

## fumasep<sup>®</sup> FKS-30

### General

*Membrane type:* Cation-exchange membrane - non-reinforced – thickness 30 µm, with very low resistance, high selectivity and high stability in pH acidic and basic environment.

*Application:* Electrodialysis for demineralisation, desalination applications, capacitive deionization and others.

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 thin, slightly brown foil, delivered on a backing foil (colourless rigid PET foil). Pull off carefully the membrane (brown) from the backing foil.

### Handling and Storage

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. 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 which may get into contact with the membrane during inspection, storage, pretreatment and mounting must be free of sharp edges or angles.

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 (NaN<sub>3</sub>) to avoid biological fouling.

### Pretreatment

The membrane is delivered in H<sup>+</sup> form and dry form. Depending on application and cell design, assembling is possible in dry form (without pretreatment) or wet form. Before assembling in wet form put the membrane sample between stabilizing meshes / spacers (in order to avoid curling) in NaCl solution - e.g. 0.5 M NaCl solution at T = 25 °C for 72 hrs exchanging the solution several times. Do not let the membrane dry out since micro-cracks may likely occur during shrinkage.

If you have any concerns about storage, chemical stability, pre-treatment or before proceeding, please feel free to contact us for further information.

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## Physical and chemical data

fumasep®		FKS-30
membrane type		cation exchange membrane
appearance / colour		slightly brown, transparent
backing foil		PET foil
reinforcement		none
counter ion		H form
delivery form		Dry
thickness (dry)	µm	21 – 26
ion exchange capacity (Na <sup>+</sup> form)	meq g <sup>-1</sup>	1.43
area resistance in Na <sup>+</sup> form <sup>a)</sup>	Ω cm <sup>2</sup>	0.84
specific conductivity in Na <sup>+</sup> form <sup>a)</sup>	mS cm <sup>-1</sup>	3.9
selectivity 0.1 / 0.5 mol/kg KCl at T = 25 °C <sup>b)</sup>	%	99
uptake in H <sub>2</sub> O at T = 25 °C <sup>c)</sup>	wt %	22
dimensional swelling in H <sub>2</sub> O at T = 25 °C <sup>d)</sup>	%	0
Young's modulus at 23 °C / 50 % r.h. <sup>e)</sup>	MPa	2030 – 2480
yield strength at 23 °C / 50 % r.h. <sup>e)</sup>	MPa	46 – 60
tensile strength at 23 °C / 50 % r.h. <sup>e)</sup>	MPa	46 – 66
elongation at break at 23 °C / 50 % r.h. <sup>e)</sup>	%	128 – 190
hydroxyl (OH) transfer rate <sup>f)</sup>	µmol min <sup>-1</sup> cm <sup>-2</sup>	120 – 130
weight per unit area	mg cm <sup>-2</sup>	4.0 – 4.2
bubble point test in water at T = 25 °C	Bar	>3

a) in Na<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 H<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 H<sup>+</sup> form, membrane as received stored in water for 24 hrs, reference membrane as received.

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

f) determined from pH potential measurement in a concentration cell 0.5 M NaOH / 0.5 M NaCl @ T = 25 °C.

**Contact us for any questions or sales information:**

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