

fumion® FAA-3 as shredded film

General

This **fumion® FAA-3** polymer is based on an anion exchange ionomer and when solved it is used for electrolyte layer in fuel cell, water electrolysis or rechargeable alkaline batteries

Delivery and Handling

Keep shredded film package closed / sealed when unused. Open only for direct use and process immediately after opening. Store and handle in a clean and dust-free area.

Always wear protective gloves and safety goggles (mask) when handling the shredded film or solution made thereof. Working of ventilated draft is highly recommended. Avoid any skin or eye contact with eventually occluded particles on the cloth. The fumion® contains a polyaromatic polymer with quaternary ammonium functional groups (counter ion bromide).

Recommended procedure of solution fabrication and handling

Homogenize the solution by stirring, milling or ultrasonic treatment. The saturation level depends on solvent and temperature. Refer to the table with respect to the ratio of solid to liquid. The dissolution of FAA-3 in alcoholic solution is typically done with help of magnetic stirrer in a 100-200 ml glass overnight at room temperature. It is recommendable to filter the solution afterwards, especially when an opaque appearance or obviously non-dissolved particles are observed. Shake the solution shortly before use.

Recommended storage conditions of solution: Store in closed non-reactive containers, avoid direct exposure to sunlight. Storage temperature for long term storage (up to 6 weeks): 5 °C; storage for several days at 15 - 25 °C possible.

Expected shelf-life of shredded film: not investigated

Remark: solutions may show some signs of gelation

The ionomer is delivered in **Br⁻ form**. Conversion of the ionomer to the other counter ion (such as Cl⁻, OH⁻ etc) is possible. It is preferred to carry out the conversion after the FAA-3 solution is processed and dried such as film or part of electrode etc.

Important remark: once the FAA-3 is converted to OH⁻ form, the material has strong affinity toward interaction with CO₂. Carbon dioxide can deactivate the material in course of minutes to days, depends on the CO₂ concentration and other operational conditions. The reactivation can be done by mild treatment such as with 0,1 M KOH at room temperature overnight followed by rinsing by DI water.

Technical Datasheet – fumion® FAA-3

SAFETY PRECAUTION LABELING

F: Highly flammable (if solved in i-propanol or n-propanol)

Xi: Irritant in any form

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

Physical and chemical data of fumion FAA-3

fumion® polymer		FAA-3
polymer type		polyaromatic polymer
appearance / colour		Slightly brown shredded film
Recommended solvents		<i>n</i> -Propanol, i-Propanol, NMP
Working concentration	wt%	NPA, IPA: 3,5-6,5 %, NMP: 20.0 %
solution viscosity at 25 °C	mPa · s	> 3.500 (based on NMP solution)
ion exchange capacity (IEC) / chloride form	meq g ⁻¹	2.5 - 3.0
functional group		quaternary ammonium group
counter ion		Bromide (Br ⁻)
Temperature limit of processability in Br ⁻ or Cl ⁻ form	degC	120
Temperature limit of processability in OH ⁻ form	degC	60

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

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.