Effective: October 18, 2007

Vikuiti™ Display Enhancement

Vikuiti™ Dual Brightness Enhancement Film-Embossed (DBEF-E)

Vikuiti™ Dual Brightness Enhancement Film II (DBEF-II)

Vikuiti™ Dual Brightness Enhancement Film-D400 (DBEF-D400)

Vikuiti™ Dual Brightness Enhancement Film-D550 (DBEF-D550)

Description

The Vikuiti™ Dual Brightness Enhancement Film (DBEF) family of Vikuiti Brightness Enhancement Films are all reflective polarizers, in which light of one polarization is reflected and light of the other polarization is transmitted. Most of them use 3M's multi-layer technology for this polarized light management in which illumination from the backlight is recycled for greater efficiency and performance. All the films substantially boost display brightness and can be used in conjunction with other Vikuiti products such as Vikuiti Brightness Enhancement Film (BEF) and Enhanced Specular Reflector (ESR).

Vikuiti™ DBEF-E Film This version of Vikuiti DBEF film has an embossed front surface. This embossed surface keeps the film from wetting out or optically coupling to the rear polarizer of liquid crystal panels.

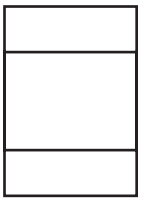
Vikuiti™ DBEF II Film This version of Vikuiti DBEF film has a matte surface on both sides. The matte surface keeps the film from wetting out or optically coupling to the rear polarizer of liquid crystal panels.

Vikuiti™ DBEF-D400 Film This version of Vikuiti DBEF film has outer skins of diffuse polycarbonate. These skins improve the film's thermal and mechanical properties.

Vikuiti™ DBEF-D550 Film This version of Vikuiti DBEF-D550 film has outer skins of diffuse polycarbonate somewhat thicker than the D400 product. These skins improve the film's thermal and mechanical properties.

The figures below illustrate the basic construction of the films. All dimensions are approximate, and the figures are not drawn to scale.

Vikuiti™ DBEF-E Film

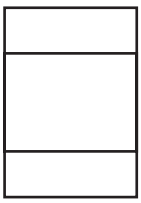


Removable Liner..... 60 microns
← Embossed Surface
Vikuiti™ DBEF Film ..... 132 microns
Removable Liner..... 60 microns

Delivered Thickness..... 252 microns

Applied Thickness ..... 132 microns
(excluding liners)

Vikuiti™ DBEF II Film

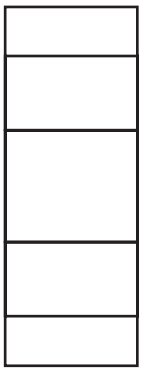


Removable Liner ..... 45 microns
Vikuiti™ DBEF Film..... 150 microns
Removable Liner ..... 45 microns

Delivered Thickness ..... 240 microns

Applied Thickness ..... 150 microns
(excluding liners)

Vikuiti™ DBEF-D400 Film

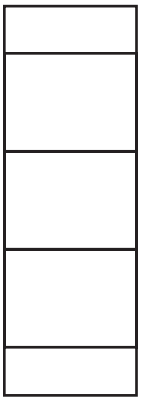


Removable Liner ..... 60 microns
Diffuser Layer..... 130 microns
Vikuiti™ DBEF Film..... 135 microns
Diffuser Layer..... 130 microns
Removable Liner ..... 60 microns

Delivered Thickness ..... 515 microns

Applied Thickness ..... 395 microns
(excluding liners)

Vikuiti™ DBEF-D550 Film



Removable Liner ..... 60 microns
Diffuser Layer..... 210 microns
Vikuiti™ DBEF Film..... 130 microns
Diffuser Layer..... 210 microns
Removable Liner ..... 60 microns

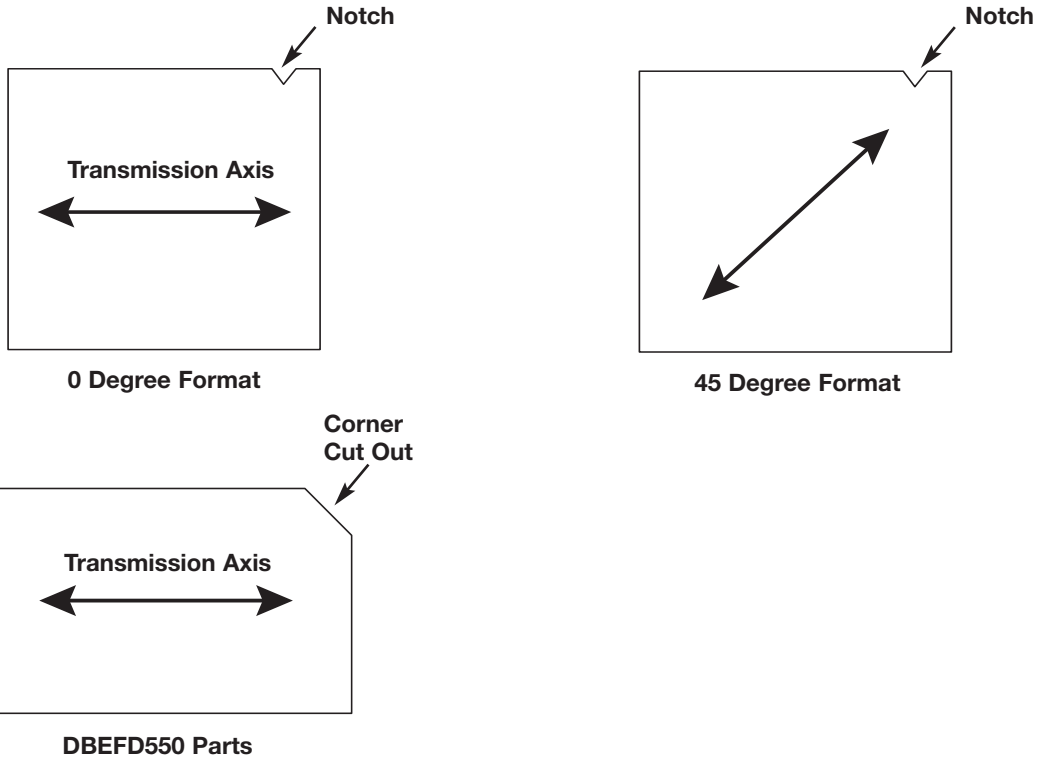
Delivered Thickness ..... 670 microns

Applied Thickness ..... 550 microns
(excluding liners)

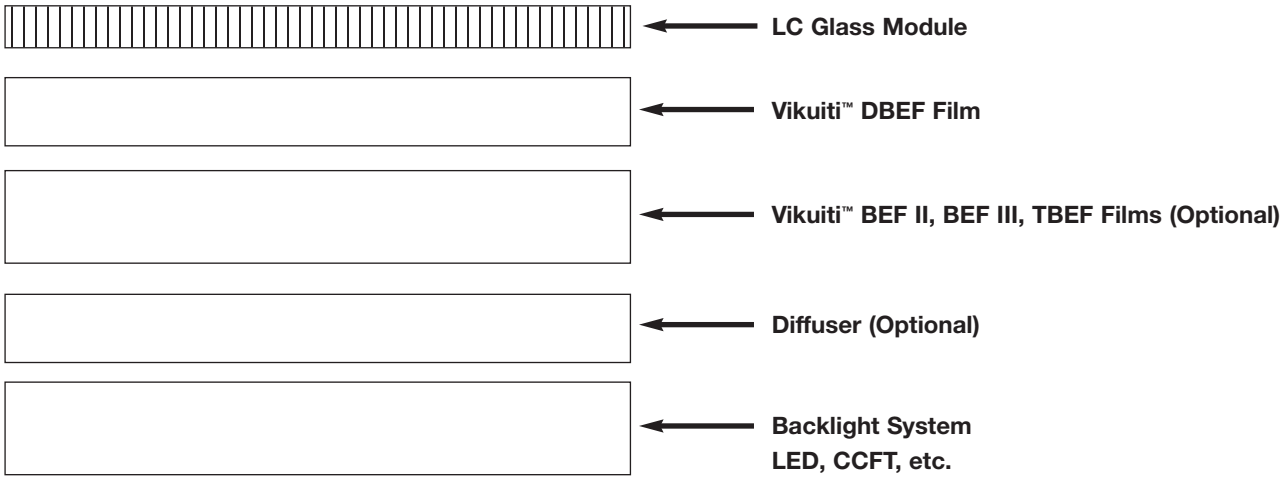
Formats

Reference the current price sheet or call customer service (1-800-553-9215) for information on part sizes.

To help you orient the film, the sheets will have a small notch cut into one of the corners (Except for DBEF-D550; it has the corner removed). Hold the sheets with the cut notch in the upper right-hand corner to identify the transmission angle, as illustrated below. When held like this, you will be looking at the upper surface, which must face the LC glass module, and face away from the backlight.



Typical Application



The film must be mounted with its transmission axis parallel to the transmission axis of the rear polarizer.

General Converting, Assembly, and Handling Recommendations

During converting operations, both the front and rear protective liners should remain on the film.

Die cutting is the recommended form of converting and will result in the cleanest edges, although shear cutting and laser cutting may also be acceptable. Whatever method utilized, you should insure that the part has clean, crisp edges without any raggedness or other damage.

The part should be precisely cut to provide a close fit in the cavity, yet not so close to experience binding or warping problems from thermal expansion.

The part should be left free-floating in the cavity to avoid warping or buckling. If necessary, the part may be tacked down along one edge or two adjacent corners with a double-coated tape, such as Scotch® Tape # 415. Designs incorporating mounting tabs, or holes mated to mounting pins, are also popular.

Remove both protective liners, if the film has them, by tacking near an edge or corner with a piece of aggressive tape and pull gently.

If two pieces of 3M Vikuiti Prismatic Film (BEF II, BEF III, TBEF) are to be incorporated, they should be converted with the grooves of the prism structure of the first sheet at a 90-degree angle to the grooves direction of the second sheet.

Be aware that handling any polymer film can generate electrostatic charges, which can attract dust and debris.

Remove any loose debris from the film by using compressed air.

Avoid fingerprints and debris by wearing clean latex gloves and holding the product at the edges.

Keep the area very clean to lessen the likelihood of debris contamination. Maintaining class 1000 clean room conditions is recommended.

Using anti-static measures, such as ionized air blowers, whenever possible is recommended.

As always, protect the film, especially the edges, from any undue shock or stress.

Storage

Material should be stored in its original packaging, laying in a horizontal orientation, away from direct sunlight. Heavy objects should not be piled on top of it to avoid damaging the product. Ambient temperature and humidity should be controlled to 10 – 30ºC at 50 +/- 20% R.H.

Important Notice to Purchaser

The following is made in lieu of all warranties, express or implied, including any implied warranties of merchantability or fitness for a particular purpose.

3M warrants that, at the time of shipment, product will meet 3M's published specification or that specification agreed in writing between 3M and purchaser, for twelve months after the date of receipt at purchaser's location provided that the product is stored flat in accordance with the requirements in the section titled Storage above and in the original package. Should product not meet specifications at time of shipment and for twelve months thereafter, 3M will replace or refund the purchase price of such quantity of the product found not to meet specifications. Given the variety of factors that can affect the use and performance of a 3M Optical Systems Product (the "Product"), some of which are uniquely within the user's knowledge and control, it is essential that the user evaluate the 3M Optical Systems Product to determine whether it is suitable for user's particular purpose and suitable for user's method of application. 3M Optical Systems' statements, engineering/technical information, and recommendations are provided for user's convenience, but their accuracy or completeness is not warranted.

3M shall not be liable under any legal theory, including in contract or in tort, for any injury, loss, or damage, whether direct, indirect, incidental, special or consequential, arising out of the use of or the inability to use the product.

The warranties and remedies set forth herein are purchaser's sole and exclusive warranties and remedies.

3M

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