

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

Ceramic tubes for gas lasers

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

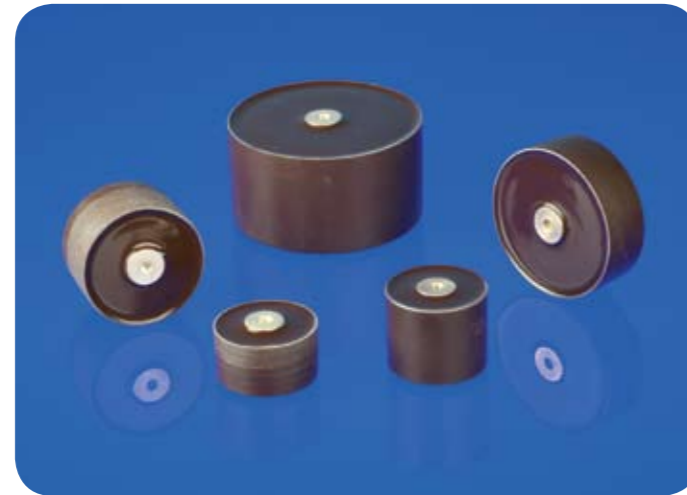
Hermetic feedthrus

- 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 +10°C to +85°C)



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



For all enquiries, please contact your regional sales office

Europe

Morgan Technical Ceramics
Bewdley Road
Stourport-on-Severn
Worcestershire
England DY13 8QR

Tel: +44 (0)1299 872210
Fax: +44 (0)1299 872218
Email: mtcuksales@morganplc.com

For German Speaking Enquiries contact:
Fax: +49 8638 6004 327
Email: mtceusales@morganplc.com

Americas

Morgan Technical Ceramics
26 Madison Road
Fairfield
NJ 07004 2309
USA

Tel: +1 800 433 0638
Fax: +1 973 227 7135
Email: mtcussales@morganplc.com

Middle East

MKGS Morgan Karbon Grafit
Sanayi AS, Ikitelli OSB
Eskoop Sanayi Sitesi
B2 Blok, N.156
34670 Ikitelli, Istanbul, Turkey

Tel: +90 212 671 3287
Fax: +90 212 549 4872
Email: mtcmesales@morganplc.com

Asia

Morgan Technical Ceramics
Dingshu Town
Yixing City 214221
Jiangshu Province
P. R. China

Tel: +86 21 5990 6139
Fax: +86 21 5990 6127
Cell: +86 13 9173 96177
Email: mtccnsales@morganplc.com

Morgan Technical Ceramics
Akihabara UDX, 13F 4-14-1
Sotokanda
Chiyoda-ku
Tokyo 101-0021
Japan

Tel: +81 3 5207 7641
Fax: +81 3 5207 7659
Email: mtcipsales@morganplc.com

Morgan Technical Ceramics is a division of
The Morgan Crucible Company Plc

www.morgantechnicalceramics.com

Lasers and Opto-Electronics



Morgan Technical Ceramics

Morgan Technical Ceramics (MTC) is a division of **The Morgan Crucible Company plc**. We design and manufacture products for demanding applications in a variety of markets using a comprehensive range of advanced ceramic, glass, precious metal, piezoelectric and dielectric materials. We 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 applications.

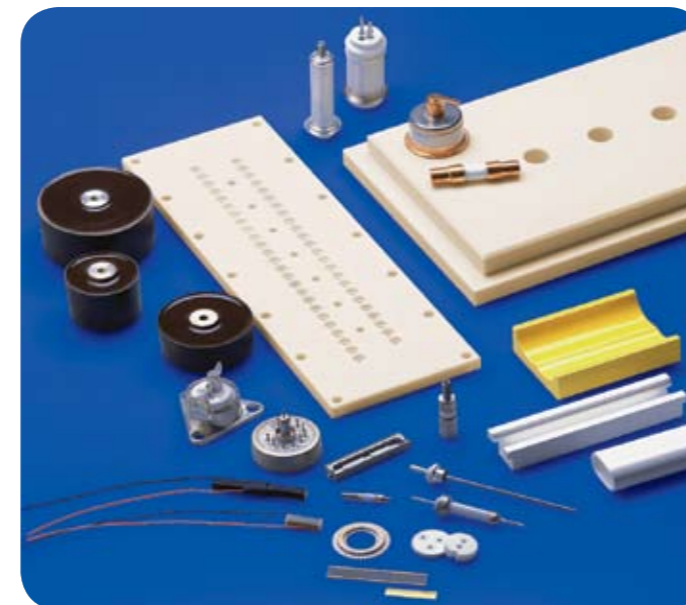
Our sales and technical support network provides assistance in product design and development through to prototyping and production. Our quality systems ensure adherence to specifications and full traceability.

Morgan Technical Ceramics Manufacturing Locations



Our advanced products have specific benefits, including

- Specifically tailored high grade Alumina for laser applications
- Option to coat and seal the surface with unique glazes to suit the application, eg when water cooling or used to filter UV
- Exceptional dielectric strength and volume resistivity
- Vacuum integrity
- Excellent chemical resistance – inert to gaseous halogens
- Very low as well as very high thermal conductivity
- Excellent chemical resistance – inert to gaseous halogens
- Extremely low coefficient of thermal expansion
- Extended life time
- Working temperatures in excess of 1000°C
- Dimensional stability
- High mechanical strength
- High reflectivity (reflector designs can accommodate low or high power lasers and single or multiple lamp designs)
- Options to manufacture composite reflectors with other demanding mechanical or electrical requirements
- Superior electrical properties
- Reflectors work particularly well for lasers utilising ruby (694nm), Nd: YAG (1064nm) and IPL systems
- Enable high efficiency
- Highly cost effective

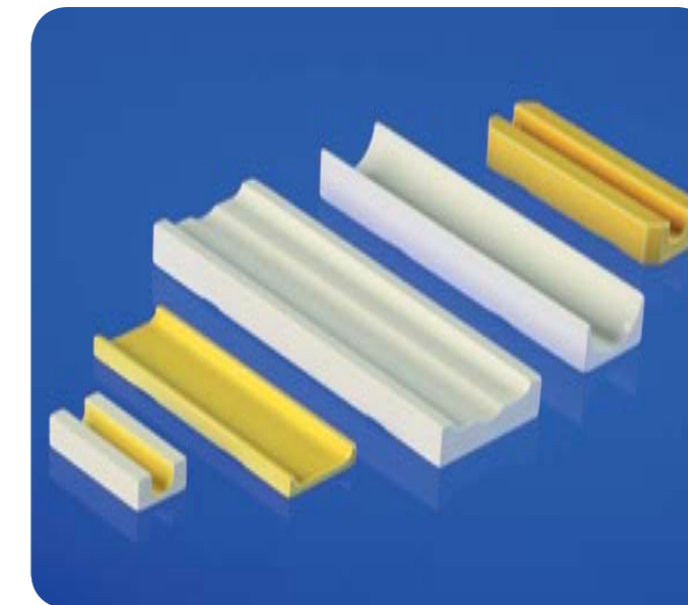
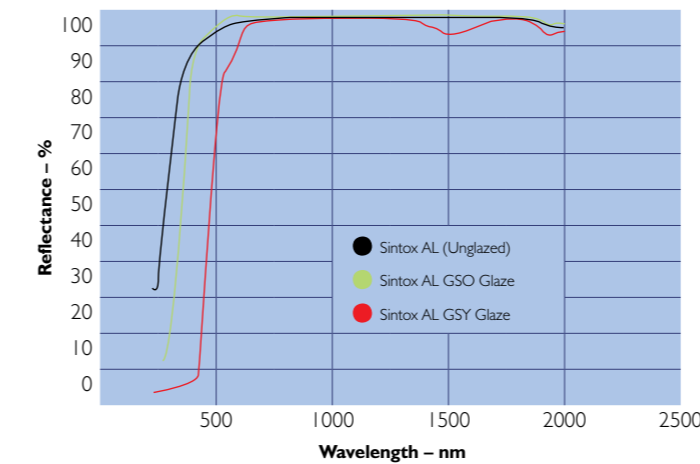


Our capabilities cover the following applications

Laser reflectors for solid-state flash lamp, diode pumping and IPL systems

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

Reflectance vs wavelength – Sintox al & glaze options



CO₂ laser wave guides

- Straight or folded wave guides fabricated in Alumina
- Complex shapes
- Thermomdiffusion 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

