

ANISOTROPIC AAO MEMBRANES – PRODUCT INFORMATION

InRedox Anisotropic Anodic Aluminum Oxide Membrane Filters

Anisotropic Anodic Aluminum Oxide (AAO) contain two layers with different pore structure integrated into a monolithic membrane:

Underlying Support Layer – contains larger pores that provide mechanical strength and high permeance.

Active Layer – an upper thin layer of highly uniform pores

Anisotropic pore structure supports size-based separation in 2 to 10 nm range, and makes anisotropic membranes suitable for nanofiltration and ultrafiltration applications. Anisotropic AAO membrane filters are currently available with pore diameters of 2-4nm, 5nm and 10nm.

These membrane filters are less brittle than similar ceramic membrane filter products ensuring easier handling, usage and less loss of product or samples during preparation.

Membrane Features

- Precise and reproducible pore geometries
- Pore size from 2 nm to 200 nm
- Narrow pore size distribution, sharp molecular weight cutoff
- Anisotropic (bi-layer) pore structure
- Smooth flat surface, low fouling, straight pores
- Optically transparent when wet, low autofluorescence
- Surface terminated with -OH-groups for binding protocols
- Naturally hydrophilic, no extractables or leachables
- Biocompatible, popular substrate for cell culturing
- Excellent bath-to-batch consistency

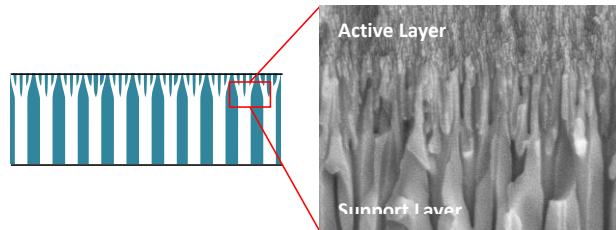
Parameter	Pore Geometries for Anisotropic AAO Membranes				
	Active Layer			Support	Tolerance
Pore Diameter (nm)	2-4	5	10	100-150	±(10%+2nm)
Pore Period (nm)	6	12	26	250	±(15%+5nm)
Pore Density (cm ⁻²)	3·10 ¹²	9·10 ¹¹	1.6·10 ¹¹	2·10 ⁹	±20%
Porosity (%)	5-15	5-15	12	15-20	±3

Attributes of Anisotropic AAO Membranes	
Size (mm dia) ± 0.2 mm	13, 25
Thickness (μm) $\pm(10\% +1\mu\text{m})$	50
Nominal weight (mg/cm ²)	10 to 20
Burst strength (psi)	50 to 200 (depending on pore size) for 50 μm membrane over 3 mm span
Max Service Temp ($^{\circ}\text{C}$)	400
pH range	5-8
Solvent Resistance	Excellent (can be used with most organic solvents)
Autoclavable?	Yes
Air Permeance (cm/s/Pa at 20 $^{\circ}\text{C}$)	10^{-8} to 10^{-4} (depending on pore size and porosity)
Water Permeance (cm/s/Pa at 20 $^{\circ}\text{C}$)	10^{-10} to 10^{-6} (depending on pore size and porosity)

Monolithic bi-layer pore structure:

Active layer (1-5% of thickness) with pore diameter 2-10 nm for size separation

Support layer (95%-99% of thickness) with pore diameter 150-200 nm to provide mechanical support with high flow



Applications: nano-, ultra & microfiltration, bioseparation, cell culturing, epifluorescence, electron microscopy, bioanalysis

Other pore sizes, filter diameters may be available. Please contact SPI Supplies for further information.

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