

# Birefringent Contrast Enhancer

Perfecting the image with BCE

Viavi Solutions continues its tradition of providing innovative optical components to the display industry with the introduction of its Birefringent Contrast Enhancer (BCE). Viavi's BCE has been optimized for maximum performance when used in LCOS engine architectures based on wire grid polarizers (WGP). Using proprietary birefringent film technology, the BCE enables 5 to 10x contrast improvement with unprecedented uniformity.

Viavi's unique ability to tailor both the a-plate retardance (in plane) and the c-plate retardance (out of plane) allows the freedom to optimize the system performance as never before. This independent control allows simultaneous compensation for unwanted polarization effects introduced by the pre-tilt of the liquid crystal microdisplay and the cone angle of the light.

Using a combination of proprietary thin film coatings and Hybrid Liquid Crystal material, Viavi is able to provide compensating retarders which exhibit outstanding reliability and durability. Viavi's BCE exhibits particular advantage at shorter wavelengths toward the blue and at high light fluxes and elevated temperatures (up to 120°C) where competing products typically struggle or fail.

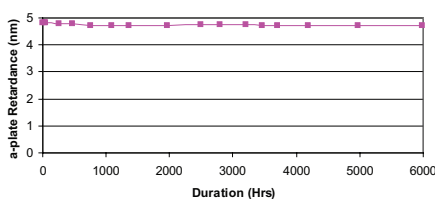
### Key Features

- Extraordinary contrast improvement
- Independent control of a-plate and c-plate retardance
- Exceptional uniformity
- Excellent reliability and stability
- High transmission
- Superior angular response
- Customizable to fit your requirements

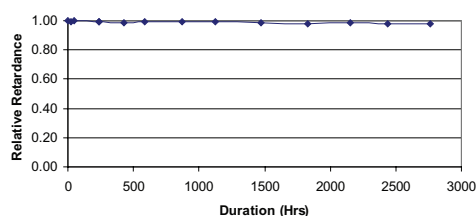
### Applications

- Projection systems – LCOS microdisplay
- Rear projection TV , video walls, cockpit projection displays
- Front projection - business/data projection, home theater
- Automotive and avionic Head Up Displays (HUD)
- Head Mounted Displays (HMD)

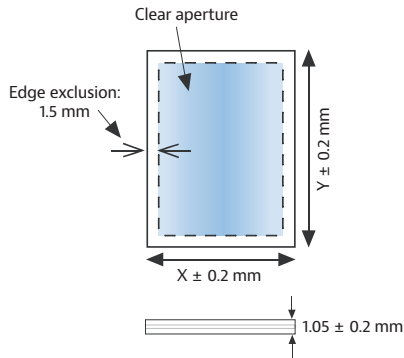
BCE Stability at Elevated Temps (120°C)



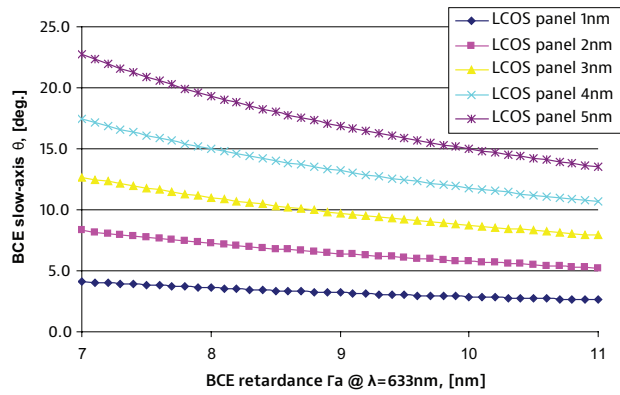
BCE Stability during Accelerated Lifetime Tests (Test Conditions: 10MLux, 75°C)



## BCE Critical Dimensions



## Approximate BCE Slow-axis vs. Retardance



## Specification

### Representative Specifications for Custom Fluorescence Filter Sets

| Parameter                | Symbol                 | Nominal Value | Notes  |
|--------------------------|------------------------|---------------|--|
| a-plate retardance       | $\Gamma_a$             | 9 nm          | Customizable from 1 nm to 20 nm              |
| Slow axis orientation    | $\theta_{\text{slow}}$ | —             | Customized for particular microdisplay       |
| c-plate retardance       | $\Gamma_c$             | -240 nm       | Customizable from -150 to -450 nm            |
| A/R coating reflectivity | R                      | <0.25%        | Optimized for each color band                |
| Substrate                | —                      | Fused silica  | Eagle 2000 and other custom options possible |
| BCE thickness            | —                      | 1.05 mm       | Customizable depending on substrate choice   |

## Ordering Information

For more information on this or other products and their availability, please contact your local Viavi account manager or Viavi directly at 1-800-254-3684 or via e-mail at [ospcustomerservice@viavisolutions.com](mailto:ospcustomerservice@viavisolutions.com).



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