

fumasep[®] FKS-50

General

Membrane type: Cation-exchange membrane - non-reinforced - thickness 50 µm, with low resistance, high selectivity and high stability in pH acidic and basic environment.

Application: Electrodialysis for demineralisation, desalination applications 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 slightly brown foil, delivered on a backing layer (colourless rigid PET foil). Pull off carefully the membrane from the backing foil. The membrane is 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 in case of sodium ion is aimed application. For storage over a longer time period a sealed container is recommended using afore said electrolyte with biocide with ca. 100 ppm biocide (NaN₃) to avoid biological fouling.

Pretreatment

The membrane is delivered in H⁺ form and dry form. Depending on application and cell design, assembling is possible in dry form (without pretreatment) or wet form. As for application where proton transfer is aimed, the membrane can be used as delivered or eventually re-conditioned by sulfuric acid before using if necessary. In case of application where transfer of sodium (or similar one) ion is targeted, it is recommended to soak the membrane in NaCl solution (such as 0.5 M NaCl solution at T = 25 °C for 24-72 hrs exchanging the solution several times) to convert the membrane into Na⁺-form. 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. Membranes will expand and contract based on water / electrolyte content. If you have any concerns about storage, chemical stability, and pretreatment please feel free to contact us for further information. 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 fumasep® FKS-50

fumasep®		FKS-50
membrane type		cation exchange membrane
appearance / colour		brown, transparent
backing foil		PET foil
reinforcement		none
counter ion		H form
delivery form		dry
thickness (dry)	µm	48 – 54
weight per unit area	mg cm ²	7.0 – 7.2
ion exchange capacity (Na ⁺ form)	meq g ⁻¹	1.35
area resistance in Na ⁺ form ^{a)}	Ω cm ²	< 1,6
specific conductivity in Na ⁺ form ^{a)}	mS cm ⁻¹	> 3,3
selectivity 0.1 / 0.5 mol/kg KCl at T = 25 °C ^{b)}	%	> 97,5
uptake in H ₂ O at T = 25 °C ^{c)}	wt %	27
dimensional swelling in H ₂ O at T = 25 °C ^{d)}	%	0
hydroxyl transfer rate ^{f)}	µmol min ⁻¹ cm ⁻²	< 350
Young's modulus at 23 °C / 50 % r.h. ^{e)}	MPa	> 1350
yield strength at 23 °C / 50 % r.h. ^{e)}	MPa	> 29
tensile strength at 23 °C / 50 % r.h. ^{e)}	MPa	> 32
elongation at break at 23 °C / 50 % r.h. ^{e)}	%	> 40
bubble point test in water at T = 25 °C	bar	> 2.5

a) in Na⁺ 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⁺ form, membrane as received stored in water for 24 hrs, reference membrane dried over P₂O₅ *in vacuo*.

d) in H⁺ 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.

Note: The product is not certified for drinking water applications. The data are not measured directly on the item supplied. The data sheet does not release the customer of the necessity of a goods inwards control procedure. All information included in this data sheet is based on tests and data believed to be reliable. The data do not imply any warranty or performance guarantee. It is the user's responsibility to examine performance, suitability and durability of the product for the intended purpose. FUMATECH BWT GmbH does not assume any liability for patent infringement resulting from the use of this product.

Hereby, it is certified that all results of the measured item comply with the margins of the internal specification defined in the technical datasheet. All measurements and data recording are conducted in accordance with standardized procedures following the ISO 9001 certification.

