

COMPRESSION SEALING 2164-GLASS PREFORMS

CHEMICAL COMPOSITION BY%

| | |
|---|-------|
| Alumina Oxide (Al ₂ O ₃) | 2.36 |
| Barium Oxide (BaO) | 13.80 |
| Boric Oxide (B ₂ O ₃) | 2.84 |
| Calcium Oxide (CaO) | .36 |
| Lithium Oxide (Li ₂ O) | 2.57 |
| Magnesium Oxide (MgO) | .14 |
| Potassium Oxide (K ₂ O) | 6.35 |
| Silica (SiO ₂) | 64.26 |
| Sodium Oxide (Na ₂ O) | 7.18 |
| Strontium Oxide (SrO) | .13 |

PHYSICAL PROPERTIES

| PROPERTY | UNIT | 2164 |
|-----------------------------------|-----------------------|-------------------------|
| Thermal Expansion | 25-300°C | 86.2 x 10 ⁻⁷ |
| Strain Point | °C | 434 |
| Set Point | °C | 405 |
| Annealing Point | °C | 474 |
| Softening Point | °C | 663 |
| Density | gr/cm ³ | 2.64 |
| Young's Modulus | psi, 25°C | 10.01 x 10 ⁶ |
| Shear Modulus | psi, 25°C | 4.10 x 10 ⁶ |
| Poisson's Ratio | 25°C | 0.22 |
| Dielectric Constant | 25°C, 1 MHz | 6.70 |
| Dissipation Factor (Loss tangent) | 25°C, 1 MHz | 1.74 x 10 ⁻³ |
| Loss Factor | 25°C, 1 MHz | 1.16 x 10 ⁻² |
| Volume Resistivity | 150°C (log 10) ohm-cm | 11.76 |
| Volume Resistivity | 250°C (log 10) ohm-cm | 9.00 |
| Volume Resistivity | 350°C (log 10) ohm-cm | 7.13 |
| Voltage Breakdown | 304 SS Body KV | 2.1 |

Since 1981, Electro-Glass Products has successfully marketed its own 2164 (barium alkali) house melted glass as an alternative to the compression glasses then available to the sealing industry. Our overwhelming success has prompted us to publish this detailed sheet along with brief statements attesting to its performance.

SANDIA NATIONAL LABORATORIES - REPORT OF MAY 13, 1991

"EG 2164 Glass has shown that it behaves in an equivalent manner to CGW 9013 with respect to material properties and sealing behavior."

NAVAL SURFACE WARFARE CENTER (Formerly Naval Ordnance)

"EG 2164 Glass was approved by NSWC, Indian Head, Maryland, in July 1993 as a substitute for 9010/9013 and ET-13 Glasses."

CUSTOMERS HAVE REPORTED AFTER TESTING THE FOLLOWING RESULTS:

1. All seals passed a leak test of 1×10^{-8} ATM-CC/SEC of helium.
2. All seals passed electrical leakage between leads and headers of 1 nanoamp at 100 volts D.C. per MIL STD-883 Method 1003, test condition D.
3. All seals passed a heat column test of 450° C for 3 minutes and cooled at room temperature.
4. All seals passed a 7 pound axial pull per MIL STD-883 Method 2004.5, Test condition B₂.

5. All seals passed a leak test of 1×10^{-9} ATM-CC/SEC helium after thermal cycling 15 times -55° C to +125° C in liquid per MIL STD-883 Method 1011.6, test condition B.
6. All seals passed a pressure test in excess of 25,000 PSI when seal length is at a 2 to 1 ratio to outside diameter. Design and material preparation are directly related.



Electro-Glass Products

"Quality from people who care."

United States of America

Phone: (724) 423-5000 FAX: (724) 423-7955

P.O. Box 157, Mammoth, PA 15664 USA www.electro-glassprod.com E-mail: egp@electro-glassprod.com