

## Reflexite<sup>®</sup> Collimating Film

### RCF90CS Computer Monitor and Notebook Display Solution

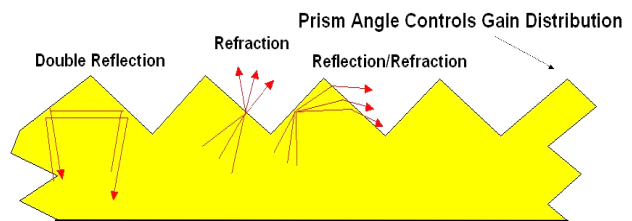


RCF is an optical film that is used to condition the light output of a transmissive LCD. RCF collimates the light that comes out of the backlight through the LCD and toward the viewer. Backlights can be comprised of edge-lit light guides, or backlit light guides. These backlights use reflectors and diffusers to direct the light towards the LCD. RCF recycles the light that enters the film at oblique angles by means of total internal reflection and reflection/refraction. The light that leaves the film is well collimated.

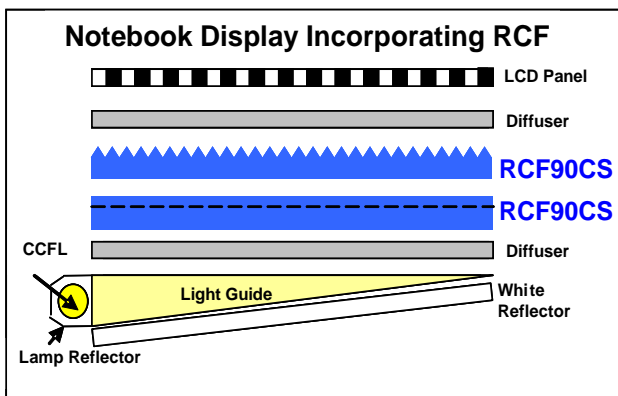
The prism peaks of RCF feature a patent pending, sub-micron modulation. This engineered pattern reduces wetout when RCF contacts other films.

Using RCF allows the display maker to maintain a level of brightness without needing to add more lamps. This helps reduce the weight of the display as well as increase battery life.

#### RCF Product Construction



**RCF does not create more light, it effectively manages the available light.**



Shown is an example of how RCF is incorporated into an LCD notebook application. One piece of the RCF90CS is placed directly on top of the light guide diffuser. A second piece of the RCF90CS is then placed on top of the first piece of RCF90CS with its prism structure running orthogonal to that first piece of the RCF90CS. At times, the orthogonal RCF is cut with a slight bias to eliminate moiré. Often a second diffuser, or other optical film, is placed on top of the RCF.

RCF material is provided with protective masking on both sides. Reflexite<sup>®</sup> RCF90CS is printed on the backside masking film of each part to denote prism direction. This material can be die cut to your specific requirements, including all mounting features, such as holes, slots and tabs.

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## RCF Nominal Product Properties

|                        |                           |
|------------------------|---------------------------|
| <b>Part Number</b>     | <b>RCF90CS</b>            |
| <b>Prism Structure</b> |                           |
| ➤ Angle                | 90°                       |
| ➤ Pitch                | 48 μm                     |
| <b>Material</b>        |                           |
| ➤ Prism Side           | Proprietary Acrylic Resin |
| ➤ Substrate            | Polyester                 |
| <b>Thickness</b>       | 160 +/-3μm                |

## Performance and Brightness Improvements

LCD notebook applications typically utilize two crossed sheets of RCF. Our tested performance and brightness improvements<sup>1,2</sup> are shown in the following table.

|                                    |             |
|------------------------------------|-------------|
| <b>Peak Brightness Improvement</b> | <b>160%</b> |
| ➤ Crossed Sheets <sup>3</sup>      |             |
| <b>½ Brightness Angle</b>          |             |
| ➤ Vertical                         | ±22°        |
| ➤ Horizontal                       | ±23°        |

## Environmental Aging - 1000 hours

| Environmental Data, Crossed Sheets | Chromaticity |         | Average Delta Gain <sup>1,2</sup> |
|------------------------------------|--------------|---------|-----------------------------------|
|                                    | Δx           | Δy      | ΔL                                |
| -30°C                              | <-0.001      | <-0.001 | -0.4%                             |
| 85°C/95% RH                        | +0.005       | +0.007  | -6.5%                             |
| 85°C                               | +0.003       | +0.004  | -4.8%                             |
| -30°/85°C (100 cycles)             | +0.003       | +0.004  | -4.8%                             |

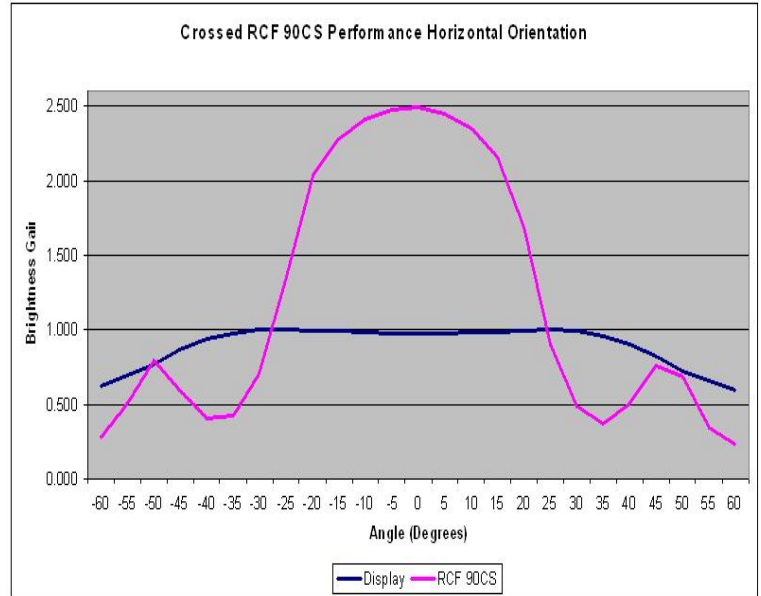
1) The data was obtained from 13 point uniformity testing of a backlight with diffuser materials and RCF.

2) RCF luminance depends on the backlight material composition, design, and lighting efficiency.

### Reflexite Display Optics

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## Photometric Performance



For ordering information or additional technical information please email [display.optics@reflexite.com](mailto:display.optics@reflexite.com), visit our web site [www.display-optics.com](http://www.display-optics.com) or call our sales department at 585-647-1140, ext. 1106.

The seller makes no warranties, expressed or implied, including warranties of fitness of the films for any particular purpose. The seller shall not be liable for loss or damage arising directly from the use of these films. The seller will refund or replace any materials found to be defective.

Reflexite Corporation's business is the *Management of Light*<sup>®</sup>. We combine optical engineering, microreplication and polymer processing technologies to provide differentiated products to customers worldwide. At Reflexite Display Optics, a division of the Reflexite Corporation, we develop, market and sell microstructured optical films for the Display Industry.

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