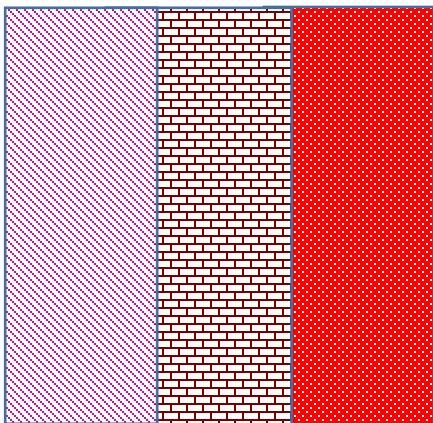


ElectrochemiaTM PFSA Membranes

ElectrochemiaTM PFSA membranes: NM-115 and NM-117



Introduction

ElectrochemiaTM is the manufacturer of perfluorosulfonic acid/ PTFE copolymer as cation exchange membranes. Our products satisfy requirements of a broad range of high-tech applications technically and economically. High quality and low cost perfluorinated sulfonic acid (PFSA) membranes,

Product Description

PFSA membranes are widely used for Proton Exchange Membrane (PEM) fuel cells, water electrolysis, and energy storage flow batteries, electrosynthesis and so on. The membrane performs as a separator and solid electrolyte in a variety of electrochemical cells that require the membrane to selectively transport cations across the cell junction. **ElectrochemiaTM** PFSA membranes are solvent-cast made from perfluorosulfonic acid/PTFE copolymer in the acid form (H^+). Our products are presented with about 1100 equivalent weight at different thicknesses.

Typical Properties of PFSA Membranes

A. THICKNESS AND BASIS WEIGHT PROPERTIESB.

Properties	Membrane Type	NM-115	NM-117
Typical Thickness (micrometer)		125 ± 10	175 ± 10
Basis Weight (g/m ²)		~ 210	~320

B. MECHANICAL PROPERTIES

Properties (measured at 50% RH, 23 °C)	Membrane Type	NM-115	NM-117	Test Method
Tensile Strength, max., MPa		25	24	ASTM D 882
Non-Std. Modulus, MPa		32	21	ASTM D 882
Elongation to Break, %		81	114	ASTM D 882

C. OTHER PROPERTIES

Properties (measured at 50% RH, 23 °C)	Membrane Type	NM-115	NM-117	Test Method
Specific Gravity		1.7	1.7	DuPont
Available Acid Capacity (meq/g)		>0.90	>0.90	DuPont NAE3
Total Acid Capacity (meq/g)		0.92-1.01	0.92-1.01	DuPont NAE3
Proton Conductivity, δ (mS/cm) at 100% RH, 80 °C		80-95	80-95	AC impedance
Hydrogen Crossover, (ml/min·cm ²)		< 0.010	< 0.010	DuPont

D. HYDROLYTIC PROPERTIES

Properties (Hydrolytic Properties)	Membrane Type	NM-115	NM-117	Test Method
Water content, % water		5.0 ± 3.0%	5.0 ± 3.0%	ASTM D 570
Water uptake, % water		50.0 ± 5.0%	50.0 ± 5.0%	ASTM D 570
Linear expansion, % increase from 50% RH, 23 °C to water soaked, 23 °C		10-12	10-12	ASTM D 756

from 50% RH, 23 °C to water
soaked, 100 °C

14-17

14-17

ASTM D 756 t

Order and Packaging Information

PFSA membranes are available in the following sizes: 5×5 and 10×10 cm² with no minimum order (air or land delivery).

For non-standard width sizes, please, contact our sales for details and availability. The water content and conditioning of the PFSA membrane will influence its dimensions, and the alteration may not be balanced in the length, width, and thickness directions. Upon opening the packaging, the membrane will respond to its environmental conditions. Certain manufacturing steps performed by the customer also may affect the membrane's dimensions and flatness.

Recommended Storage Conditions

Unopened packages of PFSA membrane should be kept in the original shipping box, out of direct sunlight, and in a climate-controlled environment, kept at 10 to 30°C, and 30 to 70% relative humidity. Before opening the package, pre-condition the membrane to the processing area temperature for 24 hours. Upon opening and exposure to the environment, the membrane will equilibrate to the ambient relative humidity, and change in dimensions accordingly. Membrane order dimensions are specified and measured at 23°C and 50% Relative Humidity.

Handling Practices

For safe handling and processing of PFSA membrane, a proper ventilation system have to be provided. The volume of local exhaust required for processing PFSA dispersion at high temperatures will be determined by several factors such as the amount of PFSA dispersion, processing temperature and exposure time.

Scrap Disposal

Storage, transportation, treatment, and disposal of PFSA material must be in line with practiced federal, state/provincial and local regulations. Preferred disposal options are (1) recycling and (2) landfill. Incinerate only if incinerator is capable of scrubbing out HF and other acidic combustion products.

Static Discharge

Due to the good dielectric properties of the PFSA membrane, packaging, the composite structure and individual layers can pick up a strong charge of static electricity,. Unless this charge is dissipated as it forms, by using ionizing radiation devices or special conducting metal tinsel, it can build to thousands of volts and discharge to people or metal equipment. A flash fire or an explosion could follow in dust- or solvent-laden air, Extreme caution is required to avoid static accumulation when using flammable solvents while coating membrane surfaces.

Expected Shelf Life

A shelf life of two years from production of membrane, under suitable storage environments, is expected.

For further inquiry about the PFSA products, please contact:

Electrochemia

Address: Kurt-Eisner-
Straße 41
81735 ,Munich
Germany

Tel: + (49) 1632438577

Email: info@electrochemia.com

Website: <https://electrochemia.com>

The technical data presented in this pamphlet fall within the normal range of PFSA product properties. They should not be practiced to establish specification restrictions nor used by itself as the design basis. This information is based on technical data that Electrochemia Baspar considers to be consistent. It is anticipated for use by individuals having technical skill and at their own discretion and risk. This data is given with the understanding that persons using it will satisfy themselves that their specific conditions of use have no health or safety hazards to themselves and others. Since conditions of product use are not under our control, Electrochemia Baspar makes no warranties, express or implied, and undertakes no obligation or liability regarding any use of this information or for results obtained in reliance thereon. The disclosure of the information is not a license to operate under or an approval to infringe any patent of others.

Caution: Do not use in medical applications including long-lasting implantation in the human body. For other medical applications at your own discretion and risk.