

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

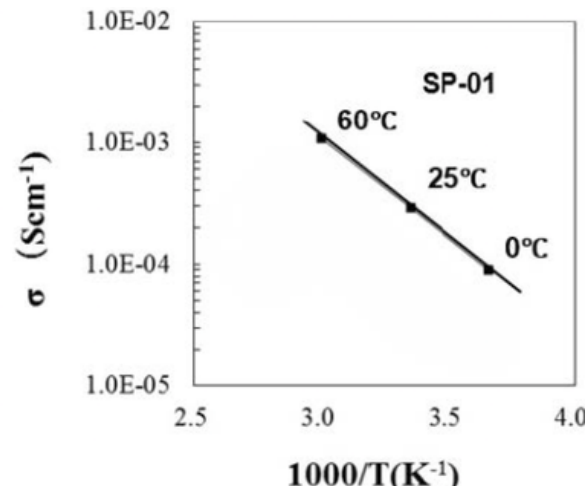
www.oharacorp.com

50 Columbia Road
Branchburg, NJ 08876
Tel: (908) 218-0100
Fax: (908) 218-1685

23141 Arroyo Vista #200
Rancho Santa Margarita, CA 92688
Tel: (949) 858-5700
Fax: (949) 858-5455

LICGC™ SP-01

- **Glass-ceramic sintered membranes without through holes**
 - **Composition:** $\text{Li}_2\text{O}-\text{Al}_2\text{O}_3-\text{SiO}_2-\text{P}_2\text{O}_5-\text{TiO}_2$ System
 - **Crystalline Phase:** $\text{Li}_{1+x+y}\text{Al}_x(\text{Ti, Ge})_{2-x}\text{Si}_y\text{P}_3-\text{yO}_{12}$
 - **Li Ionic Conductivity:** $\sim 3 \times 10^{-4}$ S/cm at 25 °C
 - **Features:** Scalable in terms of size and quantity
 - **Application:** Membranes for mass production of next-generation batteries using low-cost manufacturing methods



Arrhenius Plots of LICGC™ (SP-01 Membranes)

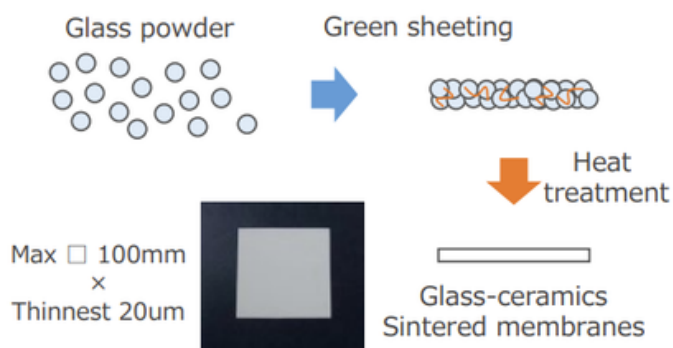
Properties

- **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** ≐ 10N
 - **Specific Gravity:** 2.80
- **Thermal Properties**
 - Coefficient Thermal Expansion 10⁻¹/K
 - 30~350 °C 94
 - 350~600 °C 82

Membrane Sizes

- **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

Production Method



Please contact us to discuss your specific requirements.

GET IN TOUCH

www.oharacorp.com

50 Columbia Road
Branchburg, NJ 08876
Tel: (908) 218-0100
Fax: (908) 218-1685

23141 Arroyo Vista #200
Rancho Santa Margarita, CA 92688
Tel: (949) 858-5700
Fax: (949) 858-5455