

3M Advanced Materials Division

# 3M™ Ionomers

## 725EW Ionomer

## 800EW Ionomer

**Important Notice and Disclaimer:** These 3M products are experimental or developmental products that have not been introduced or commercialized for general sale, and its formulation, performance characteristics and other properties, specifications (if any), availability, and pricing are not guaranteed and are subject to change or withdrawal without notice.

### Features and Benefits

- High power output
- High proton conductivity at low relative humidity
- Low gas permeation
- Good mechanical strength at high relative humidity
- High thermal stability
- High chemical resistance
- Solid format provides maximum flexibility to customize product formulations
- Room-temperature dispersible in common solvent systems

*Note: Data in this document are not for specification purposes.*

### Typical Values

Property	Test Method	725EW	800EW
Visual Aspect		Off-White Granules	Off-White Granules
Ionomer Equivalent Weight	3M Internal Method*	725*	800*
Ion Exchange Capacity (meq/g)		1.38	1.25
Viscosity mPa-s @ 20C°/1s-1	3M Internal Method** (60/40 n-propanol/ water dispersion)	50-300 15% solids	50-300 20% solids

\* FT-IR of polymer SO<sub>2</sub>F content

\*\*Rotational viscometer

### Product Description

3M™ Ionomer 725EW and 800EW are copolymers of tetrafluoroethylene and perfluorobutanesulfonylfluoride vinyl ether, offered in equivalent weights of 725EW and 800EW. They are excellent for use in membranes and electrode formulations in PEM fuel cells and in other electrochemical applications.

The high proton conductivity of 3M ionomers creates the potential to achieve higher energy output with a smaller fuel cell stack. They may also allow a reduction in the amount of expensive platinum catalyst used in electrode applications, and in turn could reduce system cost. 3M ionomers feature a linear side chain and stabilized end groups for improved chemical durability – even in demanding electric vehicle applications.

### Product Form and Packaging

These products are supplied in solid form and are packaged in plastic containers. They are available in 1kg, 10kg, and 25kg packages.

### Storage and Material Handling

3M ionomers should be stored under clean, dry conditions in the unopened original containers received from 3M. It is recommended to store the product at room temperature away from direct sunlight or other sources of heat or irradiation. These ionomers are hygroscopic and moisture content needs to be considered when preparing dispersions based on these materials. Keep containers tightly sealed to avoid moisture absorption.

## Safety and Toxicology

This is a fluoroplastic material, so normal precautions observed with fluoroplastics should be followed. Before processing this product, be sure to read and follow all precautions and directions for use contained in the product label and the Safety Data Sheet. General handling/processing precautions include:

1. Process only in well-ventilated areas.
2. Do not smoke in areas contaminated with powder/residue from this product.
3. Avoid eye contact.
4. After handling this product, wash any contacted skin with soap and water.

Potential hazards, including evolution of vapors, can exist if processing occurs under excessively high temperature conditions. Vapor extractor units should be installed above processing equipment. When cleaning processing equipment, do not burn off any of this product with an open flame or in a furnace.

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