Aquivion® E87-12S

perfluorosulfonic acid

Aquivion® E87-12S is a chemically-stabilized (denoted by the S-suffix) perfluorosulfonic acid (PFSA) ionomer membrane that exhibits an Equivalent Weight (EW) of 870 g/eq. Nominal thickness is 120 microns.

Aquivion® PFSA ionomer membranes are melt-extruded products based on the unique Short Side Chain copolymer of Tetrafluoroethylene (TFE) and Sulfonyl Fluoride Vinyl Ether (SFVE) F2C=CF-O-CF2CF2-SO2F produced by Solvay. They are available in the acid form and feature a lower Equivalent Weight (EW) than most commercial proton exchange membranes. The unique Short Side Chain copolymer allows higher crystallinity, improved mechanical properties and better proton conductivity.

Typical applications include PEM fuel cells, water electrolyzers, separators for hydrogen or redox flow batteries, and pervaporation or gas humidification systems.

Please visit Aquivion.com for more information.

General

Material Status	• Commercial: Active	
Availability	• Asia Pacific • Europe	• North America

Physical	Typical Value	Unit	Test method
Density - 23°C, 50%R.H.	1.93	g/cm³	Internal Method
Equivalent Weight (EW) [1]	870	g/eq	Internal Method
Membrane [2]			
Thickness	120.0	µm	
Weight	232	g/m²	
Total Acid Capacity	> 1.12	sec/100cc	Internal Method

Mechanical	Typical Value	Unit	Test method
Tensile Modulus	240	MPa	
Tensile Stress [3]			ASTM D882
MD : Break	40.0	MPa	
TD : Break	30.0	MPa	
Elongation [3]			ASTM D882
MD : Break	160	%	
TD : Break	200	%	

Electrical	Typical Value	Unit	Test method
Conductivity [4]	> 228	mS/cm	Internal Method

Additional Information	Typical Value	Unit	Test method
Water Uptake Properties (in liquid) [5]			Internal Method
By weight	< 40	%	
Elongation (MD)	< 20	%	
Elongation (TD)	< 25	%	

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HEALTH, SAFETY AND ENVIRONMENT

- Aquivion® PFSA membranes are not harmful if used and handled according to standard processing procedures (see for example the "Guide to the Safe Handling of Fluoropolymer Resins" issued by the Society of the Plastics Industry). If handled inappropriately, membranes may release harmful toxic chemicals. Please refer to the Material Safety Data Sheets for more information on handling and safety.

PACKAGING, SHIPMENT AND STORAGE

- The membranes are usually available in sheets of customized formats or rolls in various lengths (dimensions are based on dry product conditioned at 23 °C and 50 % Relative Humidity). They are sealed in an inert environment with a multilayer protection film before packaging inside a shock-protected cardboard box. It is recommended to store the product in a clean, controlled humidity environment and protected from direct sun light or other sources of heat.

Notes

Typical properties: these are not to be construed as specifications.

[1] eq=(mol SO3H)

[2] at 23°C, 50% R.H.

[3] - mechanical properties measured on E87-05S
- at 23°C, 50% R.H.

[4] Setup: 4-probe, in-plane measurement; Procedure: set Tcell = 80°C, Tgas = 90°C, Humidity 100%, Flow 800 sccm.

[5] 4 hours soak in liquid @100°C

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