MO-SCI CORPORATION
mo-sci@mo-sci.com
573-364-2338

## Appearance

Compliant (viscous) sealing glass that is gray colored in powder form.

## Chemical Composition (by weight)

| | |
|---|---|
| Boron oxide ($B_2O_3$) | 34.37 - 45.62 % |
| Barium oxide (BaO) | 29.91 - 36.55 % |
| Alumina ($Al_2O_3$) | 9.91 - 12.11 % |
| Strontium oxide (SrO) | 4.48 - 6.72 % |
| Zinc oxide (ZnO) | 3.52 - 5.28 % |
| Calcium oxide (CaO) | 2.42 - 3.64 % |
| Nickel oxide (NiO) | 0.66 - 0.98 % |
| Cobalt oxide (CoO) | 0.33 - 0.49 % |

## Physical Properties

| | |
|---|---|
| Specific Gravity | 3.2 ($g/cm^3$) |
| Glass Transition Temperature | 563 ± 10 °C |
| Softening Temperature ($T_d$) | 598 ± 10 °C |
| Coefficient of Thermal Expansion | $8.0 \times 10^{-6}$ /°C (50 - 500 °C) |
| Interfacial Bond Strength (Shear) | 18.0 MPa |
| Interfacial Bond Strength (Tensile) | 12.4 MPa |
| Dielectric Constant (1kHz, RT) | 7.52 |
| Loss Tangent (1kHz, RT) | 0.0038 |

## Recommended Firing Conditions

Ramp to between 800 °C and 850 °C and hold between 2 to 4 hours.
Heating/ cooling rate: 3 to 10°C/minute

## Applications

Operational Temperature: up to 800 °C

The typical application of GL1705 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.