

fumapem[®] F-930

General

Membrane type: Perfluorinated cation-exchange membrane - non-reinforced - thickness 30 µm, with low resistance, high mechanical stability, high selectivity and high chemical / oxidative stability.

Application: Fuel cell application (stationary H₂-PEMFC).

Membranes are identified by membrane type and identification number (Lot Number). Please refer to this type and identification number in case of queries.

Delivery

The membrane is the colourless, transparent foil, delivered on a backing layer (colourless rigid PET foil). Pull off carefully the membrane from the backing foil. Before use the membrane must be activated.

Handling

Keep membrane package closed / sealed when unused. Unpack membrane only for direct use and process immediately after opening. Store, handle and process the membrane in a clean and dust-free area. Use only new and sharp knives or blades, when cutting the membrane. Always wear protective gloves when handling the membrane. Handle with care, be sure not to puncture, crease or scratch the membrane, otherwise leaks will occur. All surfaces in contact with the membrane during handling, inspection, storage and mounting must be smooth and free of sharp projections.

Membranes will expand and contract based on water / electrolyte content. To eliminate wrinkling, it is necessary to expand membranes before mounting by pretreatment.

Pretreatment (activation)

The membrane is delivered in H-form and dry form (non-activated). For optimum performance and lowest resistance it is necessary to pretreat the membrane according to the following prescription: Put the membrane sample in an aqueous 10 wt% HNO₃ solution or in 5 vol % H₂SO₄ solution at minimum T = 80 °C for at least 12 h. After rinsing with demineralized water (pH ~ 7) the membrane is ready for use (activated). Membranes will expand and contract based on moisture content.

If you have any concerns about storage, chemical stability, and pretreatment please feel free to contact us for further information.

Physical and chemical data of fumapem® F-930

fumapem®		F-930
membrane type		cation exchange membrane
appearance / colour		transparent, colourless
backing foil		PET foil
reinforcement		none
counter ion		H-form
delivery form		dry (non-activated)
thickness (dry, as received)	µm	28-33
thickness (wet)	µm	30-37
weight per unit area	mg cm ⁻²	9.5 – 9.6
IEC (ion exchange capacity)	meq g ⁻¹	0.95
area resistance in H ₂ O at T = 25 °C in H-form ^{a)}	Ω cm ²	0.25
conductivity in H ₂ O at T = 25 °C in H-form ^{a)}	mS cm ⁻¹	11.3
selectivity 0.1 / 0.5 mol/kg KCl at T = 25 °C ^{b)}	%	> 90%
uptake in H ₂ O at T = 25 °C in H-form ^{c)}	wt %	23
dimensional swelling in H ₂ O at T = 25 °C in H-form ^{d)}	%	12 – 14
proton transfer rate ^{e)}	µmol min ⁻¹ cm ⁻²	> 10.000
Young's modulus at 23 °C / 50 % r.h. ^{f)}	MPa	200 – 250
yield strength at 23 °C / 50 % r.h. ^{f)}	MPa	10 – 15
tensile strength at 23 °C / 50 % r.h. ^{f)}	MPa	20 – 30
elongation at break at 23 °C / 50 % r.h. ^{f)}	%	125 – 160
bubble point test in water at T = 25 °C	bar	> 2

a) measured in 4-electrode cell (in-plane), sample activated in 10 % H₂SO₄, T = 100 °C for 30 min.

b) determined from membrane potential measurement in a concentration cell, sample activated in 10 % H₂SO₄, T = 100 °C for 30 min.

c) reference membrane dried over P₂O₅ *in vacuo*, sample activated in 10 % H₂SO₄, T = 100 °C, 30 min.

d) reference membrane dried at ambient conditions (25 °C, 50 % r.h.), sample activated in 10 % H₂SO₄, T = 100 °C, 30 min.

e) determined from pH potential measurement in a concentration cell 0.5 M HCl / 0.5 M NaCl @ T = 25 °C, sample activated in 10 % H₂SO₄, T = 100 °C, 30 min.

f) determined by stress-strain measurement at T = 25 °C and 50 % r.h., according to DIN EN 527-1, sample activated in 10 % H₂SO₄, T = 100 °C, 30 min.

Please note: The data are not measured directly on the item supplied.

Contact us for any questions or sales information:

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