fumasep® F-10120-PK

General

Membrane type: Fluorinated cation-exchange membrane – PK-reinforced – thickness 120 µm, with low resistance, high mechanical stability, high selectivity and high chemical and oxidative stability.

Application: Electrochemical processes requiring cation exchange membranes with high oxidative stability such as Water Electrolysis, Redox-Flow Batteries etc.

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, reinforced foil, supplied on a backing layer (colorless rigid PET foil). Carefully separate the membrane from the backing foil.

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. To assure safe handling prevent contact with skin and eyes. Apply sufficient room ventilation and avoid inhalation close to the membrane (use fume hood). 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.

Pretreatment

The membrane is supplied in H-form and dry form (non-activated form). For some applications (e.g. redox-flow batteries in acidic environment) the activation can be carried out in-situ in the cell without any acid pretreatment prior to assembling. In order to receive immediately high performance and lowest resistance it is optional to pretreat the membrane in aqueous 10 wt% H_2SO_4 solution at T = 70 – 90 °C for at least 6 hours. After thorough washing with demineralized water the membrane is ready for use. Membranes will expand and contract based on its water content.

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

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Physical and chemical data of fumasep® F-10120-PK

fumasep®	unit	F-10120-PK
membrane type		cation exchange membrane
appearance [a]		light brown / reinforced
backing foil		PET
reinforcement		none
counter ion		H^+ form
delivery form		dry, non-activated
thickness (dry)	µm	110 – 130
weight per unit area	g m^{-2}	200 – 250
area resistance in 0.5 M H_2SO_4 [b]	Ω cm^2	< 1.0
selectivity 0.1 / 0.5 mol/kg KCl at T = 25 °C [c]	%	> 95
dimensional swelling in H_2O at T = 25 °C [d]	%	< 5
Young's modulus at 23 °C / 50 % r.h. [e]	MPa	> 300
tensile strength at 23 °C / 50 % r.h. [e]	MPa	> 30
elongation at break at 23 °C / 50 % r.h. [e]	%	> 15
burst test in water at T = 25 °C	bar	> 3
Version [f]	2.2	Valid from April 18th 2021

a) The colour of the product may vary slightly.
b) measured in two-electrode cell (through-plane), T = 25 °C, sample activated in 10 % H_2SO_4 at T = 25 °C for 24 hours before measurement.
c) determined from membrane potential measurement in a concentration cell, sample activated in 10 % H_2SO_4 at T = 25 °C for 24 hours before measurement.
d) sample activated in 10 % H_2SO_4 at T = 25 °C for 24 hours prior to measurement., then placed in water at T = 25 °C, subsequently dried over P_2O_5 at T = 25 °C.
e) determined by stress-strain measurement at T = 25 °C and 50 % r.h., according to DIN EN 527-1 (without pretreatment).
f) Changes without prior notices may apply.

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.

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