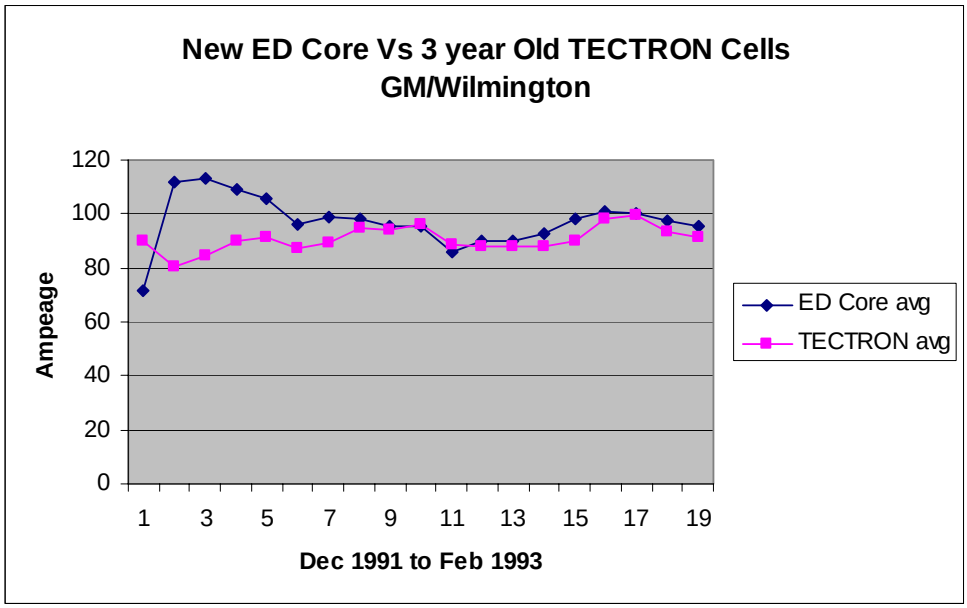
**UFS Corporation**
330 North 400 East
Valparaiso, IN 46383-9704 USA
PH: 219-464-2027 FAX: 219-464-8646
www.ufsc.com
email: service@ufsc.com

# TECTRON ME Cell Vs ED Core
# Fact Sheet Comparison

| | TECTRON™ ME Cell | ED Core Cell |
|---|---|---|
| **Sizes** | | |
| Different diameters the Cell is available. | **1-1/2" (original), 2", 3", and 5"** | Only 1-1/2" |
| **Models** | **Made by UFS Corporation** | **Made by Tokuyama Soda (Japan)/Astom div** |
| | **1-1/2" and 2" referred to as small diameter** | 1-1/2" |
| | **3" and 5" diameters referred to as larger diameter** | Not available |
| **Electrode** | | |
| Material | **Small Diameter: 316L Sch 10, 40, and 80**<br>**Large Diameter: 316L Sch 5** | Same for 1-1/2" only |
| **Electrolyte Flow** | | |
| Anolyte Flow | **Uniform. Optimal flow completely around Electrode; no dead spots. Because of the higher velocity of electrolyte across the face of the Electrode, more oxygen bubbles are scrubbed off and the temperature is reduced.** | Electrolyte drips in the top and has a poor, uneven circulation pattern. Anolyte has to make its way down the center of the anode and then around to the exterior of the anode surface. There is very little driving force behind the electrolyte so the velocity is quite low. |
| **Ion exchange Membrane** | | |
| Types | **PTAN type (sheet form, 0.5 mm thick) that has low water permeability – excellent for Low Profile (i.e. pressurized Cells). PTAR type (roll form, 0.5 mm thick) is used for large diameter products and has a higher water permeability rate.** | Spun cast and is about 4 mm thick, or about 8 x more than the ion-exchange membrane used in the TECTRON Cell. As the membrane hydrates it expands, largely on its axial length as much as 10%, special care must be given to allow for expansion so it does not touch the tank floor. |
| Area (i.e. electrical) resistance | **Varies from 50 to 10 Ohm/cm based upon the strength of the electrolyte. See attached sheet for more details** | Tokuyama Soda does not publish electrical performance data on their website http://www.astom-corp.jp/en/en-main2-edcore.html |
| Head to head comparison | In December 1991, ED Core (i.e. Koch) sponsored a side-by-side comparison of the ED Core and TECTRON Cell. The site was GM/Wilmington where TECTRON Cells had been in operation for about 3-1/2 years. Actually, the TECTRON Cells had started in GM/Framingham and were later transferred (and allowed to dry out during transit) when the plant closed. As you can see from the attached chart, the newer ED Core Cells were able to deliver more current compared the 3-1/2 year old TECTRON Cells, which is to be expected. The surprise is that this advantage did not last six months. At the end of the 15 month test the ED Core Cells had almost no advantage over the older TECTRON Cells. | |
| **Housing** | | |
| Construction | **One piece PVC and PP, therefore no joints or holes that can leak.** | Similar, has internal PVC pipe for rigidity |
| Weight | **Small Diameter: 3-5 lbs**<br>**Large Diameter: 8 – 15 lbs** | Similar<br>N/A |
| Submersible | **Yes, can be completely submerged.** | Yes |

**UFS Corporation**
330 North 400 East
Valparaiso, IN 46383-9704 USA
PH: 219-464-2027 FAX: 219-464-8646
www.ufsc.com
email: service@ufsc.com

| **Misc.** | | |
|---|---|---|
| Membrane Guard | **Guard effective against membrane cuts. Guard design does not blind membrane.** | Company says it is not required. |
| Thermal stability | **The electrolyte solution is typically 3 to 5 deg C higher than the paint bath. The paint bath is able to cool the electrolyte solution because the 0.5 mm thick membrane is not much of an insulator.** | The much thicker ED Core membrane acts more like a thermal insulator and so the average temperature of the ED Core Cell is higher than the TECTRON Cell. Thus the anode life is shorter due to greater chemical kinetics when the temperature is higher. |
| Membrane Blisters, distorted shape | **Does not occur with thin ion-exchange membrane** | When a high temperature event occurs blisters can develop inside the thick membrane. The ED Core shape can be distorted too by the heat that can develop inside the ED Core. See photos below for more information |




Heat Stressed ED Core Cell, middle Cell (notice the cut on this cell too)


Distorted Cell shape from high temperature event.

# Ionac® Ion Exchange Membranes

## *Durable Membranes Offer High Permselectivity for Industrial Processes*

Sybron Chemicals Inc. manufactures **Ionac** heterogenous ion exchange membranes with strong acid cationic and strong base anionic functionality.

**Ionac Membranes** are characterized by strongly ionized functionality which results in high permselectivity for industrial processes. The combination of a very strong fabric base and chemically stable binder yields a very tough and durable membrane. Their high Mullen Burst Strength ratings will not degrade within their normal operating temperature range.

### Ionac Membrane Applications*

**Ionac** ion exchange membranes are used in a variety of processing and waste treatment applications that include:

-production of Periodic acid
-recovery of metals from electroplating and metal finishing baths
-recovery of pickle liquors
-electrocoating for both anionic and cationic systems

### Ionac Membrane Physical Characteristics

**Ionac** ion exchange membranes are supplied in standard sheet sizes. In addition, the MA-7500 membrane is supplied in standard size rolls of 43 and 48 inches wide and in varying lengths up to 30 meters.

**Ionac** ion exchange membranes are furnished dry for ease of storage. The membranes should remain in the shipping canister in a dry environment until ready for use. Membranes should be presoaked before use, following the instructions in the membrane preparation section.

*As with any product, use of the products mentioned in this publication in a given application must be tested (including field testing, etc.) in advance by the user to determine suitability.

**Contact Us:**
Sybron Chemicals Inc.
A Bayer Company
Birmingham Road
Birmingham, NJ 08011
Phone: 1-800-678-0020
Fax: 609-894-8641

www.ionexchange.com

**Contact Us:**
Sybron Chemicals Inc.
A Bayer Company
100 Bayer Road
Pittsburgh, PA 15205
Phone: 1-800-662-2927
Fax: 412-777-4109

www.ionexchange.com

Edition 04/03a

# Ionac® Ion Exchange Membranes

## Typical Characteristics**

| | | Cation MC-3470 | Anion MA-3475 | Anion MA-7500 |
|---|---|---|---|---|
| **Width** | meters | 1.09 | 1.22 | 1.22 |
| | inches | 43 | 48 | 48 |
| **Length** | meters | 3.1 | 3.1 | 30 |
| | inches | 122 | 122 | |
| **Thickness** | mils | 15 | 16 | 18 |
| **Exchange Capacity** | Meq/gm | 1.4 | 0.9 | 1 |
| **Mullen Burst Test, min.** | psi | 150 | 150 | 150 |
| | bar | 10.3 | 10.3 | 10 |
| **Area Resistance, Ohm/cm** | 0.1 N NaCl | 25 | 50 | 30 |
| | 1.0 N NaCl | 10 | 25 | 10 |
| **Permselectivity** | 0.5 N NaCl/1.0 N NaCl | 96 | 99 | 99 |
| **Water Permeability** | ml/hr/ft$^2$ @ 5 psi | 25 | 25 | 50 |
| **Temperature Stability, max.** | $^o$C | 80 | 80 | 80 |
| | $^o$F | 176 | 176 | 176 |
| **Chemical Stability, pH** | | 1 to 10 | 1 to 10 | 1 to 10 |
| **Current Density, max.** | ampere/ft$^2$ | 50 | 50 | 50 |
| **Ionic form, as shipped** | | Sodium | Chloride | Chloride |

**These items are provided as general information only. They are approximate values and are not part of the product specifications.

Appropriate literature has been assembled which provides information concerning the health and safety precautions that must be observed when handling the Bayer products mentioned in this publication. Before working with any of these products, you must read and become familiar with the available information on their hazards, proper use, and handling. This cannot be overemphasized. Information is available in several forms, e.g., material safety data sheets and product labels. Consult your Sybron Chemicals Inc. representative or contact Bayer's Product Safety and Regulatory Affairs Department in Pittsburgh, PA.

## Ionac Membrane Preparation:

**Ionac** ion exchange membranes are furnished dry for ease of storage. The membranes should remain in the shipping canister in a dry environment until ready for use. Membranes should be prepared for service by either of the following methods listed below. This helps ensure a long useful life for the membrane.

***Method A*** - The membranes should be completely immersed in a solution typical in composition to the liquid contacting the membrane in process. It is preferable that the liquid temperature be no greater than 131$^o$ F (55$^o$ C). Allow a contact time of 3 hours to ensure complete swelling.

***Method B*** - As as alternative to equilibrating in the application liquor, the membrane can be soaked in a water or brine solution under the same temperature and time conditions as stated above.

Note: The information contained in this bulletin is current as of April 2003. Please contact Sybron Chemicals Inc. to determine whether this publication has been revised.