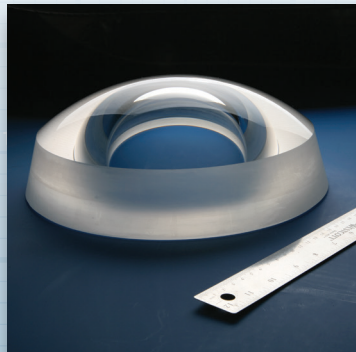




Windows for NASA Orion EFT-1



Glass Melt Fusing Process



Analemma Lens

Services & Capabilities

McDanel is an industry leader in the engineering and manufacturing of borosilicate glass, sapphire, fused silica and other IR transparent materials. McDanel's Specialty Materials Department assists clients with many first mover technologies, from concept, through engineering, to final fabrication of prototypes and production parts.

McDanel's Specialty Materials Department is backed by an engineering team that includes mechanical, material and optical expertise. Once the engineering process is complete, McDanel production has an extensive array of glass and sapphire processing equipment to support molding, grinding, polishing and sealing of McDanel engineered products in our ISO 9001 certified production facility.

Products

Molded Optical Domes - glass video & camera domes for ROV, UAV, AUV & surveillance

Windows - high-pressure assemblies, space & aerospace applications

Massive Optics - scientific & military equipment

Diffusers - engineered optics for light & laser diffusion

Sapphire - windows, tubes, rods, optics & lamps

Large Scale to Massive - molds, blanks, chucks, tooling, domes & windows

Sapphire Lamps - plasma & flash lamps (also in MgF2 & other materials)

Services

- Engineering & design
- Custom manufacturing
- Precision molding & slumping
- Polishing, grinding & cutting
- Sapphire welding
- Sealing of transparent to metals/ceramics
- Ultra-high pressure testing (up to 60 KPSI) & helium leak testing
- Optical defect scanning & analysis
- FEA/FEM simulation
- Specialty strengthening of glass & sapphire

Features & Benefits

Designation - Certified Small Business

On-site Technical Team - mechanical engineers, master optician & staff physicist

Experience - 24 years of manufacturing, sealing, materials mating & mounting

Equipment - state-of-the-art for manufacturing & measurement

Engineered & Manufactured In-House - 100% at McDanel's San Diego, USA facility

AS9100D Certified & ITAR Registered

Specialty Equipment

MACHINERY / SOFTWARE	DESCRIPTION
High Temp Retort Furnaces	An array of controlled atmosphere annealing & forming furnaces for molding & fusing
Waterjet Cutter & Laser Scriber	Glass-specific diamond cutting of ultra-hard materials. Precision cuts to 0.002" (0.05 mm)
3-Axis Surface Grinder	Precision curved surface diamond grinding for generation of simple & complex curved surfaces
5-Axis CNC	CAD/CAM large workpiece diamond grinder & CMM 4.15 x 5 x 1.4 m work envelope
Massive Polishers	For large sight window & large optics polishing. Work envelope of 3 m (120")
High-Pressure & Leak Testers	Pressure, vacuum & proof pressure testing from 10 ⁻⁸ TORR vacuum to over 60,000 PSI
Materials Sealing Lab	For sealing materials designed for thermal, chemical & pressure environments
Chemical Processing Equipment	For etching, bonding, fusing & chemical cleaning of products & processing equipment
Cleanroom	Certified class 1000 cleanroom for processing, testing & packaging of sensitive products

INDUSTRIES SERVED: MASSIVE OPTICS, AEROSPACE, MILITARY & DEFENSE, COMMERCIAL AVIATION AND MORE!