

**Technical Notes:****Organosilicon Electrolytes for Lithium Ion Batteries**

1. Silicon based electrolytes with polyethylene glycol oligomers improve thermal and electrochemical stability of lithium-ion batteries;
2. Increases battery long-term stability;
3. Are less flammable than conventional organic carbonate-based solvents and maintain the safe operation of batteries;
4. Improves conductivity and kinetics of the lithium salts;

**Electrochemical and Physical Properties:**

1. **Viscosity** 2.0 cP at 25°C; **Conductivity** of 0.8M LiBOB electrolyte:  $1.29 \times 10^{-3} \text{ S cm}^{-1}$  at 25°C. **Boiling point** 245°C; **Glass transition temperature** -110°C [1, 2].
2. Soluble electrolytic lithium salts: LiBOB, LiPF<sub>6</sub> (03-0325), and LiTFSI
3. ANL-1S1M3 is non-hydrolyzable and less flammable than the alkoxysilane counterparts [2].
4. ANL-1S1M3 electrolyte cell test demonstrated good cycling performance in lithium-ion batteries, with a charge and discharge rate of C/5, cycled between 3.0 and 4.2 V at room temperature with only 9% capacity loss over 200 cycles [2].

**References:**

1. *Electrochem. Commun.*, **2006**, 8, 429.
2. *J. Mater. Chem.*, **2010**, 20, 8224.