

fumasep® FAAM-20

General

Membrane type: Anion-exchange membrane with ternary ammonium group – non-reinforced – thickness 20 µm, with low resistance, high selectivity, and high stability in acidic and caustic environment.

Application: Alkaline electrolysis using liquid aqueous KOH (6 – 12 M KOH), preferentially at both, anode and cathode side.

Operation range: 6 – 12 M KOH, temperature RT – 100 °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 thin brown foil, supplied on a backing layer (colorless rigid PET foil). Carefully separate the membrane from the backing layers. The membrane is supplied in dry form.

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 a dry state, however some remaining water and / or solvents can be present in the product, which can be easily removed by soaking in DI water or aqueous KOH (before or after assembling, dry assembling is recommended). If additional cleaning is required rinse the membrane in either the application solution (e.g. aqueous KOH) or deionized water according to the application requirement.

The membrane is self-activating in the cell after contact with aqueous caustic electrolyte (e.g. 6 - 9 M aqueous KOH solution) within several hours. Depending on cell design, activation may also be done prior assembling: Put the membrane sample between stabilizing meshes (in order to avoid curling) in aqueous KOH solution (concentration according to application) for at least 24 hrs at room temperature. Use closed container to avoid CO₂ contamination (carbonate formation that may affect conductivity). Membranes must be covered by KOH solution. Membranes will expand when subject to swelling process. The hydration level can be controlled by KOH concentration and temperature, e.g. 9 - 12 M KOH solution at room temperature leads to approx. 40 – 60 wt% hydration level.

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

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Physical and chemical data of fumasep® FAAM-20

| fumasep® | unit | FAAM-20 |
|--|-------------------|---|
| membrane type | | anion exchange membrane |
| functional group | | ternary ammonium group |
| appearance ^{a)} | | brown, transparent |
| appearance / colour | | light brown, transparent |
| backing foil | | PET |
| reinforcement | | none |
| counter ion | | none |
| delivery form | | dry |
| thickness (dry) | µm | 17 – 25 |
| weight per unit area (dry) | g m ⁻² | 25 – 35 |
| Young's modulus at 23 °C / 50 % r.h. ^{b)} | MPa | > 1200 |
| tensile strength at 23 °C / 50 % r.h. ^{b)} | MPa | > 100 |
| elongation at break at 23 °C / 50 % r.h. ^{b)} | % | > 30 |
| thermal stability (dry) | | no oxidation below 250 °C |
| pH durability range @ RT | | stable under highly alkaline conditions |
| treatment with 12 M aqueous KOH at 20 °C for 1 day ^{c)} | | |
| thickness increase | % | < 40 |
| length increase | % | < 2 |
| swelling (hydration) | wt % | < 60 |
| Version ^{d)} | 2.2 | Valid from July 30 th 2021 |

a) The colour of the product may vary slightly.

b) determined by stress-strain measurement at T = 25°C and 50 % r.h., according to DIN EN 527-1 (without pretreatment).

c) Treatment with alkaline solution was performed in closed container to avoid CO₂ contact.

d) Changes without prior notices may apply.

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. fumasep® is a trademark of company FUMATECH BWT GmbH.

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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