

fumasep[®] F-1075-PK

General

Membrane type: Perfluorinated cation-exchange membrane, PK-reinforced, thickness 75 µm, with low resistance, high mechanical stability, high selectivity and high chemical and oxidative stability.

Application: Redox-Flow Battery, e.g. Vanadium-Redox-Flow Battery (VRB), using aqueous acidic conditions.

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. The membrane is ready for use.

Handling

Keep membrane package closed / sealed when unused. 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.

Pretreatment

The membrane is delivered in dry form and H form. The membrane does not need any pretreatment and is ready for use. Please assemble the membrane in dry form.

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

Physical and chemical data

fumasep®		F-1075-PK
membrane type		cation exchange membrane
appearance / colour		transparent, colourless
backing foil		between paper
reinforcement		PK
counter ion		H form
delivery form		dry
thickness (dry, as received)	µm	70 – 80
weight per unit area	mg cm ⁻²	13 - 14
IEC (ion exchange capacity)	meq g ⁻¹	0.8 – 0.9
area resistance in 0.5 M H ₂ SO ₄ ^{a)}	Ω cm ²	0.15
area resistance in 0.5 M H ₂ SO ₄ / 0.4 M vanadyl sulfate ^{a)}	Ω cm ²	0.5 – 0.6
selectivity 0.1 / 0.5 mol/kg KCl at pH = 3, T = 25 °C ^{b)}	%	> 97
uptake in 2 M H ₂ SO ₄ at T = 25 °C ^{c)}	wt %	10 – 15
dimensional swelling in 2 M H ₂ SO ₄ at T = 25 °C ^{d)}	%	0
uptake in vanadyl sulfate at T =25°C ^{c)}	wt %	7 – 10
dimensional swelling in vanadyl sulfate at T =25°C ^{d)}	%	0
proton transfer rate ^{e)}	µmol min ⁻¹ cm ⁻²	> 8000
Young's modulus at 23 °C / 50 % r.h. ^{f)}	MPa	400 – 450
yield strength at 23 °C / 50 % r.h. ^{f)}	MPa	-
tensile strength at 23 °C / 50 % r.h. ^{f)}	MPa	40 – 45
elongation at break at 23 °C / 50 % r.h. ^{f)}	%	> 30
bubble point test in water at T = 25 °C	bar	> 3

a) in 0.5 M H₂SO₄ solution @ T = 25 °C, measured in two-electrode cell (through-plane), sample activated before measurement in 10 % H₂SO₄ at T = 100 °C for 30 min.

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

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

d) reference membrane as received, sample activated before measurement in 10 % H₂SO₄ at T = 100 °C for 30 min.

e) determined from pH potential measurement in a concentration cell 0.1 M HCl / 0.1 M NaCl @ T = 25 °C, sample activated before measurement in 10 % H₂SO₄ at T = 100 °C for 30 min.

f) determined by stress-strain measurement at T = 25°C and 50 % r.h., according to DIN EN 527-1, sample as received without activation.

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

Contact us for any questions or sales information:

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