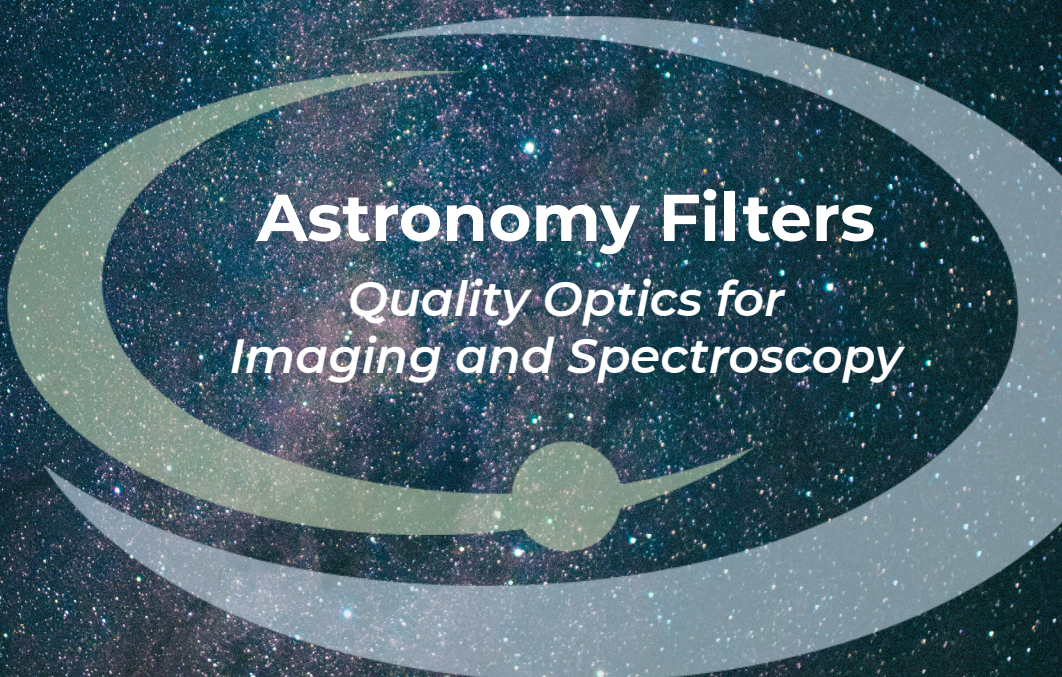


Shaping the Spectrum
With Precision and Passion

A large, stylized graphic of an eye or a lens, composed of two concentric, slightly offset, light blue-green curved lines. The text is centered within this graphic.

Astronomy Filters

*Quality Optics for
Imaging and Spectroscopy*





Why Choose Andover for Astronomy Filters?

Precision Engineering. Proven Performance. Trusted Worldwide.

Our Capabilities At-a-Glance

- **Wavelength Range:** 193nm to 14 μ m (including all Sloan DSS bands)
- **Bandwidths:** Ultra-wide to sub-nanometer narrowband
- **Sizes:** 2mm to 305mm diameter
- **Transmitted Wavefront Error:** As low as 1/20 wave
- **Parallelism:** ≤ 5 arc seconds
- **Space-Qualified:** Radiation-hard, non-outgassing materials

Built for Precision, Proven in the Field

- **Custom and Standard Filters:**
Tailored to your specifications—no minimum order quantities required.
- **Expert Coating Capabilities**
Vertically integrated processes ensure consistent quality and rapid turnaround.
- **Wide Material Compatibility**
We work with a broad range of substrates to meet the needs of advanced astronomy applications, including:

- | | | |
|----------------|----------------------|----------------------|
| ● BK7 | ● Chalcogenide Glass | ● Silicon |
| ● Fused Silica | ● Germanium | ● Calcium Fluoride |
| ● Filter Glass | ● Zinc Sulfide | ● Barium Fluoride |
| ● Sapphire | ● Zinc Selenide | ● Magnesium Fluoride |

In astronomy, optical performance isn't just important — it's mission-critical. From resolving distant galaxies to analyzing the Sun's surface, optical components must perform flawlessly under the harshest observational environments.

That's why leading observatories, research institutions, and aerospace teams turn to Andover.

Built for Demanding Environments

- **First-Surface Hardcoats**

Durable, sputtered coatings designed for long-term exposure to extreme conditions.

Tested via MIL-C-48497A abrasion and adhesion standards.

- **Low-Scatter Optical Surfaces**

Precision-polished to meet the tightest surface quality and transmitted wavefront specs.

Verified using laser interferometry and microscope inspection to MIL-C-675.

- **Environmental Durability**

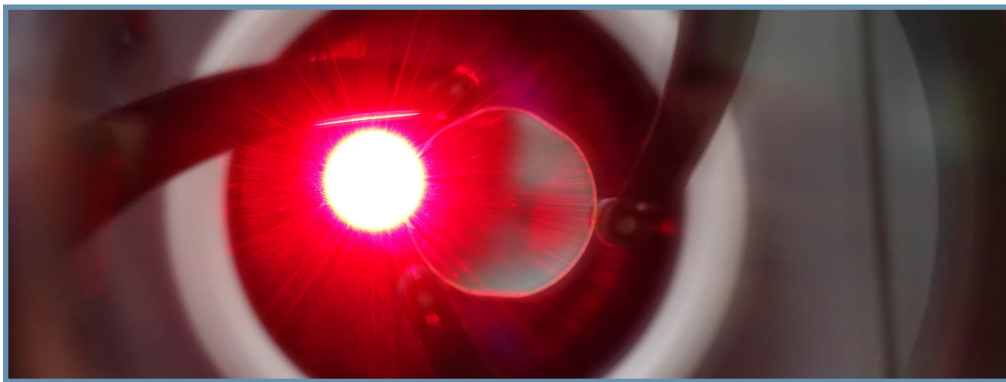
Our optics are engineered to withstand vibration, temperature extremes, and humidity — ideal for ground-based, airborne, and spaceborne systems.

Subjected to environmental cycling, thermal shock, and humidity chamber testing.

- **Space-Qualified Construction**

We use non-hygroscopic, low-outgassing materials compatible with spaceflight.

Material selections are validated through NASA ASTM E595 standards and in-house bake-out testing.



Metrology to Match the Mission

Andover ensures that **every** optical component performs as expected – and exactly as specified. Our in-house testing capabilities include:

- Spectral transmission and blocking verification
- Surface quality and transmitted wavefront error
- Flatness and parallelism
- Adhesion, abrasion, and environmental testing
- Coating uniformity and angle-of-incidence (AOI) shift control

Astronomy Filters

Projects and Missions



For nearly five decades, our optical filters and coatings have played a supporting role in some of the world's most important space exploration missions and astronomical research programs.

From deep-space telescopes and CubeSats to solar observatories and planetary probes, leading institutions and integrators turn to us for precision, reliability, and durability.

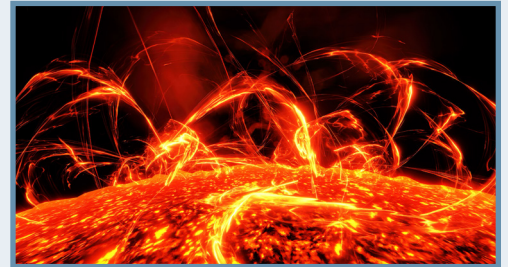


1990 – Hubble Space Telescope

Supported the Hubble Space Telescope with precision optical components, aiding in solar observation and the study of magnetic activity on the Sun's surface.

2010 – Helioseismic and Magnetic Imager (HMI)

Provided precision filters for the Helioseismic and Magnetic Imager (HMI) aboard NASA's Solar Dynamics Observatory, enabling detailed study of solar oscillations and magnetic fields.

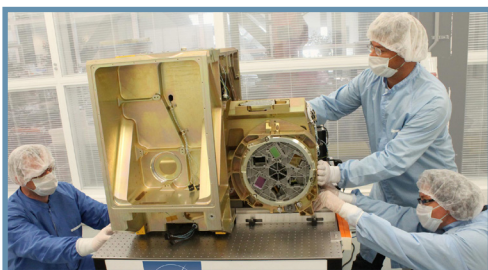
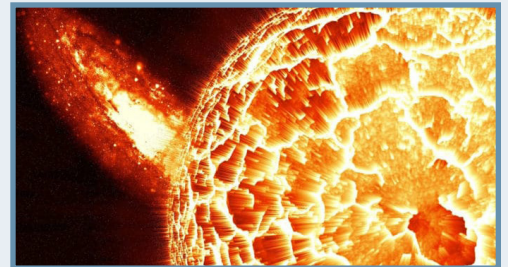


2010 – SOFIA Airborne Observatory

Delivered infrared optical components for NASA's SOFIA airborne observatory, contributing to celestial observations and the 2020 discovery of water on the Moon.

2013 – IRIS Mission

Designed filters for NASA's IRIS mission to investigate the interface between the Sun's chromosphere and corona using high-resolution imaging and spectroscopy.



2015 – MATISSE

Delivered components for MATISSE (Multi-AperTure mid-Infrared SpectroScopic Experiment), the most powerful mid-infrared interferometric instrument to date, enabling study of black holes and planet formation.

Photometric filters play a crucial role in astronomical research by enabling precise measurement of stellar brightness and colors. These filters are essential for characterizing celestial objects, differentiating between various spectral types, and conducting large-scale sky surveys.

Andover's photometric filters are designed to meet the rigorous demands of professional astronomers, ensuring high transmission, steep cutoffs, and minimal out-of-band leakage.

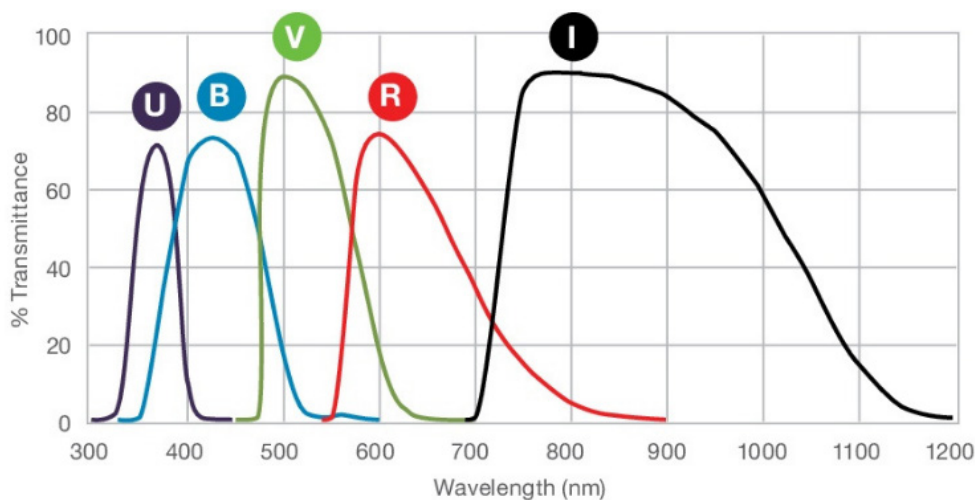
UBVRI Filters - Johnson/Bessell System

One of the most widely used photometric systems, the Johnson/Bessell filters are designed for broad-band measurements across ultraviolet, visible, and infrared wavelengths. These filters enable astronomers to capture accurate brightness and color indices of celestial objects, making them indispensable for stellar classification and variability studies.

General Specifications

Thickness:	5.0mm $\pm$ 0.1mm	Transmitted Wavefront:	1/4 wave or better per 25mm
Size Tolerance:	+0 / -0.25mm	Parallelism:	30 arc seconds or better
Bevels:	Break all sharp edges	Surface Quality:	60/40 or better per MIL-C-675
Coating Durability:	Per MIL-C-48497A moderate abrasion	Optical Quality:	Image Quality
Transmission:	>70% or better	Exterior Surfaces:	Antireflective coatings

Filter Type	CW/L (nm)	FWHM (nm)	Size (mm) & Part No.			Ring Mount (mm) & Part No.	
			25 $\varnothing$	50 $\varnothing$	50 square	31 $\varnothing$	50 $\varnothing$
U Ultraviolet	365	60	JOHN-U-25	JOHN-U-50	JOHN-U-50S	JOHN-U-31M	JOHN-U-50M
B Blue	440	100	JOHN-B-25	JOHN-B-50	JOHN-B-50S	JOHN-B-31M	JOHN-B-50M
V Visible	520	90	JOHN-V-25	JOHN-V-50	JOHN-V-50S	JOHN-V-31M	JOHN-V-50M
R Red	630	120	JOHN-R-25	JOHN-R-50	JOHN-R-50S	JOHN-R-31M	JOHN-R-50M
I Infrared	900	300	JOHN-I-25	JOHN-I-50	JOHN-I-50S	JOHN-I-31M	JOHN-I-50M
5-Piece Sets	–	–	JOHN-FA-25	JOHN-FA-50	JOHN-FA-50S	JOHN-FA-31M	JOHN-FA-50M

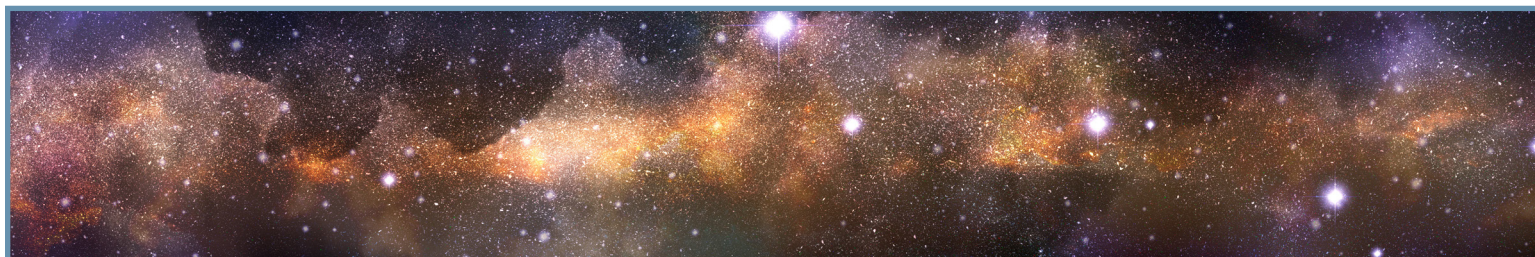


Photometric Filters

UVBRI - KRON/Cousins Type

UBVRI Filters - KRON/Cousins System

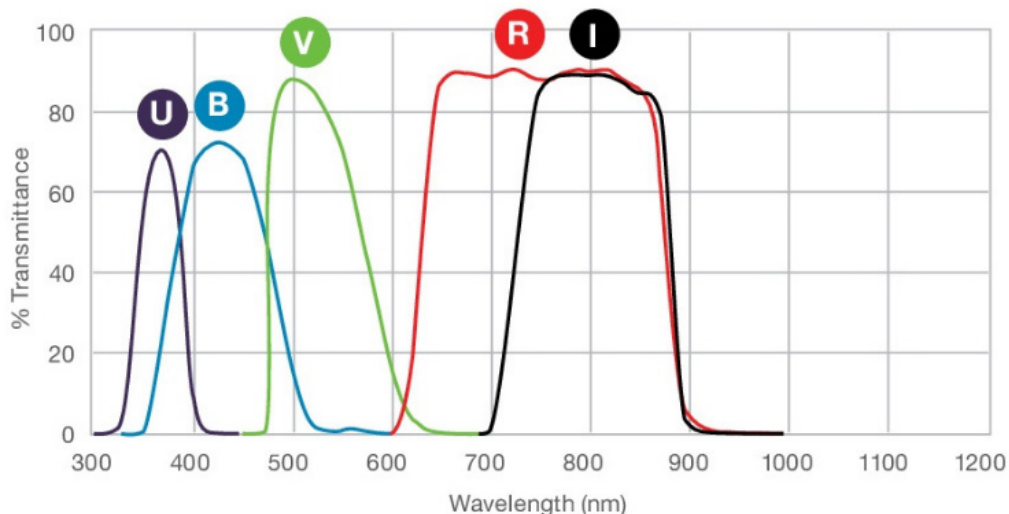
Optimized for silicon CCD detectors, the Kron/Cousins filter system refines the original Johnson photometric design, providing improved performance in modern digital imaging applications. These filters offer precise band definitions for astrophotography, photometric surveys, and long-term astronomical observations.



General Specifications

Thickness:	5.0mm $\pm$ 0.1mm	Transmitted Wavefront:	1/4 wave or better per 25mm
Size Tolerance:	+0 / -0.25mm	Parallelism:	30 arc seconds or better
Bevels:	Break all sharp edges	Surface Quality:	60/40 or better per MIL-C-675
Coating Durability:	Per MIL-C-48497A moderate abrasion	Optical Quality:	Image Quality
Transmission:	>70% or better	Exterior Surfaces:	Antireflective coatings

Filter Type	CW/L (nm)	FWHM (nm)	Size (mm) & Part No.			Ring Mount (mm) & Part No.	
			25 $\emptyset$	50 $\emptyset$	50 square	31 $\emptyset$	50 $\emptyset$
U Ultraviolet	365	60	KRON-U-25	KRON-U-50	KRON-U-50S	KRON-U-31M	KRON-U-50M
B Blue	440	100	KRON-B-25	KRON-B-50	KRON-B-50S	KRON-B-31M	KRON-B-50M
V Visible	520	90	KRON-V-25	KRON-V-50	KRON-V-50S	KRON-V-31M	KRON-V-50M
R Red	760	250	KRON-R-25	KRON-R-50	KRON-R-50S	KRON-R-31M	KRON-R-50M
I Infrared	800	150	KRON-I-25	KRON-I-50	KRON-I-50S	KRON-I-31M	KRON-I-50M
5-Piece Sets	–	–	KRON-FA-25	KRON-FA-50	KRON-FA-50S	KRON-FA-31M	KRON-FA-50M



Sloan Digital Sky Survey (SDSS) Filters

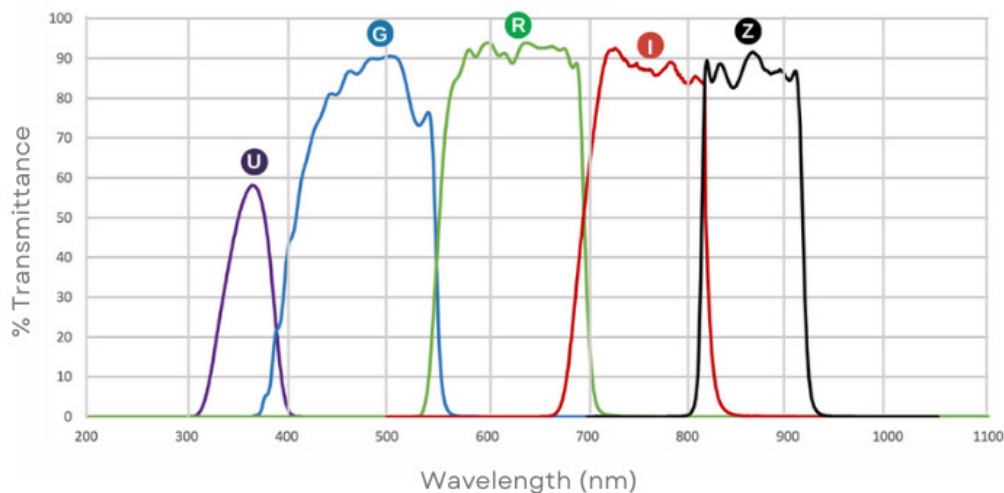
Designed for large-scale sky surveys, SDSS filters provide non-overlapping spectral bands with sharp cutoffs, making them ideal for redshift measurements and multi-band imaging of distant galaxies.

General Specifications

Thickness:	Precision-controlled to specification
Size Tolerance:	+0 / -0.25mm
Bevels:	Break all sharp edges
Coating Durability:	Per MIL-C-48497A moderate abrasion
Transmission:	>80%
Transmitted Wavefront:	1/4 wave or better per 25mm
Parallelism:	30 arc seconds or better
Optical Quality:	Image Quality
Exterior Surfaces:	Antireflective coatings



Filter Type	CW/L (nm)	FWHM (nm)	Size (mm) & Part No.	
			25 Ø	50 Ø
U Ultraviolet	355	60	SLOAN-U-SDSS-25	SLOAN-U-SDSS-50
G Green	475	150	SLOAN-G-SDSS-25	SLOAN-G-SDSS-50
R Red	620	139	SLOAN-R-SDSS-25	SLOAN-R-SDSS-50
I Near-Infrared	750	130	SLOAN-I-SDSS-25	SLOAN-I-SDSS-50
Z Far-Infrared	900	104	SLOAN-Z-SDSS-25	SLOAN-Z-SDSS-50



Infrared Astronomy Filters

MKO Near-Infrared for Penetrating Views



MKO Near-Infrared Filters

Developed in collaborations with the Mauna Kea Observatories (MKO), these near-infrared filters provide optimal performance for ground-based telescopes.

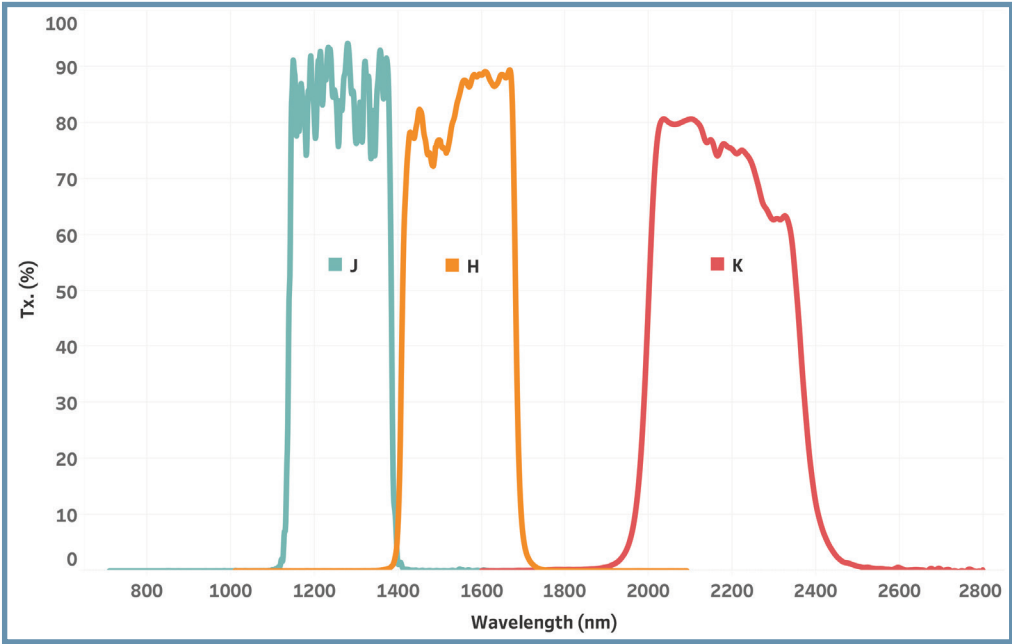
J- and H-band filters penetrate through atmospheric barriers, granting unprecedented access to celestial wonders. K-band filters, named after the German word for “short”, are perfect for short-range applications, adept at bypassing water vapor absorption for crisp imaging.



General Specifications

Thickness:	5.0mm ± 0.15mm	Parallelism:	30 arc seconds or better
Size Tolerance:	+0.00 / -0.25mm	Surface Quality:	60/40 or better per MIL-C-675
Bevels:	Break all sharp edges	Optical Quality:	Image Quality
Coating Durability:	Per MIL-C-48497A moderate abrasion	Exterior Surfaces:	Antireflective coatings
Trans. Wavefront:	1/4 wave or better per 25mm	Blocking:	OD4

Filter Type	CW/L (nm)	FWHM (nm)	Size (mm) & Part No.		Ring Mount (mm) & Part No.
			25 Ø	50 Ø	31 Ø
J-Band	125	270	125JB270-25	125JB270-50	125JB270-31M
H-Band	165	270	165HB270-25	165HB270-50	165HB270-31M
K-Band	215	280	215KB280-25	215KB280-50	215KB280-31M



L-, M-, and N-Band Filters

Favored by CubeSat and SmallSat markets, these filters cover a broad spectrum, from **3000nm to 12350nm**, and are frequently used in aircraft surveillance, satellite navigation, and weather monitoring.

The N-Band filter excels in the far-infrared domain, where hot thermal masses like lava flows stand out. Used with both cooled and uncooled microbolometers, these filters offer a glimpse into the hottest spots on earth.

General Specifications

Thickness:	1.0mm ± 0.2mm
Paralellism:	< 10 arc minutes
Scratch/Dig:	80/50
Blocking:	OD3 avg
Transmission:	> 85%



Filter Region	Application	CW/L (nm)	FWHM (nm)	Available Sizes (mm)		
				12.5 Ø	25 Ø	50 Ø
N band segment	Targeted Thermal Imaging	8100	500	—	8100NB500-25	—
		8600	500	—	8600NB500-25	—
		9100	500	—	9100NB500-25	—
		9600	500	—	9600NB500-25	—
		10100	500	—	10100NB500-25	—
		10600	500	—	10600NB500-25	—
		11100	500	—	11100NB500-25	—
		11600	500	—	11600NB500-25	—
		12100	500	—	12100NB500-25	—
L/M Band	Small Satellite	4000	2000	4.00GA20-12.5	4.00GA20-25	4.00GA20-50
Full N band	Broadband Thermal Imaging	10000	4000	—	10.00GA40-25	10.00GA40-50

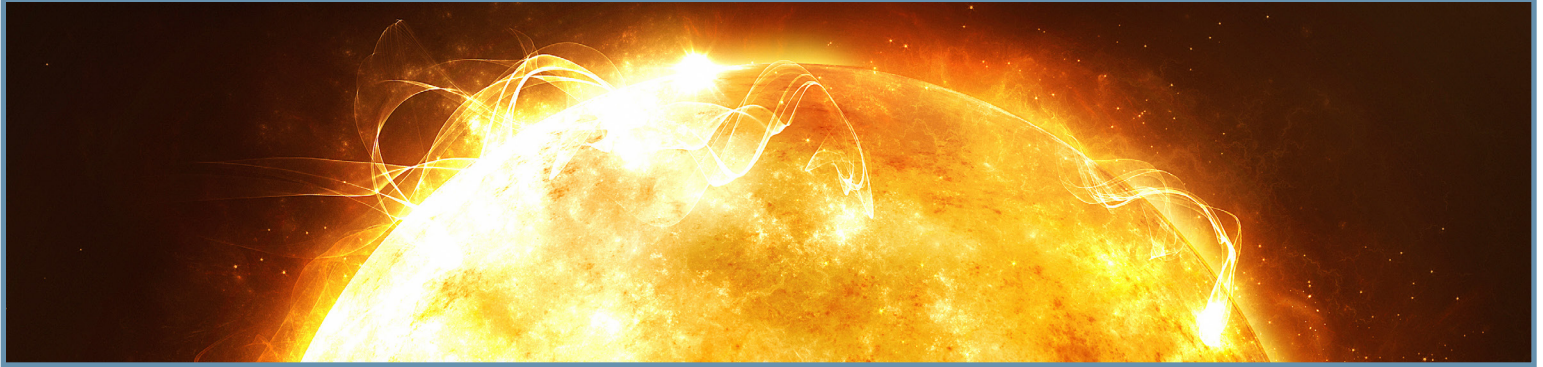
Filters for Celestial Observation

Image-Quality Filters for Incredible Clarity

Unveil the wonders of the cosmos with our range of precision optical filters tailored for solar and space observation. From capturing the dynamic surface features of the Sun to combating light pollution and enhancing astrophotography, our filters are your gateway to clearer, more vibrant views of the universe.

General Specifications

Dimensions:	ø 1.25" threaded mount
Thickness:	10.0mm
Parallelism:	30 arc seconds or better
Scratch/Dig:	60/40
Flatness:	< 0.25 TWF @ 633nm
Blocking:	> OD4



ClearSky Filter

Combat light pollution and atmospheric skyglow with our ClearSky filter. Engineered to selectively block sodium and lime light at the 590nm wavelength, it improves the visibility of celestial objects, providing a clear view of the night sky.

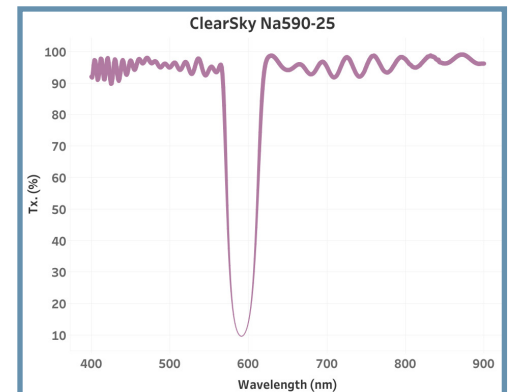
Product specs: ClearSky Na590-25

Surface One - Notch Coated to Achieve:

- Transmission < 20% at 590nm $\pm$ 5nm
- Transmission (Average) Out of Band > 90 % from 400nm - 1000nm

Surface Two - A/R Coated:

- Reflectance (Average) < 1.5% from 400nm - 1000nm

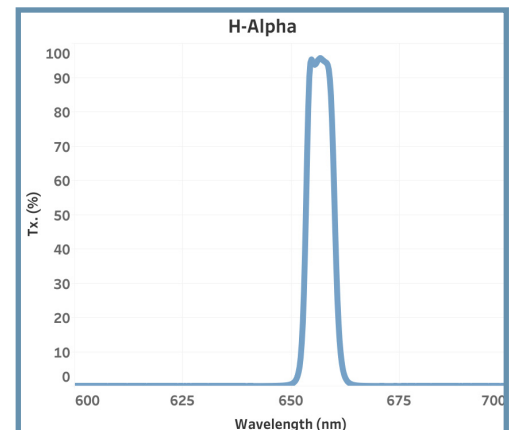


H-Alpha Filter

Experience unparalleled views of the Sun's dynamic surface features with our H-alpha filter, with high transmission and blocking capabilities for enhanced detail and contrast.

Product specs: 656HC07-31M-H-alpha

- Center Wavelength 656.3nm $\pm$ 1.2nm
- > 92% Transmission
- BW 7.0nm $\pm$ 1nm





Red, Green, and Blue Filters

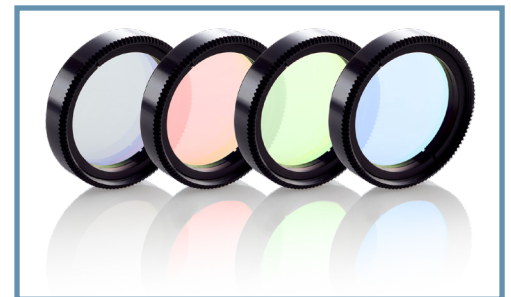
Used to accentuate features in the red, green, and blue parts of the spectrum, these filters can be used individually for specific astronomical imaging objectives, or in tandem to create composite images revealing intricate details across many wavelengths.

Product specs: Red, Green, and Blue Filters

Description	Part No.	Low Edge (nm)	High Edge (nm)	Transmission (%)
Red Filter for RGB Set	645RED90-31M	600 +7 / -3	690 ± 7	> 95
Green Filter for RGB Set	540GREEN85-31M	495 +10 / -0	580 +3 / -7	> 95
Blue Filter for RGB Set	470BLUE65-31M	440 +8 / -2	505 ± 5	> 95

Luminance Filter

Enhance overall brightness and detail in your astrophotography with our Luminance filter. Perfect for capturing the beauty of distant galaxies and revealing intricate details across multiple wavelengths.



Product specs: Luminance Filter

Description	Part No.	Low Edge (nm)	High Edge (nm)	Transmission (%)
Luminance Filter for RGB Set	570HC260-31M-Luminance	440 +10 / -0.0	700 ± 10	> 92

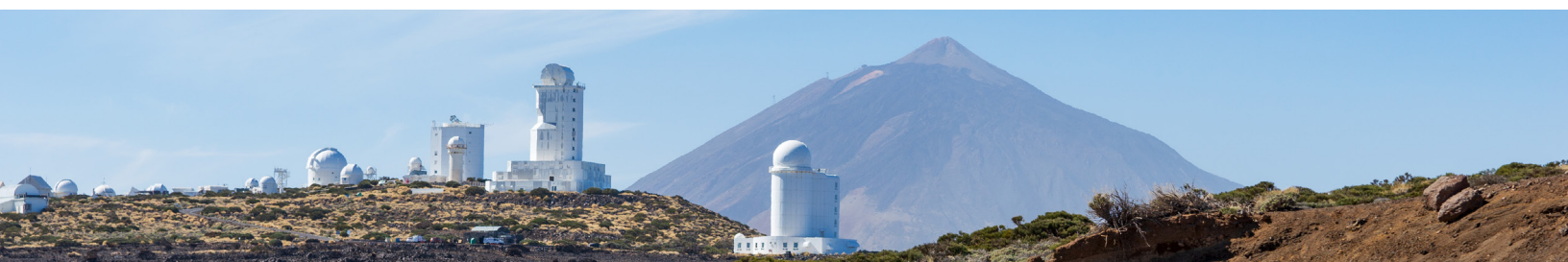
Astronomy Filters

Proven Capabilities for Demanding Applications



For nearly 50 years, Andover Corporation has been a trusted partner for astronomers and researchers worldwide. We're proud to support the global astronomy community with precision filters and coatings tailored for ground-based, airborne, and spaceborne instruments. Our customers include major observatories and research institutions across the U.S., Europe, and beyond.

From solar telescopes to deep-space observatories, our optics help capture the clearest possible view of the universe. Our high-performance optical filters are engineered to meet the rigorous demands of astronomy applications, providing exceptional transmission, precise wavelength control, and durable coatings built to withstand the harshest observational environments.



A Few of Our Astronomy Partners Include:

- Dutch Open Telescope – Spain
- Gran Telescopio Canarias, S.A. – Spain
- Instituto de Astrofísica de Canarias – Spain
- European Southern Observatory (ESO) – Germany
- Manila Observatory – Philippines
- University of Hawai'i – Hawai'i, USA
- W. M. Keck Observatory – Hawai'i, USA
- Mauna Loa Observatory – Hawai'i, USA
- Gemini Observatory (AURA) – Hawai'i, USA
- Lowell Observatory – Arizona, USA
- Fairborn Observatory – Arizona, USA
- Calypso Observatory (KPNO) – Arizona, USA
- Bradshaw Mountain Observatory – Arizona, USA
- National Optical Astronomy Observatory (NOAO) – Arizona, USA
- Johns Hopkins University Applied Physics Laboratory (JHU/APL) – Maryland, USA
- HIPAS Observatory – Alaska, USA
- Arecibo Observatory – Puerto Rico, USA
- Big Bear Solar Observatory – California, USA
- National Solar Observatory – Colorado, USA
- Smithsonian Astrophysical Observatory – Massachusetts, USA
- U.S. Naval Observatory – Washington, D.C., USA
- U.S. Geological Survey – Cascades Volcano Observatory – Washington, USA
- University of Florida – Florida, USA
- Max Planck Institute for Radio Astronomy – Germany
- National Observatory of Athens (NOA) – Greece
- Perth Observatory – Australia
- Thunder Bay Observatory – Canada
- Vatican Observatory – Italy
- Yunnan Astronomical Observatory, Chinese Academy of Sciences (CAS) – China

Shaping the Spectrum with Passion and Precision

