

CUSTOM, PRECISION OPTICAL INTERFERENCE FILTERS FOR COMMERCIAL INFRARED APPLICATIONS

Overview:

Barr is a recognized industry leader with over 25 years experience in the design and manufacture of custom IR interference filters.

- Barr's unique organizational structure places the customer in direct contact with a Barr filter design engineering team during the entire process of specifying, designing, and manufacturing the optical filter –thus providing the best optical filter solution for the infrared application and the best price/performance trade-off.
- Barr can provide both small, prototype quantity as well as large OEM volume.



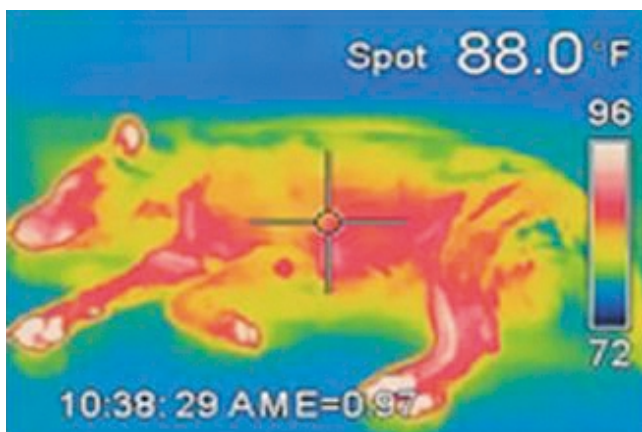
Barr's advanced technology in the manufacture of infrared optical filters offers noteworthy advantages:

- Capability from near-IR through 30 microns
- Variety of filter types including narrow bandpass, wide bandpass, multiple bandpass, edge filters, beamsplitters, notch
- High transmission
- Wide blocking range
- Effective blocking for detector responsivity range
- Tight tolerancing available on spectral properties
- Image quality offered where requested
- Minimal temperature shift
- Wide operating temperature range
- Use at cryogenic temperatures
- Conformance to standard MIL standards for environmental exposure and durability
- Solderable-metalized coatings
- Wide range of sizes and shapes

Typical Applications for Infrared Optical Filters :

Barr custom-designed infrared filters are used in a wide variety of photonic-related applications. Representative Commercial IR applications include:

- Safety applications – monitoring and detection of toxic and explosive gases
- Gas analysis including in automotive applications
- Detection of refrigerant gases
- Moisture analysis
- Optical detection of fire, flame, and explosion
- Motion and body heat detection
- Medical applications – anesthesiology
- Remote sensing
- Pyrometry
- Radiometry
- Thermal imaging



Available Filter Types:

Barr offers infrared optical filters of the following filters types:

- Bandpass filters and multiple bandpass filters
- Beamsplitters - dichroic, 50/50, other splitting ratios
- Edge filters - Longpass and Shortpass filters
- Notch filters
- AR Coatings
- Metalized/Solderable Coatings

Wavelength Range:

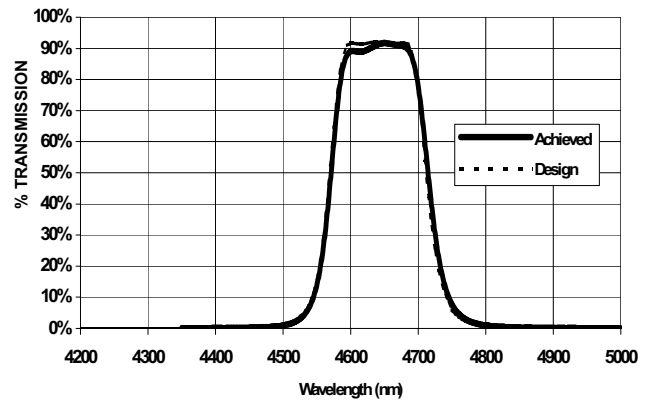
Barr offers custom-designed infrared filters over the entire infrared spectrum through 30 microns.

Key Spectral Properties of Barr Infrared Filters:

Bandpass filters

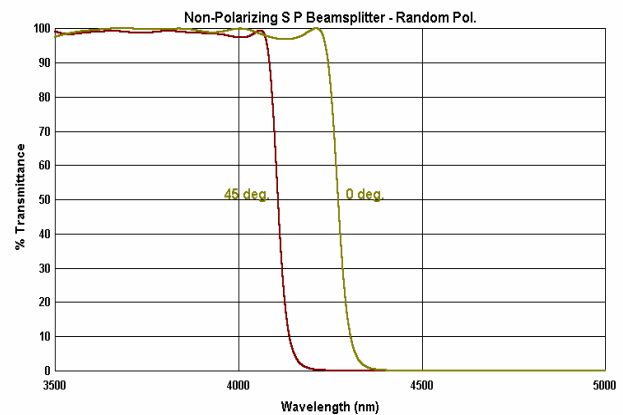
- High transmission
- Steep slopes
- Low ripple
- Designed for use at normal or non-normal incident angle
- Precision tolerance available on center wavelength, bandwidth
- Effective out-of-band rejection

4.64 Micron Bandpass Filter



Beamsplitters

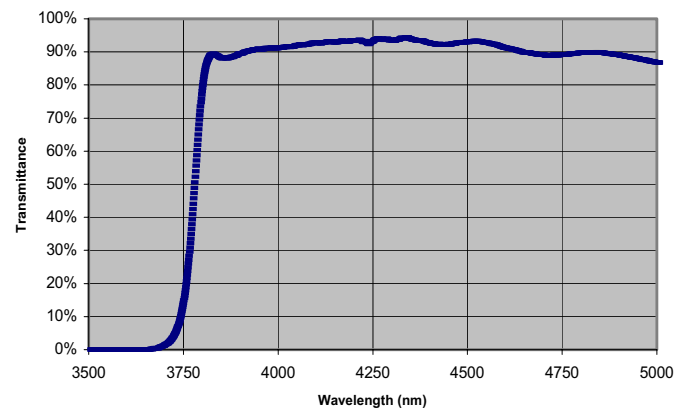
- Designed for 50/50 ratio or other splitting ratios
- High T% and high R%
- Polarization control
- Can be designed for use at 45 degree or other incident angle



Edge filters - Longpass and Shortpass Filters

- High T% in transmission band
- Steep slopes as required
- Wide transmission range
- Effective blocking in rejection band

Midwave IR Longpass



Key Physical and Environmental Durability Properties of Barr Infrared Filters:

Filter Shapes and Sizes

Filters can be supplied in the following forms:

- Wafer
- Squares, rectangles, or other shapes
- Miniature sizes
- To customer-specified thickness.
- As uncut wafer form or diced

Barr typically manufactures custom IR filters by coating a substrate selected from a variety of Barr-supplied substrate types. Barr can also accommodate coating of customer-supplied materials.



Environmental Exposure and Durability Characteristics:

- Environmental testing can be provided for humidity exposure, temperature soak and cycling, salt fog
- Routinely achieve conformance to MIL-STD-810c, MIL-STD-C-675
- Minimal temperature shift
- Can be designed to function over wide temperature range including cryogenic temperatures

Spectral Testing

- Transmission and reflection measurements
- Blocking measurements
- Angle measurements including polarization
- Cryogenic including to 4 deg K

Wavefront Control

- Control of transmitted or reflected wavefront

Surface Quality

- Scratch/Dig 60/40 or better routinely supplied
- Conformance to visual inspection standards for

MIL-O-13830

MIL-F-48616

Lot Traceability

- Barr maintains production lot traceability

BARR

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