

# fumasep® FAA-3-PK-75

## General

*Membrane type:* Anion-exchange membrane - PK-reinforced - thickness 70 - 80 µm, with low resistance, high selectivity, high mechanical stability, and high stability in alkaline and acidic environment.

*Application:* Electrodialysis for demineralisation, desalination, acid recovery applications and others.

*Stability range:* pH = 0 - 14 at T = 25 °C.

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 brown foil delivered in dry form.

## Handling and Storage

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.

Dry form: Storage for long time scale (> 12 month) may be done in dry state (sealed container). Wet form: Storage for short and medium time scale (hours up to several weeks) may be done in unsealed containers in 0.5 – 1.5 wt% NaCl solution or comparable neutral pH electrolytes. For storage over a longer time period a sealed container is recommended using afore said electrolyte with ca. 100 ppm biocide (e.g. NaN<sub>3</sub>) to avoid biological fouling.

## Pretreatment

The membrane is delivered in bromide form and dry form. Depending on application and cell design, assembling is possible in dry form (without pretreatment) or wet form. For optimum performance it is recommended to rinse the membrane in NaCl solution (e.g. 0.5 M NaCl solution at T = 25 °C for 24 hrs) to remove any additive from the membrane. Place the membrane sample between stabilizing meshes / spacers in order to avoid curling. Do not let the membrane dry out since micro-cracks may likely occur during shrinkage.

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

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## Technical Datasheet - fumasep® FAA-3-PK-75

### Physical and chemical data

fumasep®		FAA-3-PK-75
membrane type		anion exchange membrane
appearance / colour		brown
backing foil		none
reinforcement		PK
counter ion		bromide (Br <sup>-</sup> )
delivery form		dry
weight per unit area	mg cm <sup>-2</sup>	7.0 – 9.0
thickness (dry)	µm	70 – 80
ion exchange capacity (in Cl <sup>-</sup> form)	mmol g <sup>-1</sup>	1.2 – 1.4
area resistance in Cl <sup>-</sup> form <sup>a)</sup>	Ω cm <sup>2</sup>	1.2 – 2.0
specific conductivity in Cl <sup>-</sup> form <sup>a)</sup>	mS cm <sup>-1</sup>	4.5 – 6.5
selectivity 0.1 / 0.5 mol/kg KCl at T = 25 °C <sup>b)</sup>	%	94 – 97
uptake in H <sub>2</sub> O at T = 25 °C <sup>c)</sup>	wt %	10 – 20
dimensional swelling in H <sub>2</sub> O at T = 25 °C <sup>d)</sup>	%	0 – 2
proton transfer rate <sup>e)</sup>	µmol min <sup>-1</sup> cm <sup>-2</sup>	500 – 1500
Young's modulus at 23 °C / 50 % r.h. <sup>f)</sup>	MPa	1200 – 2300
yield strength at 23 °C / 50 % r.h. <sup>f)</sup>	MPa	20 – 40
tensile strength at 23 °C / 50 % r.h. <sup>f)</sup>	MPa	30 – 60
elongation at break at 23 °C / 50 % r.h. <sup>f)</sup>	%	10 – 30
bubble point test in water at T = 25 °C	bar	> 2
pH stability range at 25 °C	pH	0 – 14

a) in Cl<sup>-</sup> form in 0.5 M NaCl @ T = 25 °C, measured in standard measuring cell (through-plane).

b) determined from membrane potential measurement in a concentration cell.

c) in Br<sup>-</sup> form, membrane as received stored in water for 24 hrs, reference membrane dried over P<sub>2</sub>O<sub>5</sub> *in vacuo*.

d) in Br<sup>-</sup> form, membrane as received stored in water for 24 hrs, reference membrane as received.

e) determined from pH potential measurement in a concentration cell 0.1 M HCl / 0.1 M NaCl @ T = 25 °C.

f) determined by stress-strain measurement at T = 25°C and 50 % r.h., according to DIN EN 527-1.

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