

2009 | CORPORATE PROFILE



MORE OPTICS
MORE TECHNOLOGY
MORE SERVICE

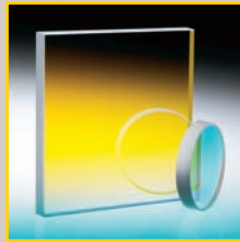
world's **LARGEST INVENTORY** of optical components



prototype
to volume
pricing

Edmund Optics® is a PHOTONICS and IMAGING company that manufactures and supplies industries around the globe with precision optical components and subassemblies. **You know our catalog, which contains over 16,900 unique products**, but that is just the beginning of the services EO offers.

optics



mechanics

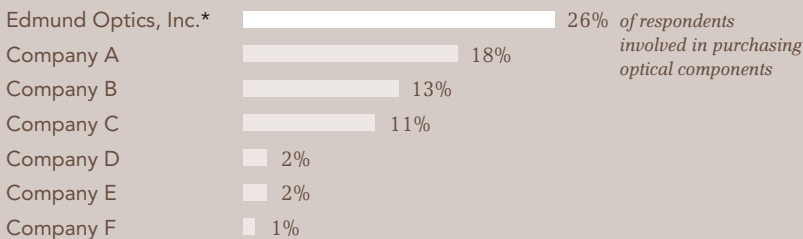


imaging

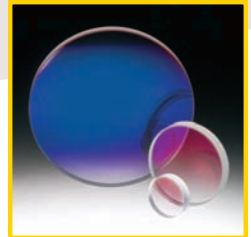


PREFERRED Supplier of Optical Components

Of the top 7 suppliers of stock and custom optics,
Edmund Optics, Inc. ranks **#1**
according to the June 2008 Readex Research Survey.



* Also voted **#1 Best Customer Service** and **Best Delivery**



STOCK & CUSTOM optical capabilities

we can
make it
for you!

Edmund Optics' **expertise in manufacturing** extends beyond just optics to include a variety of mechanical and opto-mechanical manufacturing needs.

We have the expertise and manufacturing resources necessary to custom design, prototype, and manufacture optical products based on your project's requirements. Our dedicated and skilled engineers will ensure that you get the optimal design for your application, while our quality assurance teams guarantee the best final products.

MANUFACTURING PROCESSES

- Spherical generation and polishing
- Aspherical generation and polishing
- Flatwork generation and polishing
- Optical shaping
- Optical coatings
- System assembly
- Metal machining

optical COATINGS

- Multi-Layer Dielectrics
- Laser Mirrors
- Dichroic Filters
- Polarization Control Coatings (polarizing and non-polarizing beamsplitters)
- Narrowband and Broadband Interference Filters
- “Hot” and “Cold” Dielectric Mirrors
- Thermal Resistant Filters
- High Laser Damage Threshold Coatings
- Transparent Conductive Coatings
- Infrared Coatings
- Anti-Reflection Coatings
- Single Layer
- High Efficiency Broadband Multi-Layer
- Laser V, Double Laser V
- Metallic Mirrors (Protected and Enhanced) Aluminum, Silver, Gold
- Neutral Density Filters
- Advanced Plasma Reactive Sputter Coatings
- Fluorescence Filters
- Notch (Minus) Filters
- High Performance Edge Filters (LWP and SWP Filters)
- Specialized Custom Design

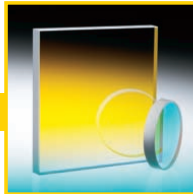


CUSTOM manufacturing capabilities

OPTICAL COMPONENT SPECIFICATIONS	Plano	Prism	Sphere Radius	Asphere Radius	Cylindrical
Diameter (mm):	3 - 500	3 - 150	3-200	15-120	15-120
Length (mm):	2-350	2-105	2-140	–	10.5-85
Width (mm):	2-350	2-105	2-140	–	10.5-85
Dimensional Tolerances (mm):	0.005	0.005	0.005	0.005	0.005
Center Thickness Tolerance (mm):	0.005	–	0.005	0.050	0.005
Parallelism Tolerance (arcsec):	5	–	–	–	30
Wedge Tolerance (mm):	0.005	–	0.005	0.025	–
Surface Accuracy (wave):	1/20	1/20	1/20	1/10	1/20
Surface Quality:	10/5	10/5	10/5	10/5	10/5
Angle Accuracy (arcsec):	–	1	–	–	–
Pyramidal Accuracy (arcsec):	–	5	–	–	–
Concave:	–	–	>5.0	>30.0	>10.0
Convex:	–	–	>2.5	>5.0	>5.0
Radius Tolerance (%):	–	–	0.05	0.05	0.1
Total Sag (mm):	–	–	–	<25	–

OTHER SPECIFICATIONS	Tolerance	Maximum	Minimum
Coatings:			
Size (mm)	–	1000	2
Waveband (nm)	–	200	14,000
FWHM (nm)	–	–	5
CWL (nm)	±2	–	–
Neutral Density OD (%T)	±5%	0.001	–
Blocking OD (%T)	±5%	0.00001	–
Reflection (%)	–	99.95	0.1
Polarization (S:P)	–	1000:1	–
Power (J)	–	20/cm ² 20 nsec	–
Metal Manufacturing:			
Size (mm)	–	250	1
Accuracy (mm)	0.001	–	–
Repeatability (mm)	0.001	–	–
Assembly:			
Active Alignment (mm)	0.001	50	5
Size (mm)	–	250	5
Environmental:			
Temperature (°C)	±0.2	200	-40
Humidity (%)	–	98 RH	20 RH

TECHSPEC®
Certified Edmund Quality



OPTICS

TECHSPEC® Optics

- Singlets
(PCX, PCV, DCX, DCV)
- Achromats
- Aspheres
- Condenser Lenses
- Ball Lenses
- Cylinder Lenses
- Filters
- Polarizers
- Prisms
(Amici, penta, equilateral,
right angle, dove, wedge,
corner cubes)
- Beamsplitters
- Windows
- Diffusers
- Mirrors
- Gratings

AVAILABLE SERVICES

**QUIK
MOD**

Edmund Optics' **QUIK MOD PROGRAM** allows for rapid, cost-effective turn-around of modified catalog optical components for orders of 10 pieces or less.



Edmund Optics' **EDGE-BLACKENING** controls stray light from imaging and photonics systems.

KEY manufacturing abilities

SPHERES



SPHERICAL MANUFACTURING

- **Fully integrated spherical manufacturing**
 - **Featuring lens sizes from 3mm to 150mm diameter**
 - **Quantities**
 - Prototypes
 - EO standard catalog: mid to high volume
 - Custom: mid to high volume
 - Medium / high volumes leverage Asian manufacturing
 - **Specifications**
 - Prototypes and low volume: 1/10 wave figure accuracy
 - Mid to high volume: 1/2 wave power, 1/4 wave irregularity
 - Center thickness: $\pm 0.01\text{mm}$
 - Centering error: < 30 arc seconds
 - Cosmetic: 10-5 scratch-dig
 - Materials: All optical glass types
 - Coating: a wide variety of standard and specialized coatings
- Metrology**
- Zygo® VeriFire™ high res. interferometer
 - TRIOPTICS OptiCenter®
 - Fogale LS-200 non-contact center thickness measurement

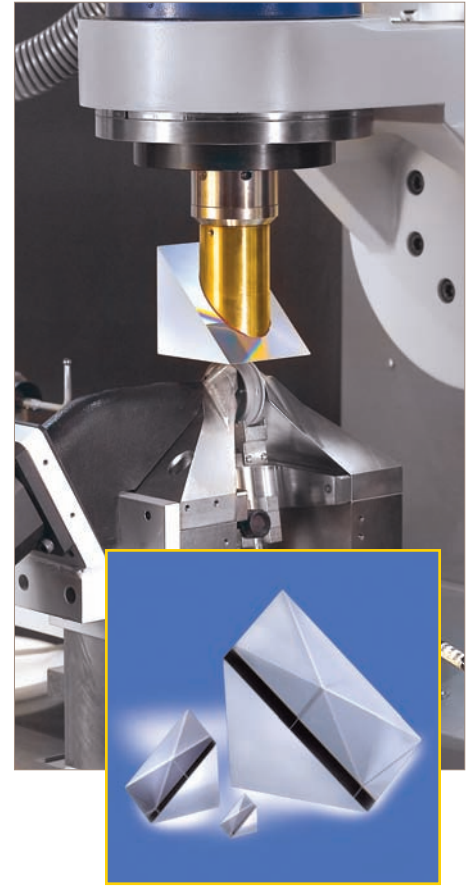
ASPHERES



ASPHERE MANUFACTURING

- **Precision grinding & polishing**
 - Volumes: prototype, low, medium
 - High departure aspheric geometries
 - 1/4 wave surfaces featuring MRF corrections
 - Size: 15mm to 150mm
 - Material: glass, crystalline, ceramics
- **Precision glass molding**
 - Volumes: medium, high
 - Geometry: per print review
 - Size: 5mm-50mm
 - Surface accuracy: 1/2 wave PV
 - Material: Glass / Chalcogenide
- **Metrology**
 - Talysurf PGI 1240 profilometer
 - Zygo® VeriFire™ high res. interferometer
 - QED SSI_A aspheric stitching interferometer
 - Zygo® White light interferometer

PRISMS



PRISM MANUFACTURING

- **Fully integrated prism manufacturing**
- **Featuring all prism geometries**
- **Quantities**
 - Prototypes
 - EO standard Catalog: mid to high volume
 - Custom: mid to high volume
- **Specifications**
 - Size: 3mm-200mm
 - Cosmetic: 10-5 scratch-dig
 - Angle tolerance: 1 arc second
 - Material: all optical glass types
 - Coatings supplied per request

COATINGS



CUSTOM COATINGS

- Available in prototype to high volume
- **Coating designs**
 - Per print specification
 - Custom designs by request
- **EO or customer supplied substrate spectral capability**
 - UV
 - Visible
 - IR
 - Dual wavelength
- **Process capability**
 - Evaporative deposition
 - Ion assisted deposition
 - Advanced plasma reactive sputtering
 - Multi-layer up to 200 layers
- **Coating Types**
 - Broadband AR
 - V-Coat AR
 - Polarizing beamsplitters
 - Non-polarizing beamsplitters
 - Laser coatings
 - Metal mirror coatings
 - ITO conductive
 - Narrow bandpass / notch filters
 - Fluorescence filters
 - Edge filters (SWP and LWP)

ASSEMBLY



ASSEMBLY CAPABILITIES

- **Volumes: prototype, medium, high**
- **Commercial: leveraging Asia assembly**
- **Defense: US based manufacturing (ITAR Compliant)**
- **Custom designed per request**
- **Build to print to meet performance specification**
- **Capability / Testing**
 - Class 100 clean room
 - ESD
 - Active alignment
 - Shock / vibration
 - Environmental: heat, cold, humidity
 - Full documentation of system performance upon request

OPTICAL TESTING



OPTICAL TESTING

- MTF
- Stray light
- Veiling glare
- EFL / T # / Distortion / BFL
- Relative illumination
- Boresight testing

GLOBAL MANUFACTURING since 1942

Edmund Optics® offers over 134,000 square feet of manufacturing space around the globe.

NEW JERSEY, USA

PENNSYLVANIA, USA

SINGAPORE

SHENZHEN, CHINA

AKITA, JAPAN



Pennsylvania, USA



- 56,000 square feet (5,205 square meters)
- Manufacturing plant with coating, metal, and optical manufacturing capabilities
- Optical component and assembly manufacturing
- Class 100 clean rooms
- Metal manufacturing
- Rapid prototype shop
- 9 coating chambers
- Environmental testing capabilities
- MRF ultra precision prism and asphere manufacturing
- Aspheric generating and polishing
- Precision parabolic and spherical mirrors up to 16" diameter @ 1/8 wave
- Precision flat mirrors up to 1/20 wave

New Jersey, USA



- 11,000 square feet (1,022 square meters) of manufacturing space
- Custom opto-mechanical and electro-optical assembly
- 35 assembly workstations
- 4 clean workstations and 6 ESD stations



Singapore



- 30,085 square feet (2,796 square meters)
- Manufacturing, coating and assembly capabilities
- Prism manufacturing with angle tolerances down to 1 arc second
- Large scale spherical optics (up to 8" dia.)
- 6 coating chambers
- Volume optical component manufacturing
- US state department approved TAA

Shenzhen, China



- New 16,140 square feet (1,500 square meters) facility
- Class 10,000 clean room
- Class 100 laminar flow booths
- Opto-mechanical assembly capability
- Optical and mechanical design, prototyping and testing capability
- High volume assembly of opto-mechanical and electrical systems

Akita, Japan



- 20,527 square feet (1,908 square meters) of manufacturing space
- High precision spherical optics from 3mm to 100mm diameter.
- On-site assembly and inspection
- Over 50 years of experience

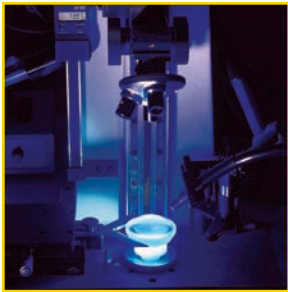
high speed GRINDING
and POLISHING >



Schneider® SCG_A 121 / SCP_A 121
Aspheric Generator/Polisher



Double-sided Polishing



LOH Centering Machine



QED MRF® Y22 Polisher

< CENTERING



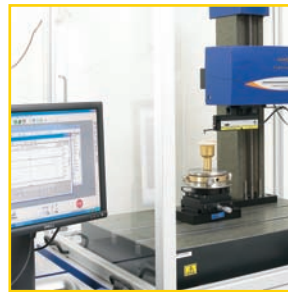
COATING >

< ULTRA SONIC
cleaning

QUALITY assurance >



TRIOPTICS Centering Scope



Taylor Hobson PGI 1240
Profilometer



QED SSI_A Aspheric
Interferometer



ZYGO® NewView White
Light Interferometer

QUALITY CONTROL

Edmund Optics® maintains state-of-the-art QA equipment for optical and mechanical testing. In addition, we work with various customers and manufacturing partners to ensure on-site Quality Assurance.

QA Resources Include:

- Zygo® GPI-XP Phase Shifting Interferometer
- Zygo® VeriFire AT™ Interferometer
- Varian Cary Spectrophotometer
- Laminar Flow Assembly Booths
- Perkin Elmer® Lambda 900 Spectrophotometer
- Taylor Hobson PGI 1240 Talysurf
- TRIOPTICS Centering Scopes
- Optikos™ Video MTF
- QED SSI_A Aspheric Interferometer

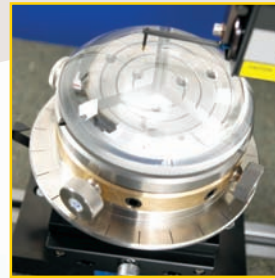
certified Edmund quality

Edmund Optics® is committed to ensure product and procedural quality through a number of ISO and mil-spec standards.



metrology

- State-of-the-art Optical Metrology
- Automated equipment for optical parameters such as EFL, Distortion, Field Curvature, and concentricity
- Radiometrics: straylight, veiling glare, etc.
- Semi-automated MTF measurement equipment
- Environmental testing equipment such as temperature cycling, salt, fog, shock, vibration and humidity



< DEFENSE

■ ITAR registered

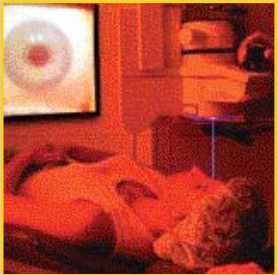
Edmund Optics® is one of the leading providers of optics and optical assemblies to Defense contractors in the world. EO has created a “World Class” Compliance Program that establishes and defines policies, responsibilities and procedures for all Edmund Optics, Inc. employees. EO’s Compliance Program is committed to the highest standards of ethical conduct and conducts international business in full compliance with all pertinent laws, regulations and policies that govern the import/export of defense articles, the export of defense services, and the export of commercial commodities.

Photo courtesy of
Lance Cpl. R. Drew Hendricks

CUSTOMER satisfaction

“ As a soldier in the Army for the last 15 years I have personally witnessed the advancement of weapons technology, making it a safer fight for the soldier on the ground. **Edmund Optics® has been providing soldiers like me the ability to bring the fight to the enemy with superior optics that allow pinpoint precision instead of old iron sight shooting.** I can, with 100% confidence, say that these innovations have saved lives of not only our armed forces serving across the world as well as innocent civilians on the battlefield. ”

- Sgt. 1st Class Sean Bennett, “Airborne”



APPLICATIONS

Edmund Optics® manufactures products for a variety of markets. This diversity allows for innovation across markets with regards to design, development and testing.

RESEARCH &
DEVELOPMENT

MILITARY / AEROSPACE

PHOTONICS & IMAGING

MEDICAL / BIOMEDICAL

SEMICONDUCTOR /
ELECTRONICS

MANUFACTURING

more than BUILD TO PRINT

The Edmund Optics® team of engineers provides customers with engineering on demand! Our global network allows us to work on your design 24-hours a day. Each design is carefully evaluated with a knowledge of manufacturing, tolerancing, and package integration.

OPTICAL SYSTEM DESIGN

OPTO-MECHANICAL SYSTEM DESIGN

SYSTEM MANUFACTURABILITY

PRODUCT DESIGN

ILLUMINATION DESIGN/ANALYSIS

Our expertise covers the gamut of imaging design, from simple objective lenses to complex multi-element systems.

We not only design cutting edge systems, we can also manufacture and assemble them on-site. This makes us extremely sensitive to manufacturing tolerances and costs.

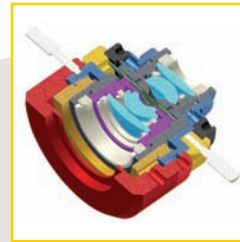
UV (193 to 400nm)

MWIR (3 to 8 μ m)

VISIBLE (400 to 750nm)

LWIR (8 to 12 μ m)

NIR (750 to 3.0 μ m)



< ENGINEERING SUPPORT



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