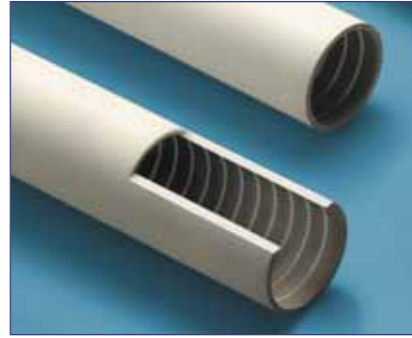


Ceramic tubes for gas lasers

- Extruded and iso-statically pressed
- Metallised patterns (internal & external)
- Assemblies



Hermetic feedthrus

- Ceramic/metal assemblies
- Single & multi-pin
- High voltage / high current



Capacitors

- High dielectric strength and high electrical energy densities can be achieved
- Low capacitance loss at rated operational voltages
- No piezoelectric / electrostrictive effect - high peak current applications
- Low dissipation factor – high peak current / high shot / repetition applications
- Linear temperature coefficient of capacitance (N4700 from +10C to +85C)



All Morgan Technical Ceramics manufacturing sites hold ISO 9000 approvals

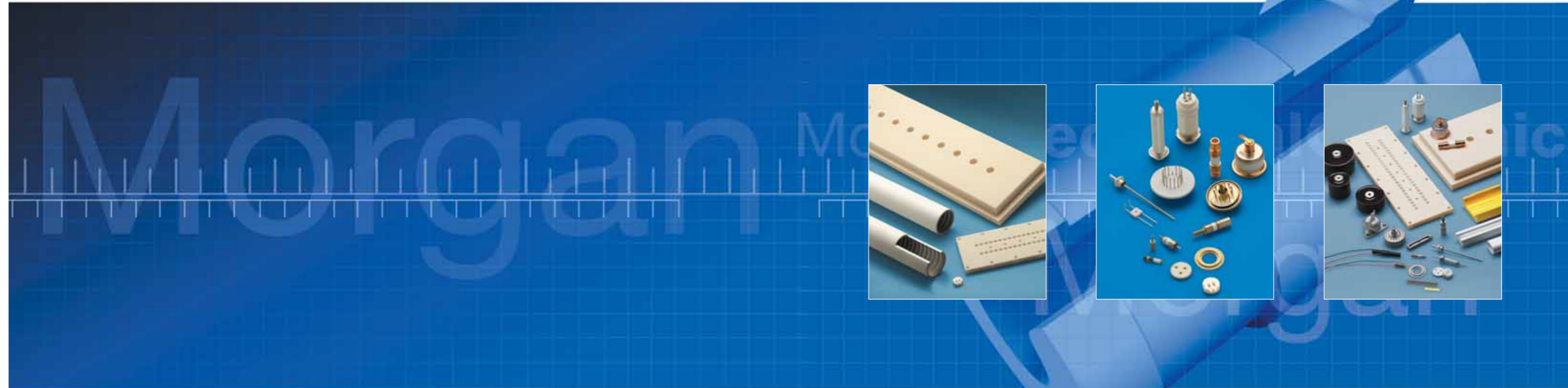
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PROVIDING CERAMICS AND ASSEMBLIES TO THE
LASER AND OPTO-ELECTRONICS COMMUNITIES



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Morgan Technical Ceramics
a Member of
The Morgan Crucible Company Plc

www.morgantechnicalceramics.com
www.morganadvancedceramics.com
www.morganelectroceramics.com

With a **world-leading** reputation in advanced ceramics, brazing alloys and engineered coatings and with manufacturing sites on three continents, you can be sure we will meet your development, prototype and production needs

Morgan Technical Ceramics is a division of The Morgan Crucible Company plc, comprising Morgan Advanced Ceramics and Morgan Electro Ceramics. The group manufactures products from a comprehensive range of ceramic, glass, precious metal, piezoelectric and dielectric materials.

The company utilize core competences of applications engineering and superior materials technology, together with state of the art, fully integrated manufacturing processes to offer precision ceramic components, ceramic to metal assemblies and special coatings for use in a variety of Laser and Opto-Electronics processing applications.



Customer services

Our customer services include full technical assistance for product design and development, prototyping, production quantities and complete documentation and traceability.



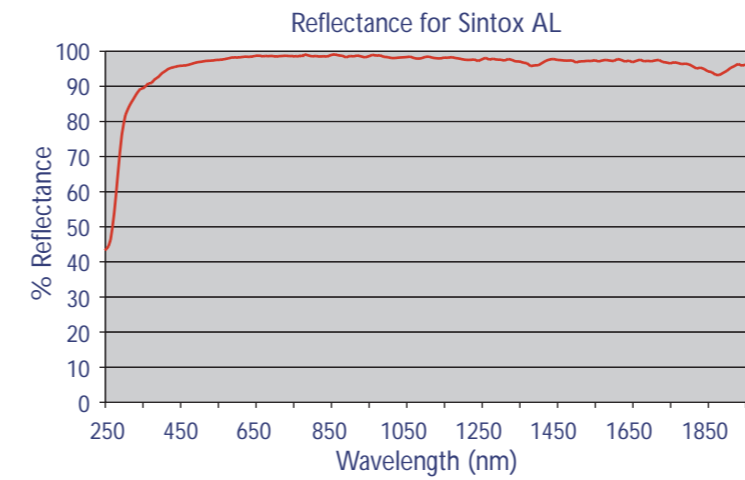
Our advanced products have specific physical benefits including

- Exceptional dielectric strength and volume resistivity
- Vacuum integrity
- Excellent chemical resistance - inert to gaseous halogens
- Very low to very high thermal conductivity
- Extremely low coefficient of thermal expansion
- Working temperatures well in excess of 1000°C
- Dimensional stability
- High mechanical strength
- Superior electrical properties
- High reflectivity

Materials - Our range of materials include, but are not limited to

- High purity Aluminas (Aluminium Oxides)
- Aluminium Nitride
- Fused Silica
- Macor® (machinable glass ceramic)
- Zirconia
- Silicon Carbide
- Braze Alloys
- Dielectric Ceramics
- Piezoelectric Ceramics

Our capabilities cover the following applications -



Laser reflectors for solid-state diode pumping and IPL systems

- High grade Alumina coated with solarization resistant glaze
- 97.8% reflectance at 1000nm
- Over 96% efficient between 500nm and 2000nm
- Virtually indestructible
- Highly cost effective



CO₂ laser wave guides

- Straight or folded wave guides fabricated in Alumina
- Complex shapes
- Thermodiffusion bonded to form intricate internal structures
- Vacuum-tight seals and feedthrus with refractory metallised ceramics
- Excellent optical properties at 10 micron wavelength



Power laser diode heat sinks

- High integrity Aluminium Nitride insulators
- Thermal conductivity exceeds 180W/m.K
- Substrates as thin as 100µm
- Precisely ground holes, grooves and channels
- Can be metallised and brazed
- Offer high performance in passively cooled stack designs

Excimer laser insulators

- Insulators of high purity Alumina
- Volume resistivity exceeds 10¹⁴ ohm.cm
- No organics to pollute laser gas and reduce its working life
- Inert to halogens and high temperatures

Customer engineered components for opto-electronic systems

- From subminiature parts to cylinders 500mm diameter or 1500mm long
- Large complex parts and cavities
- Finishes to 0.05 micron Ra
- High vacuum hermeticity
- Metallised coatings and brazed assemblies
- Thick film metallised assemblies (solderable and wire bondable)



Piezoelectric multi-layer actuators

- Achieve high electric fields from low voltages
- Offer microns of expansion, with Kilo Newtons of force
- Microsecond response time
- Reduced component size
- Higher resonant modes
- Layer thickness between 20µm and 60µm

Piezoelectric Bimorphs

- From two to many layers for flexural actuation
- Move mirrors
- Control path length
- Steer focused beams

Piezoelectric tubes and components

- Temperatures up to 200°C
- High strain materials
- Length or radial mode
- Fibre stretching for phase modulation

