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# LINQCELL **VRB-MEM Series**

## Ion Exchange Membranes for Redox Flow Batteries

- Available in different thicknesses
- High acid capacity, high conductivity, and extended service life
- Designed as ion exchange membranes for redox flow batteries

**LINQCELL VRB-MEM Membranes** are perfluorinated cation exchange polymers in the acid $H^+$ form produced through solution casting. This chemistry and manufacturing method provide several benefits, including high acid capacity and conductivity, enhanced crystallinity and tensile strength, reduced linear expansion and anisotropy, and an extended service life. These characteristics make **LINQCELL VRB-MEM Membranes** highly recommended for use as ion exchange membranes in redox flow batteries, particularly in all-vanadium flow batteries.

**LINQCELL VRB-MEM Membranes** are available in two standard thicknesses—50 µm (VRB-MEM50) and 75 µm (VRB-MEM75)—and can also be custom-fabricated to meet specific requirements. The maximum roll width is 75 cm.

### Specifications

| Property | Unit | VRB-MEM50 | VRB-MEM75 |
|---|---|---|---|
| **Physical Properties** | | | |
| **Thickness** | µm | 50 (±2) | 75 (±2) |
| **Specific gravity** | – | 2 | |
| **Tensile strength** (MD/TD) | MPa | 38/38 | |
| **Modulus** | MPa | 600 | |
| **Elongation to break** | % | 160 | |
| **Hydrolytic Properties** | | | |
| **Water content**[1] | %water | 5 | |
| **Water uptake**[2] | %water | 49 | |
| **Linear expansion from 23 °C, 50% RH**<br>to water soaked, 23 °C<br>to water soaked, 100 °C | % | <br>3<br>5 | |
| **Other Properties** | | | |
| **Available acid capacity** | $meq \cdot g^{-1}$ | 1 | |
| **Conductivity** | $S \cdot cm^{-1}$ | 0.1 | |
| **Hydrogen permeability** | $mL/(min \cdot cm)$ | 0.008 | – |

[1] *Water content of the membrane conditioned at 23 °C and 50% relative humidity, based on dry weight.*
[2] *Water absorption from a dry membrane to a conditioned state in water at 100 °C for 1 hour, based on dry weight.*

### Storage and Handling

Keep unopened rolls of LINQCELL membranes in their original packaging, away from sunlight, at 10–30 °C and 30–70% humidity. Let the roll adjust to the processing area temperature for 24 hours before opening. Once exposed, the membrane will adapt to the surrounding humidity, which may affect its dimensions.

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