



Leading the Way in Advanced Materials Solutions®

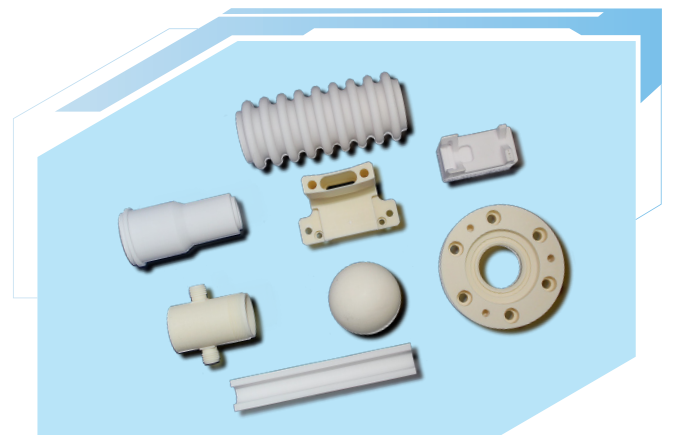
ENGINEERED STRUCTURAL CERAMICS

FRALOCK CERAMIC SOLUTIONS

Industrial structural ceramics are advanced material ceramic components that are used in a variety of applications in many industries. Resistance to wear, thermal stability, and corrosion render them ideal for many uses, including thermal or electrical insulators and high-temperature structural parts. Fralock provides structural ceramics components that are fabricated with material compositions including alumina, glass, quartz, zirconia, iconic, sapphire, and aluminum nitride.

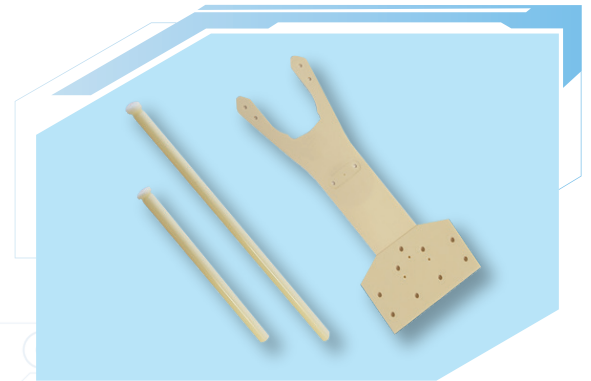
Structural ceramics are an ideal choice for applications that require electrical isolation, thermal management, hermetic solutions, and bio-compatibility. Our precision machining capability enables us to achieve tight tolerances and a wide range of surface finishes.

Fralock's Alumina and Aluminum Nitride (AlN) structural ceramics are custom fabricated with high-precision green-to-fire processing systems, and can be made in a wide variety of shapes and sizes. Our engineers can assist you in designing, prototyping, and manufacturing the right component for your application.



Capabilities

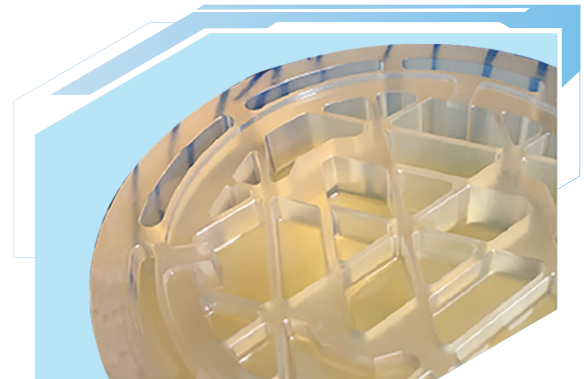
- Alumina diameter up to 31" diameter part size
- Alumina thickness up to 3" (disk shape) or 12" height (cylinder shape)
- AlN sizes up to 12.5" (320mm) round or square
- AlN thicknesses to 0.400" (10mm)
- Green to fire Alumina and green-to-fire tolerances +/- 0.002"/inch
- Hard grind to tolerances within 0.00002" (0.000508mm)
- Surface metallization and assembly available
- Lapping, polishing to 0.000005"



LIFT PINS, END EFFECTOR
 SEMICONDUCTOR MANUFACTURING

Hard Grinding (Diamond Machining) of the Following Materials

CERAMICS	GLASS
<ul style="list-style-type: none"> • Alumina • Zirconia • Aluminum Nitride (AlN) • Silicon Nitride (SiN) • Boron Nitride (BN) • Silicon Carbide (SiC) • Macor • Shapel • Steatite • Mullite & Cordierit 	<ul style="list-style-type: none"> • Fused Quartz • Fused Silica • Sapphire • ULE / Zerodure (low CTE glasses) • Silicon • BK7 (optical glass) • Borosilicate • Germanium • Additional glass available



LITHIUM-ALUMINOSILICATE GLASS CERAMIC
 SPACE TELESCOPE APPLICATION

- 5 Axis CNC machining
- CNC lathe machining
- High temperature firing up to 2,000°C
- ID/OD grinding
- Surface grinding
- Honing
- Ceramic sawing and green cutting
- Ceramic laser machining
- Ceramic lapping and polishing



AUTOMATED CNC MACHINING

Industries and Applications

Semiconductor

Precision components in wafer fabrication equipment including wafer handling, (end effectors), lift pins, wafer chucks, shadow rings, high-temperature dome chambers, gas distribution nozzles

Medical

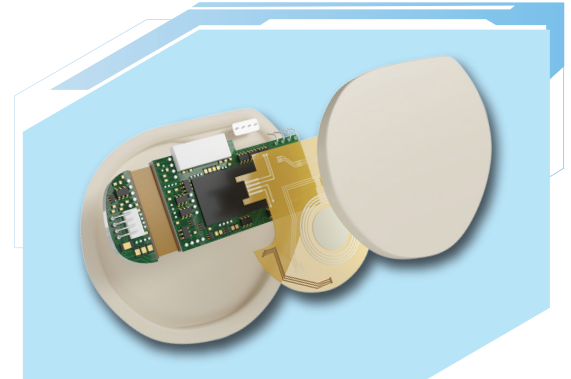
Medical devices including valves, pumps, feed-throughs, pistons and cylinders for blood analysis equipment, dialysis machines, insulators for pacemaker applications, housings for implantable devices, CT scanning

Aerospace and Defense

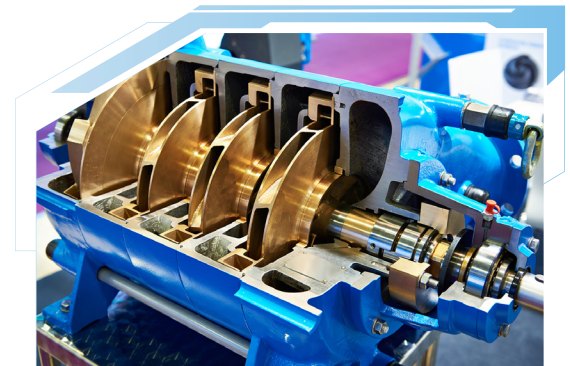
Fuel management systems, thermal insulation, hermetic isolation chambers, hermetic packaging, vacuum tubes, vacuum relays, fuel atomizers, microwave devices

Industrial, Electronics, Energy

Packaging, laser insulators, X-ray tubes, fluid bearings, firing trays, pressure reduction devices, wear resistant pumps, molten glass pumps, mass spectrometers, high voltage insulators, thermal energy storage



IMPLANTABLE DEFIBRILLATOR



MULTI-STAGE CENTRIFUGAL PUMP

Questions about your application?

We're here to help.
Contact us at Sales@fralock.com
www.fralock.com
+1-661-702-6999

Alumina and AlN Ceramics Specifications

Material Name	Finished Sizes Inches Diameter	Green Machining Details	Purity	Fired Density g/cm ³
Alumina				
FR-960	0.5 to 8	Complex	96.0%	3.70
FR-975	0.5 to 8	Complex	97.5%	3.72
FR-980	7 to 27	Simple	98.0%	3.78
FR-980	0.5 to 8	Complex	98.0%	3.78
FR-995	1 to 30	Simple, complex	99.5%	3.85
FR-997-EM	1 to 30	Simple	99.7%	3.87-3.89
FR-997	1 to 30	Simple, complex	99.7%	3.88-3.90
FR-998	1 to 30	Simple, complex	99.8%	3.89-3.92
FR-999-LLTA	1 to 30	Simple, complex	99.9%	3.91-3.94
Aluminum Nitride				
FR-AlN (3-YtO)	0.5 to 15	Simple, complex	99.9%	>3.24

