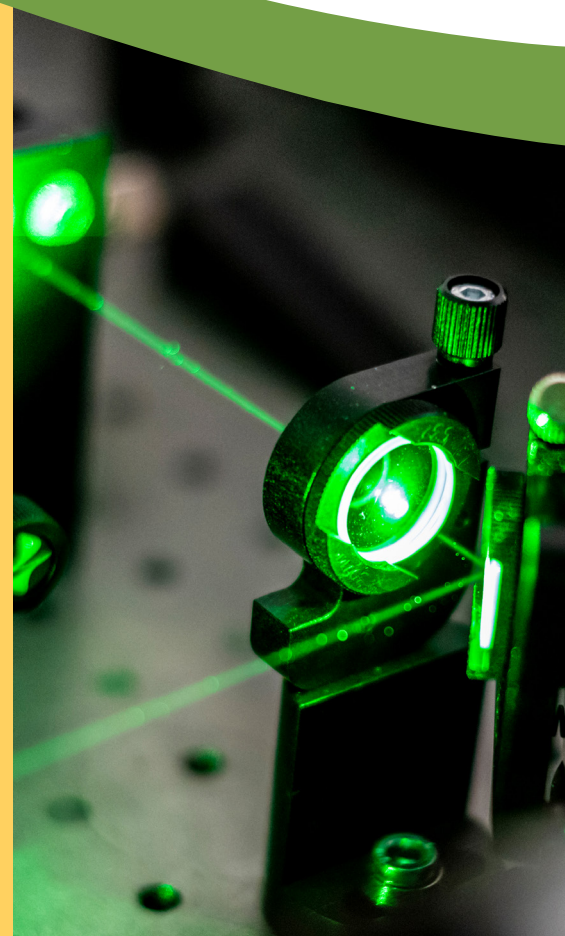


**Shaping the Spectrum
With Precision and Passion**

Optical Filters and Coatings

Company Overview



Welcome to Andover Corporation

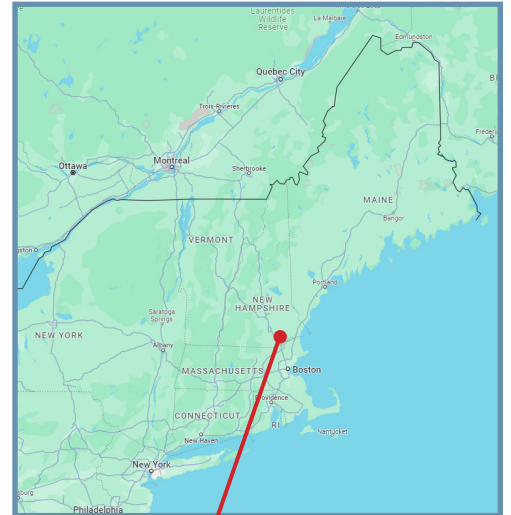
Location and Facility



A Leading Designer and Producer of High-Quality Optical Filters

Located in beautiful Salem, New Hampshire, our state-of-the-art facility is continuously improving and expanding to ensure that we provide the best in service, engineering, production, and innovation for the specific needs of each of our customers.

- **Established:** 1976
- **Facility:** 44,000 ft²
- **Employees:** 50



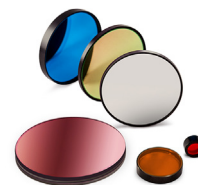
Catalog Items

Our standard products are designed to meet the diverse needs of industries ranging from medical instrumentation to aerospace. Renowned for their precision, durability, and exceptional performance, these top-tier solutions are always readily available to our valued clients.

- **Standard wavelengths:** 193nm – 10600nm
- **Sizes:** 12.5mm – 50mm
- **24/7 online ordering, no minimum quantities**

Bandpass Filters

- Standard and custom
- First-surface UV filters
- High transmitting
- Hard-coated / Assembled



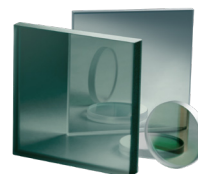
Infrared Filters

- Bandpass filters
- Neutral-density filters
- Edge filters



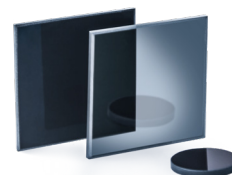
Heat Control Filters

- Ultraviolet cold mirrors
- Cold mirrors
- Hot mirrors
- IR-suppressing filters



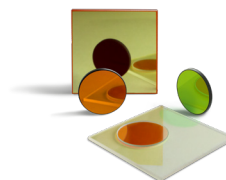
Neutral Density Filters

- Metallic UV-VIS-NIR
- Infrared ND filters
- ND filter sets
- Absorptive ND filters



Dichroic Filters

- Color-control filters
- Beamsplitters



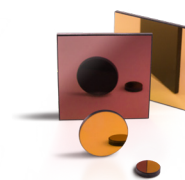
Steep-Edge Longpass Filters

- Slope <1%
- Deep blocking



Standard Edge Filters

- Long-wave pass
- Short-wave pass



About Andover Corporation

Products and Services Overview



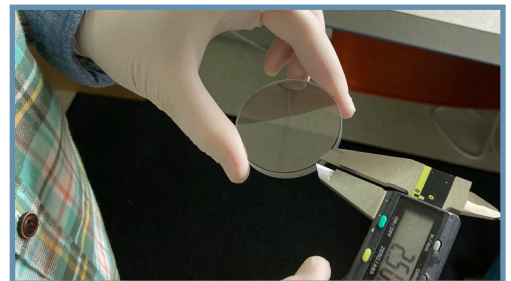
Our Products and Services

- **Design and Manufacture:** We design and manufacture high-quality optical filters and coatings.
- **Wide Range of Applications:** Our filters and coatings are used in medical instrumentation, fluorescence studies, machine vision, agricultural imaging, ground-based and space-borne astronomical observation, telecommunications, military and civilian surveillance systems, and defense targeting systems.
- **Advanced Equipment:** Our facilities include automated coating, glass polishing, fabrication equipment, and extensive testing equipment.
- **Optical Metrology Lab:** Our lab features a custom-designed, computer-controlled tunable interferometer, capable of measuring transmitted wavefronts beyond the capabilities of traditional laser interferometers.
- **Additional Products:** We offer optical and electrical epoxies, cryolite evaporation material, filter ovens, and filter wheels.
- **Calibration Services:** We provide precise optical filter calibration services.



Our Capabilities and Strengths

- **Vertical Integration and Flexibility:** We control the design and manufacturing process, ensuring consistent quality and the ability to meet demanding lead times.
- **Exceeding Industry Standards:** Our products surpass industry standards for quality, and we are AS9100, ISO9001, and ITAR registered.
- **Automated Systems:** Our fully-automated systems ensure excellent repeatability and rapid turnaround.
- **Continuous Improvement:** We continuously update our manufacturing processes to stay at the forefront of technology.
- **Extensive Testing Capabilities:** We have extensive testing capabilities, including automated spectrophotometers for broadband spectral measurements and ultra-high-resolution spectrophotometers for narrowband measurements.



Mission Statement

***“Andover Corporation’s mission** is to achieve total customer satisfaction through the best possible quality, delivery, pricing, service, and communication at every step.*

We strive for continuous improvement in our design, production, and testing processes, while operating safely and ethically.

Andover Corporation is committed to minimizing any adverse impact on our environment, and fostering the growth, development, and well-being of our employees to ensure they are aligned with our company values.”

Value Proposition

The value proposition summarizes our promise of unique benefits, value, and market differentiators that give our customers several reasons to choose Andover Corporation over a competitor. In your day-to-day work, consider how your actions contribute to fulfilling our value proposition and meeting the needs of our customers.

Why Andover?

- **Industry-leading customer satisfaction**

Superior delivered quality with short lead times

- **Exceptional coating expertise**

First-surface hardcoat, assembled coatings, and hybrid solutions

- **Vertically integrated for a seamless process**

For every step of the job including design, fabrication, and metrology

- **No program too small or too large**

A high volume capacity with no minimum order quantities

- **Custom craftsmanship to meet your needs**

We work with every customer to develop the best possible solution

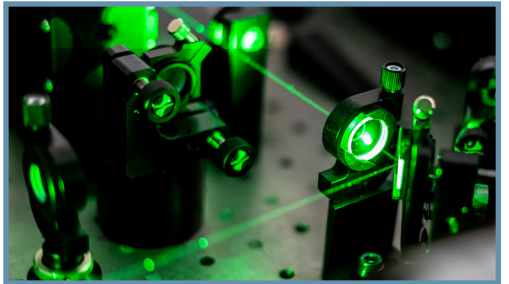
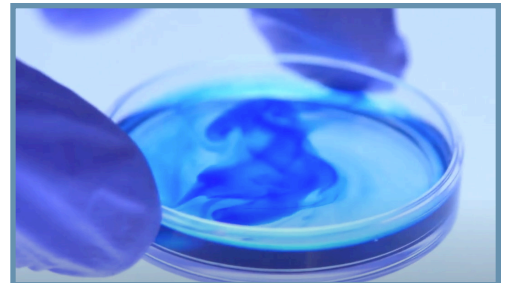
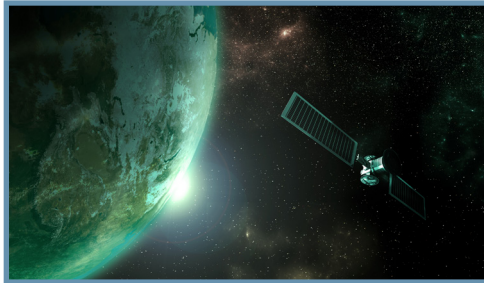
Market and Engineering Expertise

Tailored Optical Solutions for Diverse Industries



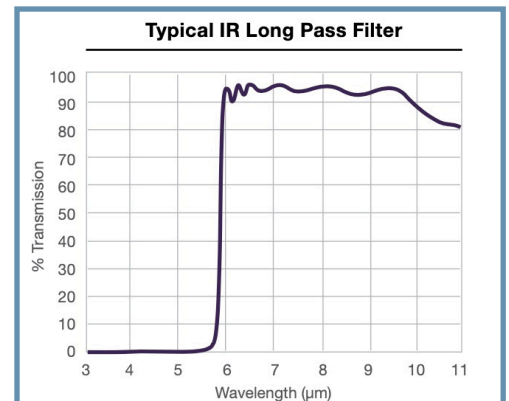
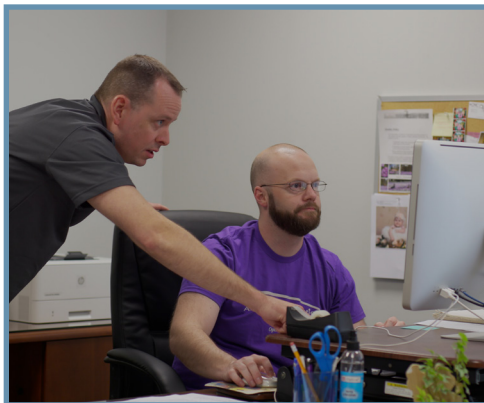
Markets We Serve

- Defense & Aerospace
- Environmental
- Science & Industry
- Instrumentation
- Astronomy
- Semiconductor
- Imaging
- Biotechnology
- Medical Devices
- Universities & National Labs
- Resellers & Representatives



Staff of In-House Engineers

Andover's engineers design unique optical solutions tailored to your project's needs, leveraging experience across commercial, military, and research markets, including airborne and spaceborne deployments. Our team collaborates with you to meet performance and cost goals for your programs.



Our Capabilities

- Custom optical coatings
193nm – 15000nm
- Standard optical filters
193nm – 10600nm
- Custom bandpass filters
240nm – 14000nm
- Optical accessory products
- Optical assemblies
- Advanced substrate fabrication
- Precision beveling
- Dicing
- Diamond milling, coring, and sawing

Substrate Materials

- BK-7; H2; G-18
- Fused silica; UV & IR grade
- Filter glass
- Chalcogenide glass
- Sapphire
- Germanium
- Zinc Sulfide
- Zinc Selenide
- Silicon, CZ and FZ grade
- Calcium Fluoride
- Barium Fluoride
- Magnesium Fluoride

Coating Technologies

Magnetron Sputtering

- Environmentally stable & extremely durable
- No wavelength shift over time
- At least 20/10 scratch/dig
- Consistent production results
- Low water-content coatings
- Handles complicated requirements
- Large load capacity, even with custom filters

E-Beam with Ion Assist

- Durable and environmentally stable
- Large usable coated area for optics up to 14"
- Stress-free coatings for low-surface distortion
- Parts coated to size for low unit cost
- Improved UV transmission
- High laser damage threshold
- Severe abrasion per MIL-SPEC
- 20/10 scratch dig

Resistance Evaporation

- Lower cost
- Short lead times
- Variety of coating types available
- Ultra-narrow selections <0.1nm in the VIS
- Parts coated to size
- Low distortion for imaging applications

Hybrid Technologies

- Combining coating technologies to create unique solutions



Production Equipment Summary

Coating technologies and capacity



Coating Chambers Overview

| Chamber | Filter Type | Coating Technology | Wavelength Application Range (nm) | Planetary Layout & diameter | Filter Construction | Durability |
|---------|--|---|-----------------------------------|---------------------------------|---------------------|--|
| AC-1 | VIS Bandpass | Thermal/Resistance Evaporation | 390 - 850 | Single 10" | Laminated | Exterior glass surfaces |
| AC-2 | UV bandpass, aluminum mirrors | Thermal/Resistance Evaporation | 190 - 390 | Single 10" | Laminated | Exterior glass surfaces |
| AC-3 | VIS bandpass | Thermal/Resistance Evaporation | 390 - 850 | Single 10" | Laminated | Exterior glass surfaces |
| AC-4 | Neutral density | EB gun (ion assisted preclean) | 250 - 14000 | 4"-10" planets | First surface | Moderate to severe abrasion |
| AC-5 | NIR bandpass | Thermal/Resistance Evaporation | 400 - 2400 | Single 10" | Laminated | Exterior glass surfaces |
| AC-6 | NIR bandpass | Thermal/Resistance Evaporation | 400 - 2400 | Single 10" | Laminated | Exterior glass surfaces |
| AC-7 | Visible edge Beamsplitters, AR coatings Dichroic | EB Gun with Ion Assist Deposition | 240 - 2100 | 5"-14" planets | First surface | Severe abrasion |
| AC-9 | Far infrared edge, AR coatings | EB Gun and Resistance (ion assisted preclean) | 1650 - 20000 | 5"-10" planets | First Surface | Moderate abrasion/ cleanability and solubility |
| AC-10 | Edge Bandpass Beamsplitters AR coatings | Magnetron Sputtering | 325 - 5000 | 5"-10" planets | First Surface | Severe abrasion |
| AC-11 | Far infrared bandpass | EB Gun and Resistance (ion assisted preclean) | 2050 - 12000 | Single 10" | First Surface | Moderate abrasion/ cleanability and solubility |
| AC-12 | Edge Bandpass Beamsplitters AR coatings | Magnetron Sputtering | 325 - 5000 | 5"-10" planets | First Surface | Severe abrasion |
| AC-13 | Visible edge Beamsplitters, AR coatings Dichroic | EB Gun with Ion Assist Deposition | 240 - 2100 | 8"-9" planets or 5"-14" planets | First surface | Severe abrasion |
| AC-14 | Edge filters AR coatings | EB Gun and Resistance (ion assisted preclean) | 1650 - 20000 | 8"-9" planets | First surface | Moderate abrasion/ cleanability and solubility |
| AC-15 | Hard-coat Automated: Edge Bandpass Beamsplitters AR coatings | Magnetron Sputtering | 325 - 5000 | 6"-8" planets | First surface | Severe abrasion |
| AC-16 | Hard-coat Automated: Edge Bandpass Beamsplitters AR coatings | Magnetron Sputtering | 405-1650 | 1"-10" planets | First surface | Severe abrasion |

Fabrication Equipment

Grinding

- Myford Cylindrical grinders (x2)
- Sidai robotic autochamfering / autocentering machines (x2)
- ADT dicing machine Model 7134
up to 12" plate cut to under 2mm (x1)
- Haas CNC saw machine (x2)
- Haas CNC mill / coring machines (x3)

Polishing

- Ability to polish to 0.1 wave TWF – 0.25 wave RWF
- Yoshikawa blanchard grinders for bulk removal (x2)
- Speedfam double sided lappers (x2)
- Speedfam double sided polishers - 8.2" max (x3)
- Strausbaugh single sided polisher (x2)

Other

- Universal Laser System laser engravers (x4)
- Full machine shop for metal fabrication of tooling or assemblies
- Master machinist on staff



Quality Capabilities and Equipment

- Cary 5E (x1)
- Cary 500 (x2)
- Cary 5000 (x3)
- Cary 7000 with UMA angle attachment (x1)
- Zygo interferometer 633nm fixed W/L
- Custom white light tunable interferometer – Operating range 380nm to 1200nm
- Cryostat for liquid nitrogen spectral measurements cooled to 77°K
- 2 - Perkin Elmer FTIR Frontier Optica (FIR)
- 2 - Perkin Elmer 983G spectrophotometers (old style good out to 50 microns)
- Long bench spectrophotometer with resolution down to 0.05 nm
- Inclusion tester with IR camera that allows us to check IR filters glass for inclusions.
- Thermotron environmental chamber (model SE-300-2-2) for humidity testing.

Quality and Regulatory Info

Upholding the highest standards



Quality Assurance

Andover Corporation operates using a Quality Management System (QMS) certified and registered to several standards:

- **ISO 9001:2015** Registration
- **AS 9100:2016** Registration
- Fully compliant with **DFARS** (Defense Federal Acquisition Regulation) 7012
- **FedRamp Moderate** file sharing service for secure sharing of **CUI** and **ITAR** materials
- Received high praise during **NIST 800-171** gap analysis



Additional Regulatory Information

- **Cage Code:** 0J798
- **DUNS NO.:** 09-427-6854
- **EIN:** 04-2607555
- **SIC Codes:** 3827 Optical Instruments and Lenses
- **NAICS Code:** 333310 Commercial and Service Industry Machinery Manufacturing
- **Exostar** Approved Supplier

Mike Tiner

Chief Operating Officer

mtiner@andovercorp.com

Chris Richards

VP, Operations

chris.richards@andovercorp.com

Jeannine Riley

VP, Finance and Administration

jeannine.riley@andovercorp.com

David Litwinovich

VP, Technology

dpl@andovercorp.com

Tina Hoppock

Sr. Outside Sales/Bus. Development

tina.hoppock@andovercorp.com

Joshua Jones

Operations Manager

joshua.jones@andovercorp.com

Rick Shagoury

Marketing Manager

rick.shagoury@andovercorp.com

Martín Sipowicz

Optical Engineer

martin.sipowicz@andovercorp.com

Phil Clark

Technical Sales

phil.clark@andovercorp.com

Nicole Christensen

Sales Coordinator/Purchasing

nicole.christensen@andovercorp.com

Customer Testimonials

Trusted by industry leaders

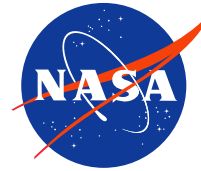


Real Feedback from our Valued Customers

"They are on-the-money on lead times."

Clear Align, Nashua NH

Electro-Optical/Infrared imaging and surveillance systems



"Andover is our go-to supplier for custom optics."

Delta Photonics, Canada

Reseller



"Accuracy is their top strength"

Daystar Filters, Warrensburg MO

Safe solar filters and telescopes

LOCKHEED MARTIN



"Their custom products go into pretty much everything we make."



*"Andover is **the** supplier when it comes to optical filters."*



"We can have discussions on an engineering level, engineer to engineer."

L3Harris WESCAM, Canada

Electro-Optical/Infrared imaging and surveillance systems



"One of the better optical filter [suppliers] out there."

"Andover is top notch. They are professionals."

Lockheed Martin Corporation

Aerospace and defense manufacturing



Quantum Design
EUROPE



"Andover is one of the world's leading companies in this business."

"They are my number one. I first look to see if I can get it from Andover."

Quantum Design GmbH, Germany

Scientific instrument supplier



L3HARRIS™
FAST. FORWARD.



"Andover is a one-stop shop. They did the complete design, mechanical as well as optical."

"They are very innovative. They definitely know their stuff. Technically, they are very good."

The Boeing Company

Aerospace and defense manufacturing

Shaping the Spectrum with Passion and Precision

