NEW

Dual Wavelength Retarders

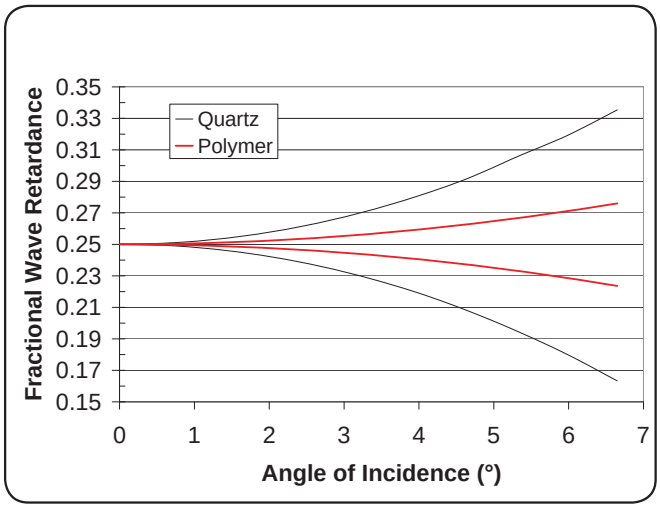

Fig. 2-12 Dual Wavelength Field of View

Dual wavelength retarders can provide the same retardance at two wavelengths that are separated in wavelength by more than the span covered by an achromatic retarder. They can also provide different specified retardances at two different wavelengths. Traditionally these retarders have been made using crystal quartz and are multiorder retarders at both wavelengths. Our dual wavelength retarders use polymers instead. They are usually much lower order and consequently have a slower change in retardance with angle of incidence as shown in the figure. On average the order is about 20% of that for a comparable quartz dual wavelength retarder. Call for a quote on a custom coating on these normally uncoated retarders. The retardance tolerance is ±0.01waves at both wavelengths. Many custom combinations not listed in the catalog are available. Please call for a quote on your custom requirement. Standard unmounted sizes are 0.50 inches and 1.00 inches.

SPECIFICATIONS	
Retarder Material	Birefringent Polymer
Substrate Material	BK 7 Grade A, fine annealed
Retardance Accuracy	≤ λ/100 at both wavelengths
Transmitted Wavefront Distortion (at 632.8 nm)	≤ λ/4
Reflectance (per surface on uncoated retarders only)	~ 4% at normal incidence
Diameter tolerance	+0/-0.010 in.
Beam Deviation	≤ 1 arc min
Thickness	
Half inch diameter One inch diameter	0.14 in. 0.27 in.
Temperature Range	design dependant

Custom anti-reflection coatings to provide less than 0.5% reflection at both wavelengths are available. Please call your Meadowlark Optics sales engineer for a quote.

Key Benefits

- **Low order**
- **Wide angular field**
- **Broad wavelength coverage**

QUESTION

"I have a need for a quarter (or half) wave retarder at two different wavelengths. Which do I order, the Precision Achromatic Retarder or the Dual Wavelength Retarder?"

ANSWER

Dual wavelength retarders are primarily for use at two different wavelengths separated by 20% apart. If the wavelengths are both covered by one of our standard achromatic retarder wavelength ranges (please see the Specifications Box for Precision Achromatic Retarders on page 37), we recommend purchasing a Precision Achromatic Retarder. We can also do custom achromatic retarder wavelength ranges. Please contact your Meadowlark Optics sales engineer for assistance and a custom quote.

If the wavelength difference between the two is greater than 30 to 35 % of the lower wavelength, then we recommend a Dual Wavelength Retarder. Please contact your Meadowlark Optics sales engineer for assistance so that we can design for you the required Dual Wavelength Retarder or if you need any help at all.

QUESTION

"I need a Dual Wavelength Retarder with two non-standard retardances at two non-standard wavelengths. Can you help me?"

ANSWER:

While not all retardance and wavelength combinations are available, we can manufacture tens of thousands of different combinations for our Dual Wavelength Retarders. Please contact your Meadowlark Optics sales engineer for assistance and a custom quote.

光技術をサポートする
株式会社オプトサイエンス
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Dual Wavelength Retarders

ORDERING INFORMATION				
Available Combinations				
First Retardance	*Second Retardance*	*Diameter (in.)*	*First Wavelength*	*Second Wavelength*
Quarter wave Half wave Full wave	Quarter wave Half wave Full wave	0.50 1.00	488 nm 514.5 nm 632.8 nm 780 nm 976 nm 1064.1 nm	488 nm 514.5 nm 632.8 nm 780 nm 976 nm 1064.1 nm

HOW TO ORDER DUAL WAVELENGTH RETARDERS

To order dual wavelength retarders, five pieces of information are required (with their symbols in brackets):

1. The First (or lower) wavelength [λ_1] in nanometers
2. The Second (or higher) wavelength [λ_2] in nanometers
3. The retardance at the first wavelength [R_1], where:
   a. Q = Quarter Wave Retardance
   b. H = Half Wave Retardance
   c. F = Full Wave Retardance
4. The retardance at the second wavelength [R_2]
   a. Q = Quarter Wave Retardance
   b. H = Half Wave Retardance
   c. F = Full Wave Retardance
5. The outside diameter, 0.50 in. or 1.00 in. [*D*] where
   a. 050 = 0.50 in.
   b. 100 = 1.00 in.

The part number is then created by these five pieces of data and the letter "D" to start it off.

D R_1 R_2 – *D* – λ_1/λ_2

And we have 10,000 combinations!

Example 1:

A dual wavelength retarder is requested with a full wave of retardance at 488 nm and a half wave of retardance at 976 nm. The outside diameter is 0.50 in. The part number is then:

DFH – 050 – 0488/0976

Example 2:

A dual wavelength retarder is requested with a quarter wave of retardance at 514.5 nm and a quarter wave of retardance at 1064.1 nm. The outside diameter is 1.00 inches. The part number is then:

DQQ – 100 – 0514/1064

Please note that the decimal is not included in the part number.