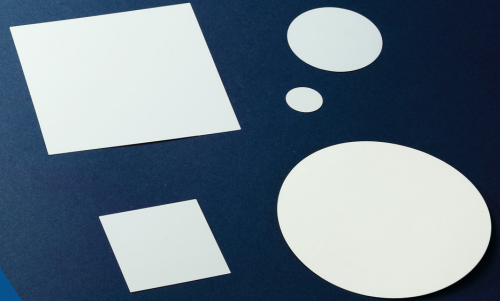


The Future Made Clear



LITHIUM ION CONDUCTING GLASS-CERAMIC (LICGC™)



LICGC™

LICGC™ is a lithium ion conducting glass ceramic that was developed to serve as a true solid state electrolyte or separator in next generation lithium batteries and other electrochemical devices. The unique properties of LICGC™ make it the enabling component in advanced lithium metal cells.



Advantages

- High Lithium Ion Conductivity:
 - $1-3 \times 10^{-4}$ S/cm at 25 °C
 - Lithium ion transport is #1
- Chemical Properties
 - Water and mild acid have minimal influence on lithium ion conductivity
- Physical and Mechanical Properties
 - Stable in air and water
 - True solid electrolyte
 - Non-flammable
 - Safe, prevents dendrite penetration
- Supplied as membranes in various sizes

GET IN TOUCH

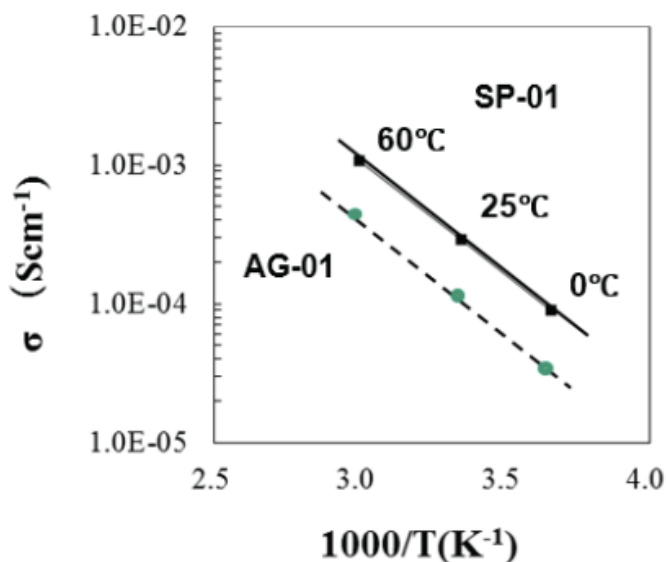
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Material Profiles

- **AG-01 Polished Substrates**
 - $\text{Li}_2\text{O}-\text{Al}_2\text{O}_3-\text{SiO}_2-\text{P}_2\text{O}_5-\text{TiO}_2-\text{GeO}_2$ System
 - Li Ion Conductivity $\sim 1 \times 10^{-4}$ S/cm @ 25 °C
 - Excellent air and seawater stability
- **SP-01 Sintered Plates**
 - $\text{Li}_2\text{O}-\text{Al}_2\text{O}_3-\text{SiO}_2-\text{P}_2\text{O}_5-\text{TiO}_2$ System
 - Li Ion Conductivity $\sim 3 \times 10^{-4}$ S/cm at 25 °C
 - Scalable in terms of size and quantity



Arrhenius Plots of LICGC™
(AG-01 & SP-01 Membranes)

Properties

- **Chemical Properties**
 - RW(p) JOGIS Class 1 water resistance
 - RA(p) JOGIS Class 1 acid resistance
- **Mechanical Properties**
 - Bending strength (4 pts): 140 N/mm²
 - Knoop Hardness: Hk 590
 - Piercing breaking strength \cong 10N
 - Specific Gravity (AG-01): 3.05
 - Specific Gravity (SP-01): 2.80
- **Thermal Properties**
 - Coefficient Thermal Expansion $10^{-1}/\text{K}$
 - 30~350 °C 94
 - 350~600 °C 82

Membrane Sizes

- **AG-01**
 - 25.4 mm SQ x 150 um thick
 - 25.4 mm SQ x 20 um thick
 - 50.0 mm SQ x 180 um thick
 - 50.0 mm SQ x 20 um thick
 - 19.0 mm DIA x 150 um thick
 - 25.4 mm DIA x 150 um thick
 - 50.8 mm DIA x 250 um thick
- **SP-01**
 - 25.4 mm SQ x 150 um thick
 - 25.4 mm SQ x 45 um thick
 - 50.0 mm SQ x 180 um thick
 - 50.0 mm SQ x 45 um thick
 - 50.0 mm SQ x 90 um thick
 - 19.0 mm DIA x 45 um thick

Please contact us to discuss your specific requirements.