

Sealing Glasses

for metal and ceramic sealing applications

Mo-Sci Corporation, a world leader in precision glass technology, continues to explore and develop new and exciting ways to integrate products and services within a wide variety of useful and life changing applications. As a provider to many Fortune 500 companies, our glass technology is saving lives and improving the quality of life in humans and animals through continued advancements in biomedical and industrial applications.



Mo-Sci Corporation
4040 HyPoint North
Rolla, MO. 65401

EMAIL: mo-sci@mo-sci.com

WEB: www.mo-sci.com

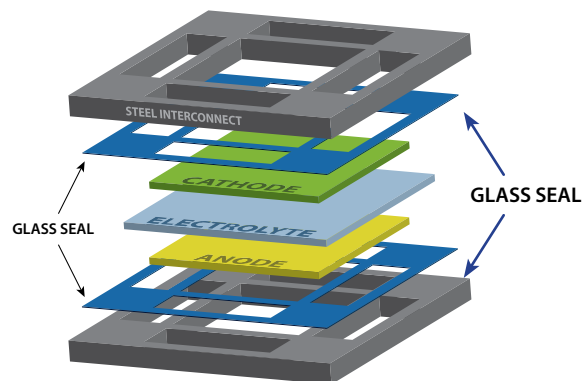
PHONE: 573-364-2338

FAX: 573-364-9589

Mo-Sci has developed a new generation of high performance sealing glasses that have been proven to withstand repeated thermal cycles. Some materials also have the ability to self-repair in the event that the seal is compromised and provide more stability and longer life cycles than other formulations on the market today.

Uses

Common applications of sealing glass include solid oxide fuel cells (SOFCs), solar cells, sodium ion batteries, high-temperature sensors, or other sealing applications such as metal to ceramic, metal to metal, or ceramic to ceramic.



Features

- Large selection of sealing glasses for applications in various firing and operational temperatures (from 250°C to 1600°C)
- Excellent wetting and bonding to both metal and ceramics
- Chemically stable under both dry and wet forming gas
- Available in alkali-free compositions
- Selected compositions are resistant to alkali ion attack
- Compliant glass is homogeneous, with no crystals and no significant elements from metal or ceramics diffusing into glass
- Customized compositions are available with requisite thermal and physical properties

Mo-Sci provides sealing glasses in powders with custom particle size distributions and pastes with custom viscosities. Contact us with your specific sealing requirements.

Sealing Glass Information

Glass	Glass Seal Type	Operational Temperature (°C)	Firing Temperature (°C)	Color	CTE (1/°C)	T _c (°C)	T _d (°C)	T _g (°C)	Density (g/cm ³)	
GL-1701	glass-ceramic	up to 1600	1200 or higher	white	6 × 10 ⁻⁶ (crystallized)	1000-1200	>1200 (sintered)	750	2.6	Ramp to 1200°C and hold for 1 to 2 hr Heating/cooling rate: 3 to 10°C/min
GL-1702	glass-ceramic	up to 1200	900 to 1200	white	7.9 × 10 ⁻⁶ (as-cast) 8.0 × 10 ⁻⁶ (crystallized)	880	697	670	3.5	Ramp to 800°C and hold for 2 hr, then ramp to 900°C and hold for 2 hr Heating/cooling rate: 3 to 10°C/min
GL-1862	glass-ceramic	up to 1000	850 to 925	white	10.0 × 10 ⁻⁶ (as-cast) 10.3 × 10 ⁻⁶ (crystallized)	1028	762	725	3.4	Ramp to between 850°C and 925°C and hold for 1 to 2 hr Heating/cooling rate: 3 to 10°C/min
GL-1873	glass-ceramic	up to 1000	800 to 820	white	8.3 × 10 ⁻⁶ (as-cast) 7.6 × 10 ⁻⁶ (crystallized)	827	700	651	2.6	Ramp to between 800°C and 820°C and hold for 0.5 to 1 hr Heating/cooling rate: 3 to 10°C/min
GL-1850	glass-ceramic	up to 970	1250	white	3.9 × 10 ⁻⁶ (as-cast) 3.5 × 10 ⁻⁶ (crystallized)	1250	849	815	2.4	Ramp to 1250°C and hold for 0.5 hr Heating/cooling rate: 3 to 10°C/min
GL-1870	glass-ceramic	up to 910	1020	white	9.6 × 10 ⁻⁶ (as-cast) 9.1 × 10 ⁻⁶ (crystallized)	1037	754	724	3.2	Ramp to 1020°C and hold for 0.5 to 1 hr Heating/cooling rate: 3 to 10°C/min
GL-1883	glass	up to 900	950 to 970	white	3.5 × 10 ⁻⁶	N/A	599	462	2.1	Ramp to between 950°C and 970°C and hold for 0.5 to 1 hr Heating/cooling rate: 3 to 10°C/min
GL-1810	glass-ceramic	up to 900	820 to 1000	white	10.0 × 10 ⁻⁶ (as-cast) 16.0 × 10 ⁻⁶ (crystallized)	815	682	575	2.4	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
GL-1350	glass-ceramic	up to 900	800 to 850	white	9.5 × 10 ⁻⁶ (as-cast) 10.0 × 10 ⁻⁶ (crystallized)	856	730	700	3.4	Ramp to 850°C and hold for 2 hr Heating/cooling rate: 3 to 10°C/min
GL-1729	glass-ceramic	up to 900	790 to 890	white	10.9 × 10 ⁻⁶ (as-cast) 11.0 × 10 ⁻⁶ (crystallized)	890	750	690	3.5	Ramp to 850°C and hold for 2 hr Heating/cooling rate: 3 to 10°C/min
GL-1497	glass-ceramic	up to 900	760 to 830	brown	9.6 × 10 ⁻⁶ (as-cast) 10.0 × 10 ⁻⁶ (crystallized)	830	718	640	3.3	Ramp to 760°C and hold for 2 hr, then ramp to 830°C and hold for 2 hr Heating/cooling rate: 3 to 10°C/min
GL-1742	glass-ceramic	up to 900	760 to 830	white	8.4 × 10 ⁻⁶ (as-cast) 5.5 × 10 ⁻⁶ (crystallized)	830	693	660	3.8	Ramp to 760°C and hold for 2 hr, then ramp to 830°C and hold for 2 hr Heating/cooling rate: 3 to 10°C/min
GL-1835	glass (viscous)	up to 900	850 to 900	white	9.4 × 10 ⁻⁶	N/A	638	617	3.2	Ramp to between 850°C and 900°C and hold for 2 to 4 hr Heating/cooling rate: 3 to 10°C/min
GL-1709	glass (viscous)	up to 850	800 to 850	white	7.3 × 10 ⁻⁶	N/A	655	604	3.0	Ramp to 850°C and hold for 2 to 4 hr Heating/cooling rate: 3 to 10°C/min
GL-1681	glass (viscous)	up to 850	800 to 850	white	8.0 × 10 ⁻⁶	N/A	660	624	3.2	Ramp to 850°C and hold for 2 to 4 hr Heating/cooling rate: 3 to 10°C/min
GL-1707	glass (viscous)	up to 800	750 to 850	white	8.0 × 10 ⁻⁶	N/A	589	553	3.2	Ramp to between 800°C and 850°C and hold for 2 to 4 hr Heating/cooling rate: 3 to 10°C/min
GL-1705	glass (viscous)	up to 800	750 to 850	gray	8.0 × 10 ⁻⁶	N/A	598	563	3.2	Ramp to between 800°C and 850°C and hold for 2 to 4 hr Heating/cooling rate: 3 to 10°C/min

Sealing Glass Information (cont'd)

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GL-1745	glass (viscous)	up to 700	700 to 750	white	7.0×10^{-6}	N/A	577	550	3.2	Ramp to between 700°C and 750°C and hold for 2 to 4 hr Heating/cooling rate: 3 to 10°C/min
GL-1738*	glass-ceramic	up to 600	700 to 850	light gray	8.8×10^{-6} (crystallized)	630	530	453	3.4	Ramp to between 700°C and 850°C and hold for 2 to 4 hr Heating/cooling rate: 3 to 10°C/min
GL-1739*	glass-ceramic	up to 600	700 to 850	gray	9.6×10^{-6} (crystallized)	620	509	446	3.9	Ramp to between 700°C and 850°C and hold for 2 to 4 hr Heating/cooling rate: 3 to 10°C/min
GL-1724*	glass-ceramic	up to 600	700 to 850	light gray	9.5×10^{-6} (crystallized)	610	500	440	3.7	Ramp to between 650°C and 850°C and hold for 2 to 4 hr Heating/cooling rate: 3 to 10°C/min
GL-1860	glass	up to 600	1020	white	10.9×10^{-6}	N/A	512	459	2.6	Ramp to 1020°C and hold for 0.5 to 1 hr Heating/cooling rate: 3 to 10°C/min
GL-1734	glass	up to 550	500 to 550	white	14.5×10^{-6}	620	408	370	3.2	Ramp to between 500°C and 550°C and hold for 1 to 2 hr Heating/cooling rate: 3 to 10°C/min
GL-1886	glass	up to 520	690	white	15.9×10^{-6}	N/A	506	475	2.7	Ramp to 690°C and hold for 0.5 to 1 hr Heating/cooling rate: 3 to 10°C/min
GL-1882	glass	up to 500	550 to 600	white	9.5×10^{-6}	N/A	366	339	3.2	Ramp to between 550°C and 600°C and hold for 0.5 to 1 hr Heating/cooling rate: 3 to 10°C/min
GL-1732	glass	up to 500	450 to 500	white	16.0×10^{-6}	N/A	370	330	2.6	Ramp to between 450°C and 500°C and hold for 1 to 2 hr Heating/cooling rate: 3 to 10°C/min
GL-1819	glass	up to 400	560 to 590	light gray	6.7×10^{-6}	N/A	505	478	4.5	Ramp to between 560°C and 590°C and hold for 1 to 2 hr Heating/cooling rate: 3 to 10°C/min
GL-1846	glass	up to 350	510	light gray	9.4×10^{-6}	N/A	424	400	5.6	Ramp to 510°C and hold for 0.5 to 1 hr Heating/cooling rate: 3 to 10°C/min
GL-1728	glass	up to 350	250 to 350	light yellow	16.7×10^{-6}	360	230	213	4.4	Ramp to between 250°C and 350°C and hold for 1 to 2 hr Heating/cooling rate: 3 to 10°C/min

*Resistant to sodium