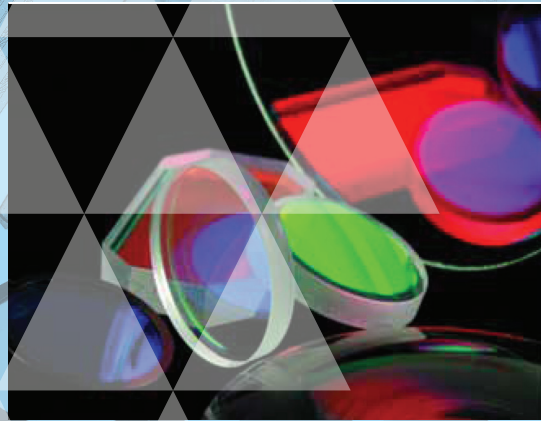




**MATERION**



Custom Rugate  
Notch Filters

**BARR PRECISION OPTICS  
& THIN FILM COATINGS**

## Custom Rugate Notch Filters

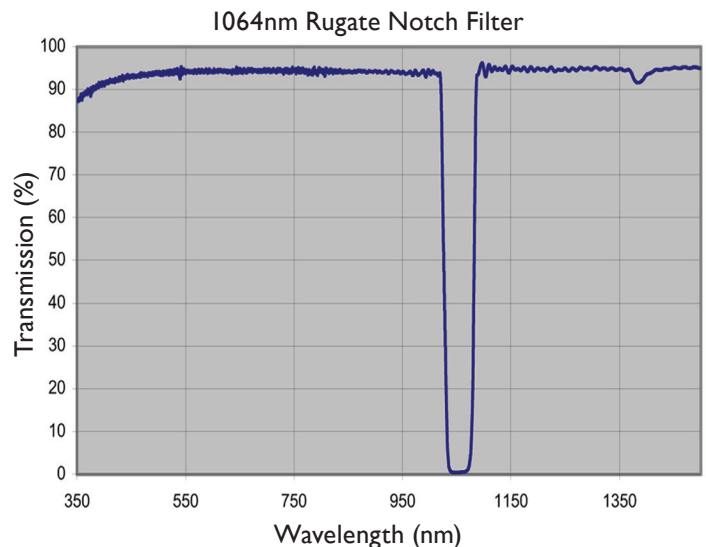
Custom-designed Rugate notch filters are available from Materion for use in a wide variety of spectroscopically-based and laser-based applications. In contrast to conventional notch filters made with dielectric-stack technology, Materion's Rugate notch filters offer effective optical reflection within the notch, while retaining high transmission over a broad spectral range. Rugate notch filters can be designed as single-line or multi-line notch filters. They can be designed for use at any incident angle and show extremely robust environmental durability characteristics.

A Rugate filter has a continuous variation in refractive index following a prescribed profile. Adjusting the index profile places notches of independent optical density and bandwidth anywhere within the transmission region of the materials used in the fabrication of the filter.

Materion's capability to produce Rugate notch filters with a continuous variation in refractive index avoids material constraints imposed by use of more traditional thin film designs and may provide solutions to some of your more challenging optical requirements.

### Representative Applications for Rugate Notch Filters:

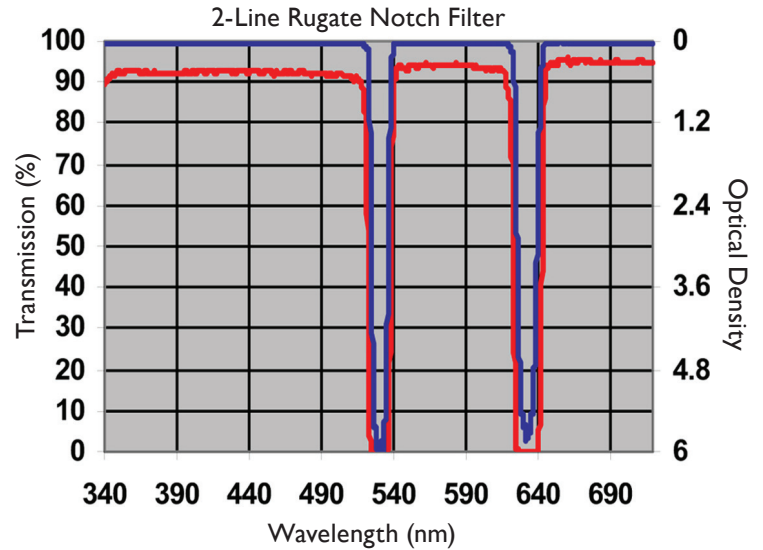
- Fluorescence-based instruments for effective rejection or reflection of single- or multiple laser lines
- Eye-safe applications in Ophthalmic-related instrumentation, for providing effective laser attenuation at pre-selected laser lines while ensuring high, largely color-neutral transmission in the visible spectrum
- Raman Spectroscopy applications; for effective Rayleigh line rejection
- Image-quality Astronomy-related applications requiring high transmission over a broad spectral range, with simultaneous rejection of a narrow wavelength band or bands.



**Materion Barr Precision Optics & Thin Film Coatings** is a leading manufacturer and supplier of precision optical filters, hybrid circuits, flexible thin films and custom thin film coating services. We offer coating solutions for manufacturers in the defense, commercial, space, science, astronomy and thermal imaging markets.

#### Rugate Notch Filter Features:

- Available as single-line or multi-line notch
- Wavelength position of notch or notches can be preset to user-specified values
- Can be designed for both normal incidence and non-normal incidence applications
- Either high reflectance ( $> 99.9\%$ ) within the notch or deep blocking, up to OD 6 achievable
- Suitable for use over wide operating temperature range ( $-200^{\circ}\text{C}$  to  $+200^{\circ}\text{C}$ )
- Can be constructed with minimal wavefront distortion to be suitable for imaging applications
- Can be fabricated in a wide variety of shapes and sizes
- Offer extremely robust environmental durability characteristics
- Custom Rugate Notch Filters can presently be fabricated within the spectral region from the UV to the near-IR



**Materion** is a global advanced materials company, dedicated to providing solutions that enable our customers' technologies and drive their growth. Our products include precious and non-precious specialty metals, precision optical filters, inorganic chemicals and powders, specialty coatings, specialty-engineered beryllium alloys, beryllium and beryllium composites, and engineered clad and plated metal systems. The Materion business is structured to enhance our ability to provide customers with innovative, best total-cost solutions.

**FOR PRECISION OPTICAL COATING PRODUCTS**  
2 Lyberty Way  
Westford, MA 01886  
Phone: +1 978.692.7513  
[www.materion.com/barroptics](http://www.materion.com/barroptics)

**FOR CUSTOM THIN FILM COATING PRODUCTS**  
153 Industrial Way  
Buellton, CA 93427  
Phone: +1 805.688.4949  
[www.materion.com/barroptics](http://www.materion.com/barroptics)

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[www.materion.com](http://www.materion.com)