

### Appearance

Glass-ceramic sealing glass white colored in powder form

### Chemical Composition

Silica (SiO<sub>2</sub>)

Lithium oxide (Li<sub>2</sub>O)

Alumina (Al<sub>2</sub>O<sub>3</sub>)

Potassium oxide (K<sub>2</sub>O)

Phosphorus oxide (P<sub>2</sub>O<sub>5</sub>)

Boron oxide (B<sub>2</sub>O<sub>3</sub>)

### Physical Properties

Specific Gravity	2.4 (g/cm <sup>3</sup> )
Glass Transition Temperature	575 ± 10 °C
Softening Temperature (T <sub>d</sub> )	682 ± 10 °C
Crystallization Temperature	815 ± 10 °C
Coefficient of Thermal Expansion (annealed glass)	10.0 x 10 <sup>-6</sup> /°C (50 - 400 °C)
Coefficient of Thermal Expansion (crystallized)	16.0 x 10 <sup>-6</sup> /°C (50 - 400 °C)
Interfacial Bond Strength (Shear)	17.9 MPa
Interfacial Bond Strength (Tensile)	14.5 MPa
Dielectric Constant (1kHz, RT) (annealed glass)	10.36
Loss Tangent (1kHz, RT) (annealed glass)	0.1482

### Recommended Firing Conditions

Ramp to 1000°C and hold for 15 min, then hold for 15 min at 650°C, and then hold for 20 min at 820°C.  
Heating or cooling rate: 3 to 10 °C/min

### Applications

Operational Temperature: up to 900 °C

The typical application of GL1810 sealing glass is to seal ceramics and metals at high temperatures. Common applications of sealing glass include: solid oxide fuel cells (SOFCs), solar cells, sodium ion batteries, high-temperature sensors, and other sealing, bonding, or coating applications.

