

# fumasep<sup>®</sup> F-10120

## General

*Membrane type:* Cation-exchange membrane - non-reinforced - thickness 120 µm, with low resistance, high mechanical stability, high selectivity and high chemical / oxidative stability, and resistant to chlorine.

*Application:* Electrochemical processes requiring cation exchange membranes with high oxidative stability and highly resistant to chlorine - e.g. for electrode protection.

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 foil (colourless rigid PET foil). Pull off carefully the membrane from the backing foil.

## 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.

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-form and dry form. Depending on application and cell design, assembling is possible in dry (without pretreatment) or wet form. Pretreatment before assembling: 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 several times the solution. 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.

---

## Technical Data Sheet - fumasep<sup>®</sup> F-10120

### Physical and chemical data

fumasep <sup>®</sup>		F-10120
membrane type		cation exchange membrane
appearance / colour		transparent, colourless
backing foil		PET foil
reinforcement		none
counter ion		H-form
delivery form		dry
weight per unit area	mg cm <sup>-2</sup>	2.4
thickness (dry, as received)	µm	114 – 124
IEC (ion exchange capacity)	meq g <sup>-1</sup>	0.88 – 0.91
area resistance in 0.5 M NaCl <sup>a)</sup>	Ω cm <sup>2</sup>	0.79
conductivity in 0.5M NaCl <sup>a)</sup>	mS cm <sup>-1</sup>	14.3
selectivity 0.1 / 0.5 mol/kg KCl at T = 25 °C <sup>b)</sup>	%	93 – 94
uptake in H <sub>2</sub> O at T = 25 °C in H-form <sup>c)</sup>	wt %	24
dimensional swelling in H <sub>2</sub> O at T = 25 °C in H-form <sup>d)</sup>	%	13 – 14
Young's modulus at 23 °C / 50 % r.h. <sup>e)</sup>	MPa	205 – 218
yield strength at 23 °C / 50 % r.h. <sup>e)</sup>	MPa	9
tensile strength at 23 °C / 50 % r.h. <sup>e)</sup>	MPa	27 – 31
elongation at break at 23 °C / 50 % r.h. <sup>e)</sup>	%	235 – 277
proton transfer rate <sup>f)</sup>	µmol min <sup>-1</sup> cm <sup>-2</sup>	6910
bubble point test in water at T = 25 °C	bar	> 3

a) measured in two-electrode cell (through-plane), sample activated in 10 % H<sub>2</sub>SO<sub>4</sub>, T = 100 °C, 30 min before measurement.

b) determined from membrane potential measurement in a concentration cell, sample activated in 10 % H<sub>2</sub>SO<sub>4</sub>, T = 100 °C, 30 min before measurement.

c) reference membrane dried over P<sub>2</sub>O<sub>5</sub> *in vacuo*.

d) reference membrane dried, sample activated in 10 % H<sub>2</sub>SO<sub>4</sub>, T = 100 °C, 30 min before measurement.

e) determined by stress-strain measurement at T = 25 °C and 50 % r.h., according to DIN EN 527-1, sample activated in 10 % H<sub>2</sub>SO<sub>4</sub>, T = 100 °C, 30 min before measurement.

f) determined from pH potential measurement in a concentration cell 0.1 M HCl / 0.5 M NaCl @ T = 25 °C, sample activated in 10 % H<sub>2</sub>SO<sub>4</sub>, T = 100 °C, 30 min before measurement.

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