CeramTec

HERMETICS

Reliability under extreme conditions

Ceramaseal® – Hermetically sealed connections

CeramTec

Hermetics
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The measured values mentioned before were determined for test samples and are applicable as standard values. The values were determined on the basis of DIN-/DIN-VDE standards and if these were not available, on the basis of CeramTec standards. The values indicated must not be transferred to arbitrary formats, components or parts featuring different surface qualities. They do not constitute a guarantee for certain properties. We expressly reserve the right to make technical changes.

Where conventional materials fail, ceramics take over

As one of the world's leading manufacturers of advanced technical ceramics and hermetic assemblies, CeramTec combines over 120 years of expertise with global production capabilities and close customer centric approach serving key industries from semiconductor and aerospace to medical technology and energy.

For over 60 years, we have been pioneering hermetically sealed ceramic-to-metal, glass-to-metal, and glass/ceramic-metal assemblies under the Ceramaseal® brand, designed for extreme conditions and enabling absolute hermeticity, reliability, and precise electrical performance.

From design to manufacturing and testing, we deliver fully integrated solutions from a single source engineered and manufactured to deliver the highest standards of quality, operational efficiency, and reliable performance.

Areas of Application

Ceramaseal® components are the first choice for the most demanding applications in industry and research:

- Semiconductor Technology – Ultra-high vacuum processes, PVD/CVD chambers, ion implantation
- Aerospace & Defense – High-reliability electronics, sensing systems, high-voltage components (ITAR-certified)
- High Energy Physics & Lasers – Particle accelerators, sealed CO_2 lasers, nuclear fusion technology
- Energy & Oil/Gas – Downhole exploration, high-pressure feedthroughs, sensors and imaging
- Security & Analytical Equipment – X-ray tubes, MRI systems, spectrometers, radiation detectors
- Medical Technology – Precision components for medical imaging and diagnostics
- Superconductivity & Cryogenics – Applications at temperatures down to –269 °C

Property	Customer Benefit
100% Helium Leak Test	Maximum hermeticity guaranteed – 1×10^{-9} atm cc/s He (down to 1×10^{-10} on request)
Extreme Temperature Resistance	Reliable from –269 °C to +450 °C
High Pressure Resistance	Withstands pressures exceeding 1,700 bar
Excellent Electrical Insulation	Supports voltages >100 kV and currents >1,000 A
High Chemical Resistance	Resistant to aggressive and corrosive media
Low Particle Generation	Ideal for vacuum and cleanroom environments
Dimensional Stability & Tight Tolerances	Precision and reproducibility in series production
High Reliability / MTBF	Long-lasting, low-maintenance, high operational safety
Superior Thermal Conductivity	Efficient heat dissipation combined with electrical insulation

Ceramaseal® – Pioneering Ceramic-to-Metal & Glass Sealing Technologies

CeramTec North America pioneered the science of ceramic-to-metal and glass sealing technologies including glass-to-metal and glass/ceramic-to-metal seals and remains the world leader in this technology to this day.

- Fully Integrated Manufacturing: Research, development, ceramic production, metal joining, and testing – all under one roof in Laurens, South Carolina, USA.
- Custom-Engineered Solutions: From standard catalog products to highly complex custom designs – including design collaboration as an extension of your engineering team.
- Ceramaseal® Product Portfolio: Feedthroughs, NPT feedthroughs, coaxial connectors, isolators, multipin connectors, viewports, thermocouples, terminals, and accessories.
- ITAR Certified: Full export and compliance programs for security-critical defense and aerospace applications.
- Comprehensive Testing Capabilities: Including AC corona discharge up to 200 kV, dielectric withstand voltage up to 50 kV, complex impedance measurements, and SEM with EDX.

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