

# fumasep® FBM

## General

Bipolar membranes consist of an anion layer and a cation layer which are connected by means of a patented process. This composite is chemically and mechanically very stable. On the borderline between anion membrane (AEM) and cation membrane (CEM) water is split into  $\text{OH}^-$  and  $\text{H}^+$  ions when exceeding a potential difference of approximately 0,8 V. Thus, attention must be given to the right poling. The CEM must be directed towards the cathode, the AEM must be directed towards the anode. If the membrane is used in the wrong position for a longer period of time, the interim layer may be destructed, and the monolayers will separate.

The electro-catalytically forced water dissociation produces – in contrast to the classical electrolysis of water- no reaction gases. Therefore, one Mol of  $\text{OH}^-$  and  $\text{H}^+$  ions can be achieved at an energy value of approximately 22 Wh (Electrolysis: approximately 55 Wh per Mol)

The fumasep FBM membranes are easy to use and show:

- High effectiveness (>98%  $\text{OH}^-$ , respectively  $\text{H}^+$ -generation in reference to the load transported<sup>1</sup>)
- Low electric resistance (<3 Ohm  $\text{cm}^2$  / starting at 50mA/ $\text{cm}^2$ )
- Excellent mechanical properties at very low thickness (0,2 – 0,25 mm)
- Excellent thermal stability (max 60°C)
- Easy to use

Membranes are identified by membrane type and identification number (Lot.-Number). Please refer to this type and identification number in case of queries.

## Handling and Storage

Please pay attention that the membrane surface is not contaminated with surface active agents or will be damaged by mechanical influence.

### High attention must be given to the right poling when using the membranes!

When mounting the membranes it is imperative that the membrane sides will not get mixed up. Therefore, the cation side is marked with 'K'. If not marked with 'K', watch the side with the cut edge in the upper right corner and the punching hole in the upper left side. This side must be directed towards the cathode (see also drawing overleaf).

The membrane should be stored in 1 M NaCl-solution and placed in a closed container. If storage will be for a longer period of time 100 ppm of  $\text{NaN}_3$  should be added to prevent biological growth. Other biocides have not been used as yet.

<sup>1</sup> in 0,5 M  $\text{Na}_2\text{SO}_4$ -solution at 100 mA/ $\text{cm}^2$

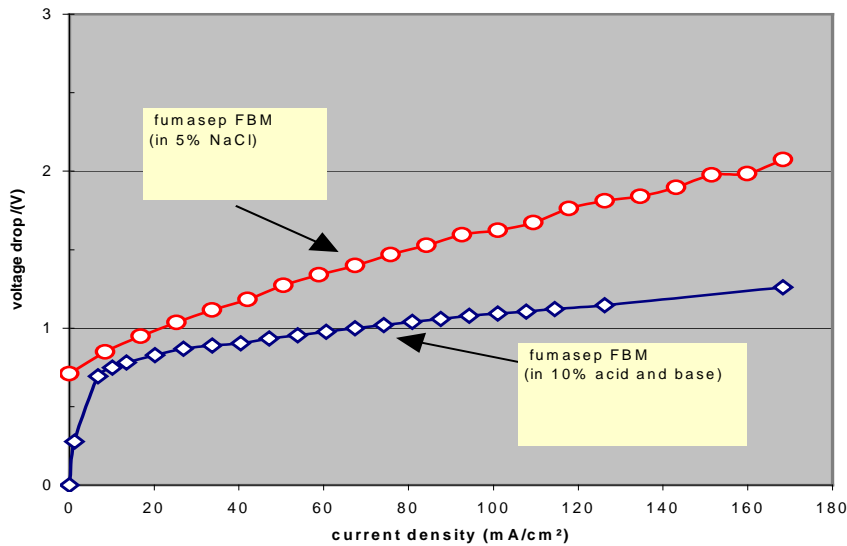
If you have any concerns before proceeding, please feel free to contact us for further information

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Typical Current-Voltage-Plot of fumasep® FBM, measured in 0,5 M  $\text{Na}_2\text{SO}_4$  at RT

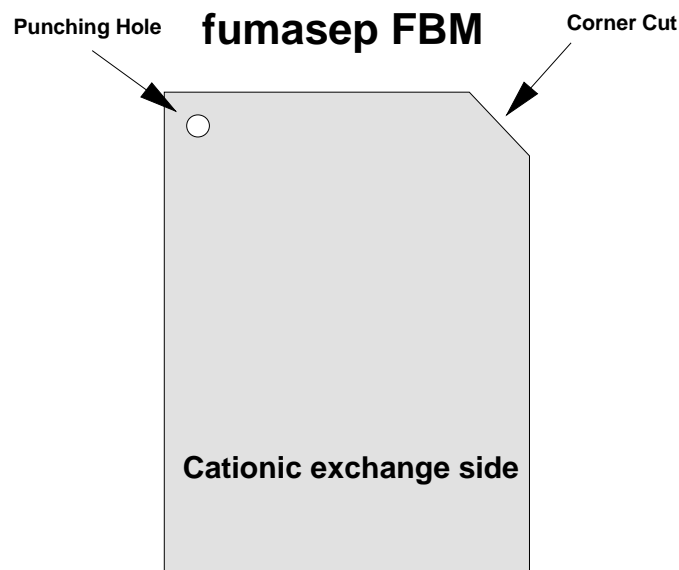
## Technical Information Sheet fumasep® FBM

### current-voltage plot fumasep FBM



Typical Current-Voltage-Plot of fumasep® FBM, measured in salt and acid/base media at RT

See following drawing for correct orientation of the membrane side. The cation exchange side is on the top, when the punching hole is in the upper left and the cut edge in the upper right position.



Please note: The measuring data are not measured directly on the item supplied. The data correspond with the measurement of our quality control.

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