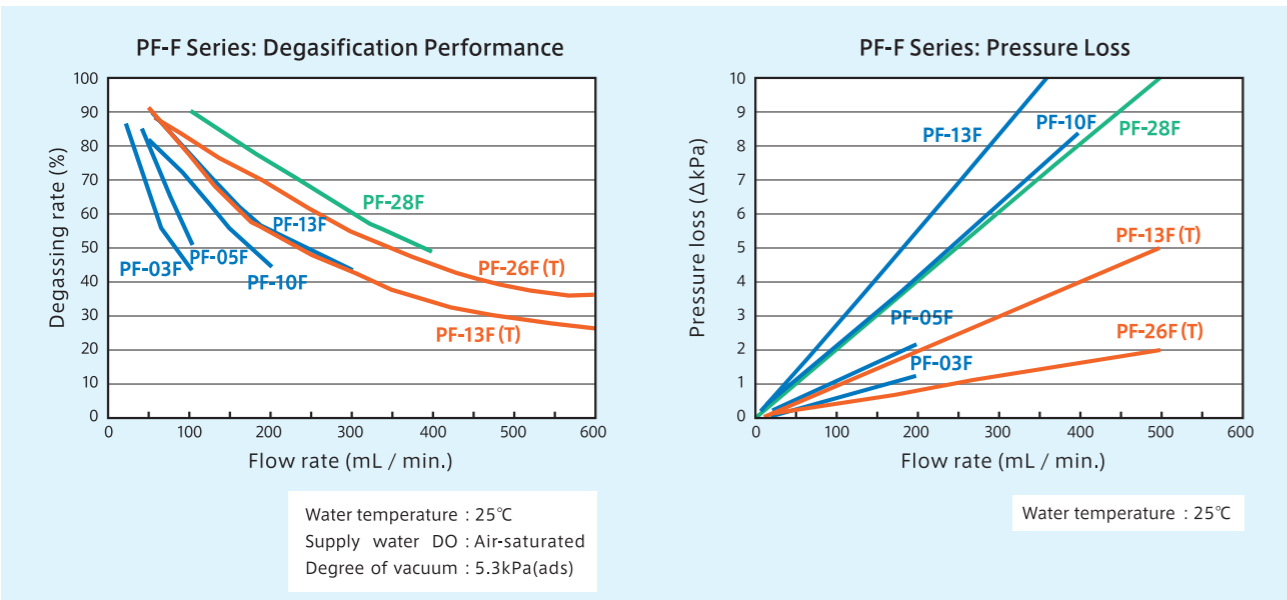
【Main Applications】

- Degasing and defoaming of fluids used in semiconductor and LCD manufacturing processes (various resists, thinners, chemicals, etc.)
- Degasification of ink-jet ink

	Supported flow rate*1 (ml / min.)	Dimensions*2 (mm)	Internal volume (ml)	Pressure resistance (MPa)	Maximum operating temp. (°C)	Connection	
						Fluid inlet	Vacuum port
Standard type							
SEPAREL PF-03F	1 – 100	102φ×180	70	0.294	40	Super pillar 1/4	Rc1/8
SEPAREL PF-05F	1 – 100	102φ×180	110	0.294	40	Super pillar 1/4	Rc1/8
SEPAREL PF-10F	1 – 200	102φ×260	230	0.294	40	Super pillar 1/4	Rc1/8
SEPAREL PF-13F	1 – 300	102φ×260	300	0.294	40	Super pillar 1/4	Rc1/8
SEPAREL PF-28F	1 – 500	102φ×440	650	0.294	40	Super pillar 3/8	Rc1/8
Low pressure loss type							
SEPAREL PF-13F(T)	1 – 500	102φ×260	310	0.294	40	Super pillar 1/4	Rc1/8
SEPAREL PF-26F(T)	1 – 500	140φ×450	620	0.294	40	Super pillar 10mm	Rc1/4

*1 The above supported flow rates are used as a guide when selecting products. Products may be used outside the flow rate ranges listed depending on the type of fluid and target degasification level.

*2 Dimensions do not include protrusions or joints. Please check the product drawings for detailed dimensions.



Color & Comfort by Chemistry

SEPAREL®

Hollow Fiber Membrane Module

Hollow Fiber Membrane for Controlling Fluid Degasification and Aeration



DIC's hollow fiber membrane transmits gases while blocking liquids, making it highly suitable for degassing and aerating fluids.

- Exceptional degasification performance makes it possible to degas fluids containing gases at high ppb levels
- Supports inline degassing and aeration
- Compact size and low pressure loss due to proprietary internal structure

Manufacturing & Sales

DIC Corporation

DIC Building, 7-20, Nihonbashi 3-chome, Chuo-ku, Tokyo 103-8233, Japan
Tel: +81-3-6733-5944 Fax: +81-3-6733-5960

<http://www.separel.com/en/>

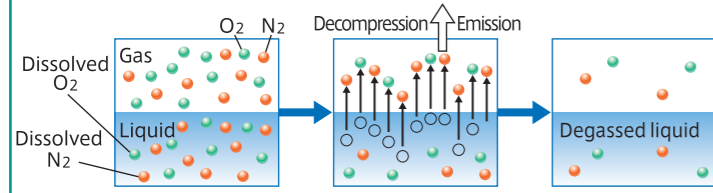
- Specifications are subject to change without notice.
- Verify the compatibility of the fluid to be used with the internal components of the degasification module before use.

DIC Corporation

What is Degasification/Aeration?

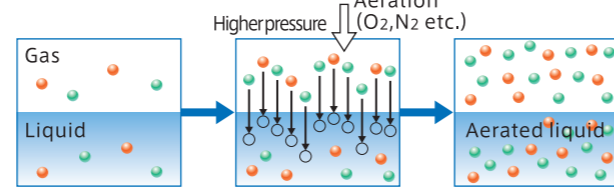
Degasification

Degasification is the removal of gases (O₂, N₂, etc.) dissolved in a liquid.

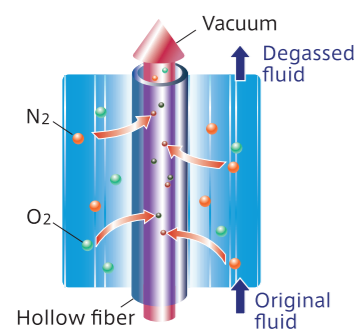


Aeration

Aeration is the process of dissolving gases (O₂, N₂, etc.) in a liquid.

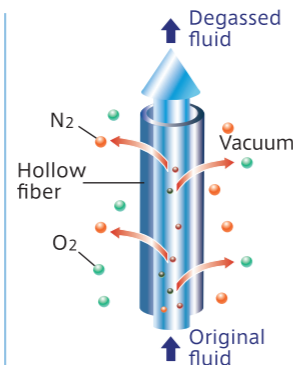


Basic Principle of Degasification



External Perfusion (EF Series)

Fluid directed outside of hollow fiber
[Features]
 • Low pressure loss
 • High-level degasification possible



Internal Perfusion (PF Series)

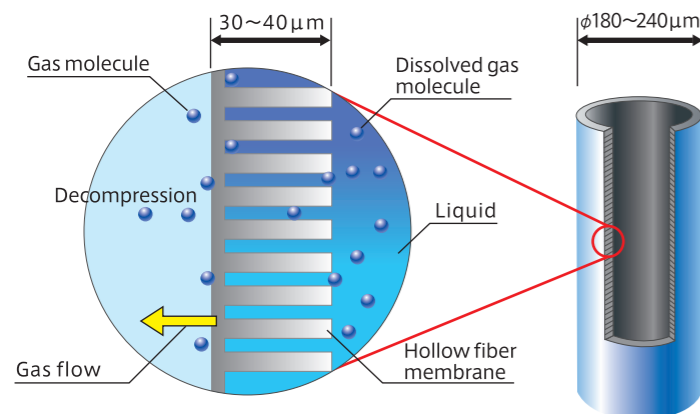
Fluid directed through inside of hollow fiber
[Features]
 Wide range of water quality supported

DIC 's Proprietary Hollow Fiber Membrane

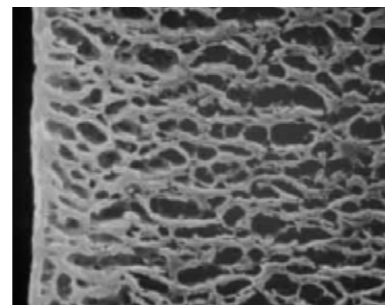
- Uses proprietary hollow fiber membrane (SS membrane) with a skin layer on the surface
- Even fluids containing surfactants supported thanks to SS membrane
- SS membrane substantially reduces water vapor transmission compared to microporous membranes
- SS membrane can also be used as a gas separation membrane

Patents Registered
 Patent Numbers : JP1616519, USP4664681, EPC124028, etc.

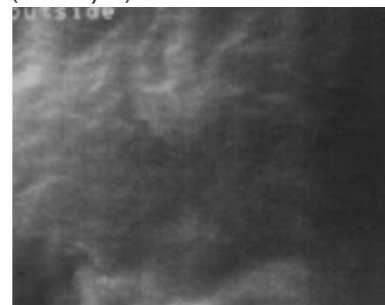
[Material]
 PMP (poly-4-methylpentene-1)
[Manufacturing method]
 DIC's proprietary melt-molding method, which uses no solvent and other additives



Hollow fiber cross-section



Hollow fiber surface cross-section (skin layer)



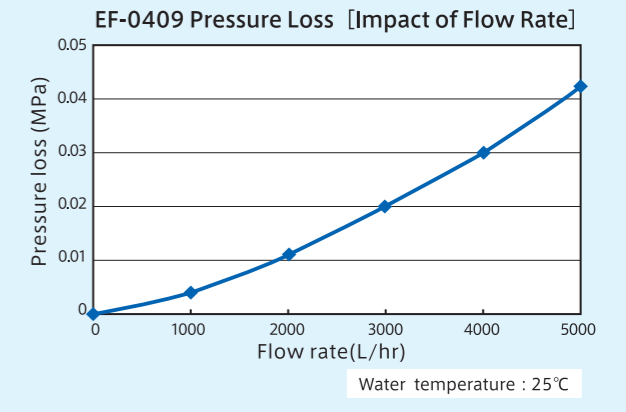
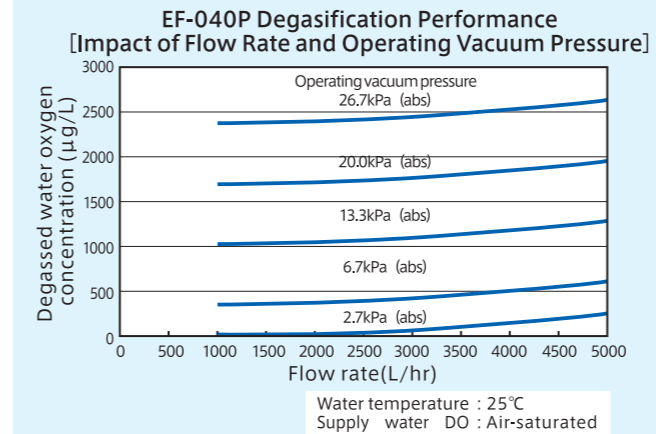
Water Degasification / Aeration Module SEPAREL® PF,EF Series

Main Applications:
 Deoxygenation and decarbonation of ultrapure water; deoxygenation of boiler water, degasification and defoaming for ultrasonic washers; gas aeration of ultrapure water (use eFLOW for CO₂ aeration)

	Supported flow rate*1 (l/hr)	Dimensions*2 (mm)	Pressure resistance (MPa)	Operating temperature (°C)	Connection (fluid-in side)	Connection (vacuum side)
SEPAREL PF-001D	0.6 – 60	60φ×140	0.3	2 – 40	Rc1/4	φ6 tube fitting
SEPAREL PF-004D	3 – 180	99φ×260	0.3	2 – 40	Rc3/8	φ6 tube fitting
SEPAREL EF-002A-P	6 – 300	109φ×240	0.3	2 – 40	1/2super pillar	Rc1/4
SEPAREL PF-015	50 – 500	140φ×530	0.3	2 – 40	Rp1/2	Rp1/2
SEPAREL PF-030	100 – 1000	180φ×615	0.3	2 – 40	ISO 15A ferrule	φ10 tube fitting
SEPAREL EF-010	100 – 1500	170φ×430	0.5	2 – 40	Rc1	Rc1/2
SEPAREL EF-020	300 – 3000	170φ×880	0.5	2 – 40	Rc1	Rc1/2
SEPAREL EF-040P	500 – 5000	180φ×673	0.6	2 – 50	JIS10K 25A flange	ISO 15A ferrule
SEPAREL EF-120	3000 – 50000	315φ×850	0.6	5 – 40	JIS10K 80A flange	Rc1

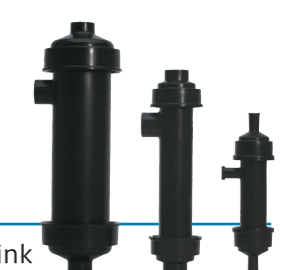
*1 The above supported flow rates are used as a guide when selecting products. Products may be used outside the flow rate ranges listed depending on the type of fluid and target degasification level.
 *2 Dimensions do not include protrusions or joints. Please check the product drawings for detailed dimensions.

Performance Data (for SEPAREL EF-040P)



Modules Supporting Surfactants and Modules Supporting Ink-Jet Ink

SEPAREL® PF,EF Series



[Main Applications] Degasification of developing solution and degasification of ink-jet ink

	Supported flow rate*1 (ml/min.)	Dimensions*2 (mm)	Pressure resistance (MPa)	Operating temperature (°C)	Supported ink*3
SEPAREL EF-MICRO	0.5 – 10	22φ×94	0.2	2 – 40	Water-based, UV and some solvent ink*4
SEPAREL EF-G2	1 – 60	26φ×115	0.2	2 – 40	Water-based, UV and some solvent ink*4
SEPAREL EF-G3	5 – 300	43φ×131	0.2	2 – 40	Water-based, UV and some solvent ink*4
SEPAREL PF-001D	10 – 1000	60φ×140	0.3	2 – 40	Only water-based
SEPAREL PF-001DG(E)	10 – 1000	60φ×143	0.3	2 – 40	Water-based, UV and some solvent ink*4
SEPAREL EF-G5	10 – 1500	60φ×140	0.2	2 – 40	Water-based, UV and some solvent ink*4
SEPAREL PF-004D	50 – 3000	99φ×260	0.3	2 – 40	Only water-based
SEPAREL EF-002A	100 – 4000	109φ×182	0.3	2 – 40	Water-based, UV and some solvent ink*4
SEPAREL EF-010G	100 – 10000	170φ×430	0.5	2 – 40	Water-based, UV and some solvent ink*4
SEPAREL EF-020G	100 – 20000	170φ×880	0.5	2 – 40	Water-based, UV and some solvent ink*4

*1 The above supported flow rates are used as a guide when selecting products. Products may be used outside the flow rate ranges listed depending on the type of fluid and target degasification level.
 *2 Dimensions do not include protrusions or joints. Please check the product drawings for detailed dimensions.
 *3 Verify fluid compatibility with the degasification module components before use. (Even if the ink is supported, the warranty does not apply unless fluid compatibility is checked.)
 *4 Limited to ink for which fluid compatibility has been verified. The PF-F Series listed on the reverse page may also be used for solvent ink.