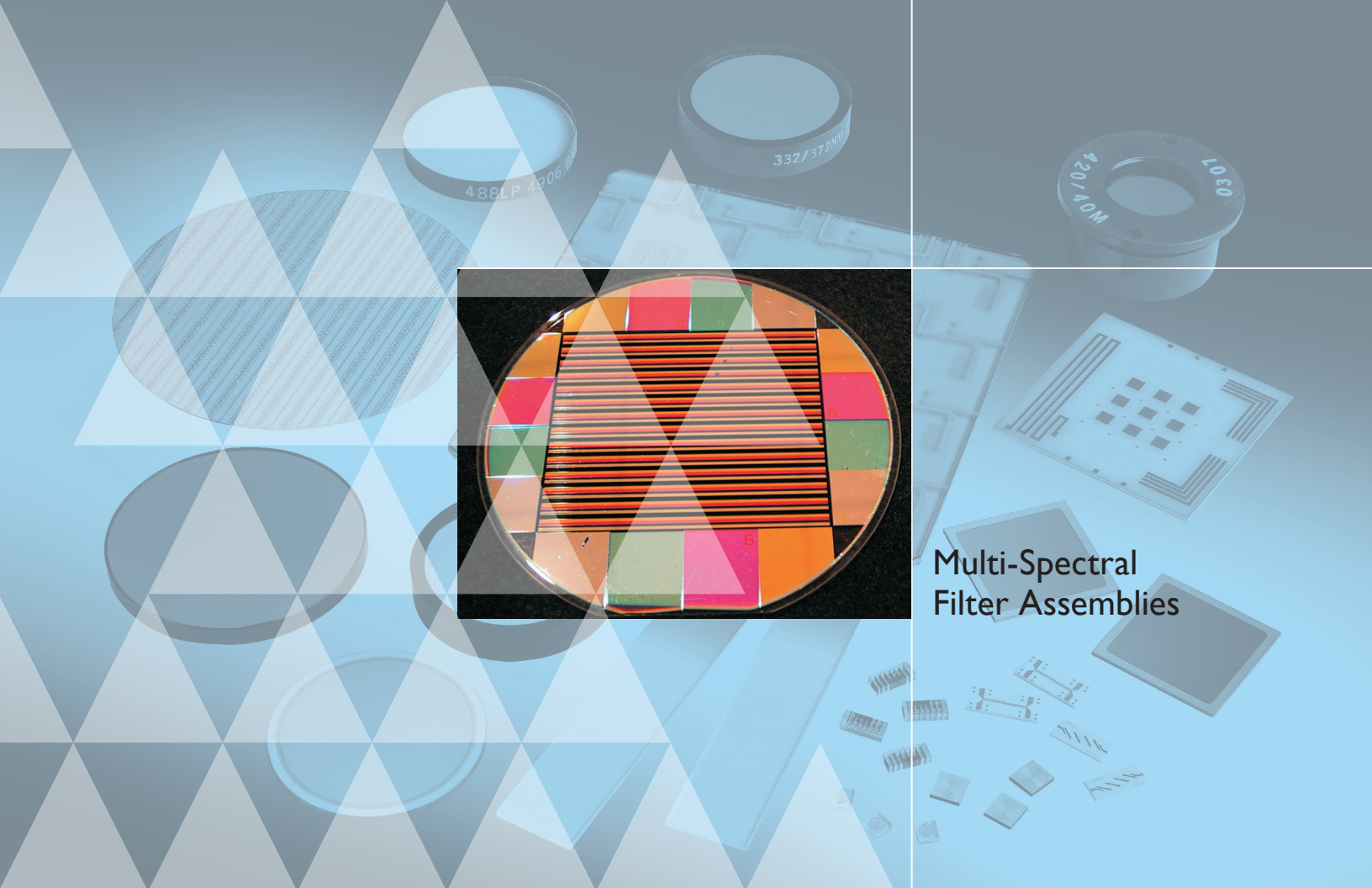




MATERION



**Multi-Spectral
Filter Assemblies**

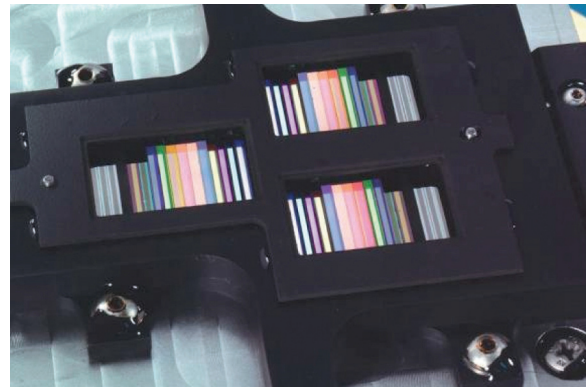
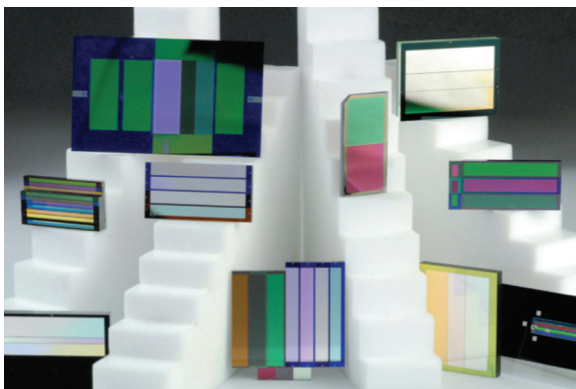
**BARR PRECISION OPTICS
& THIN FILM COATINGS**

Multi-Spectral Filter Assemblies

These filter assemblies have been developed by Materion to address a requirement of new multi-spectral sensor systems. The filter wheel has been replaced with multi-band filter arrays mounted directly above the focal plane. Applications range from commercial colorimetry (i.e. paint matching) to Earth imaging (i.e. Landsat).

Features:

- Many bands in one device (arrays with as many as 15 spectral bands have been delivered)
- Wide spectral coverage (assemblies for UV thru LWIR have been delivered)
- Very fine pitch is routine (bands less than 0.080 mm center-to-center)
- Superior spectral performance (as expected in conventional loose filters)
- Cryogenic or room temperature operation
- Space qualified, flight proven



This technique permits the precise positioning and sizing of multiple filter features on a single substrate. Materion has produced patterned filters for a number of flight instrument programs. High aspect ratio filter strips consistent with current line array detector architectures are possible.

Features:

- Very fine, precise filter features as small as a few tens of microns, located within a few microns of the desired position.
- Wavelengths from UV to LWIR have been produced, but single substrate, multi waveband devices are not practical.
- Several filters on a single substrate are possible
- Any feature shape is possible
- Cryogenic or room temperature operation
- Space qualified

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.

Typical Characteristics:

Dimensional	Assemblies	Patterned
Center-to-center element dimension (Typical)	1.000 mm or less	1.000 mm or less
Tolerance	+/- 0.010 mm	+/- 0.010 mm
Cumulative over 6 bands	+/- 0.010 mm	+/- 0.005 mm
Clear Aperture size	+/- 0.005 mm	+/- 0.005 mm
Tolerance	+/- 0.010 mm	+/- 0.005 mm
Dead zone width (as small as)	< 0.075 mm	< 0.050 mm
Adhesive	Opaque epoxy	NA
Mask all dimensions	+/- 0.005 mm	+/- 0.005 mm
Front-to-back alignment, if two masks	+/- 0.020 mm	+/- 0.010 mm
Position wrt fiducial or edge	+/- 0.010 mm	+/- 0.010 mm
Bond line width	0.015 +/- 0.005 mm	NA
Edge chips (fused silica / Si)		
Average	0.020 mm / 0.005 mm	0.020 mm / 0.005 mm
Max	0.035 mm / 0.010 mm	0.035 mm / 0.010 mm
Transmitted WF error over any element (band)	Lambda/8 RMS	Lambda/8 RMS
Wedge, individual element	30 arc sec	30 arc sec
Element-to-element thickness matching	+/- 0.020 mm	NA
Coplanarity, specified surface	+/- 0.010 mm	0
Cutting tolerances (strip widths), if called out	+/- 0.006 mm	NA



Materion 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. Materion business is structure to enhance our ability to provide customers with innovative, best total-cost solutions.

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