

# All-Fluororesin Nano-Porous Membrane “Poreflon Nano Module”

## 1. Outline

Our Poreflon porous materials made from stretched polytetrafluoroethylene (PTFE) are used in various industrial fields. For example, in semiconductor-related applications, higher cleanliness levels are required for process chemical liquids due to ever-higher integration. There has been a growing need for separation membranes with smaller pore diameters. To meet the need, we have developed Poreflon nano, proprietary PTFE membranes with nano-pores. This paper describes the specifications and applications of the new filtration module, which houses Poreflon nano in an all-fluororesin package.

## 2. Features

### 2-1 Product specifications

Table 1 shows the standard specifications of the Poreflon nano module, and Table 2 shows the heat and chemical resistance. This module consists of fluororesin only. In addition, this module is characterized by high chemical and heat resistance. Furthermore, the hollow fiber membrane and housing are available for high pressure load by high pressure resistance. The external connection port to use standard piping enables flexible design depending on the piping diameter and layout of the processing equipment at the installation site.

Table 1. Standard specifications of the module

<b>Appearance</b>	
Decompression or gas inlet	Sealing or gas outlet
Application	Degassing/gas-dissolving and filtration of liquids
Flow rate [mL/min]	Max. 1,000
Pressure resistance [MPa]	Max. 1.0 <sup>†</sup>
Operating temperature [°C]	Max. 140 <sup>†</sup>
Hollow fiber material	PTFE (Pore size: 10 nm <sup>†</sup> )
Housing material	PTFE, PFA, FEP

<sup>†</sup> Nominal values, not guaranteed values.

Table 2. Heat and chemical resistance

Resistance	Fluororesin				Others	
	PTFE	PFA	FEP	PVDF	PMP <sup>†</sup>	PA <sup>†</sup>
Heat	++	++	++	+	-	-
Acid	++	++	++	+	+/-	-
Alkali	++	++	++	+/-	++	++
Organic solvent	++	++	++	+/-	+/-	+/-

<sup>†</sup> PMP: Polymethylpentene, PA: Polyamide

### 2-2 Degassing/gas-dissolving performance

Figure 1 shows a schematic diagram of the degassing/gas-dissolving, and Figs. 2 and 3 show the degassing/gas-dissolving performance of the Poreflon nano module. In terms of degassing/gas-dissolving performance, the volume and weight ratio of the Poreflon nano module can be reduced to about 1/3 to 1/4 those of the conventional product at the degassing rate of 80% (vacuum pressure: -85 kPaG) and to about 1/5 to 1/6 of the conventional product at the dissolved oxygen of 8.2 ppm (air flow rate: 0.5 L/min). Poreflon nano modules enable significant downsizing from conventional products.

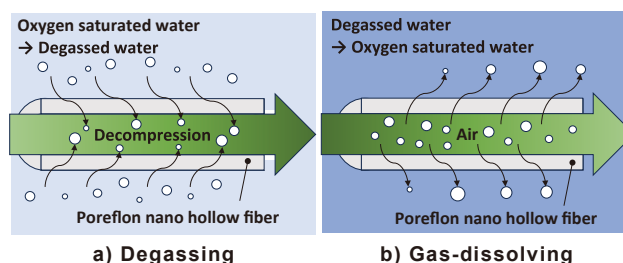


Fig. 1. Schematic diagram

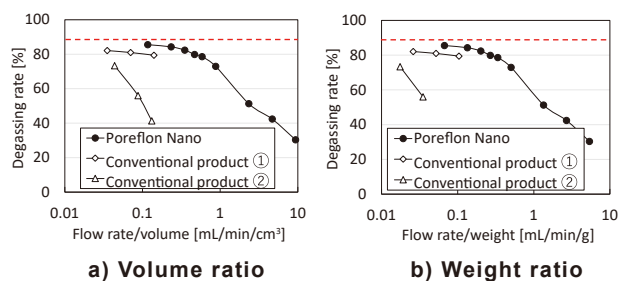


Fig. 2. Degassing performance

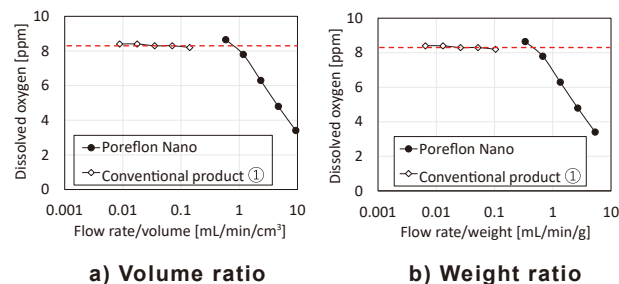


Fig. 3. Gas-dissolving performance

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