

3M™ Brightness Enhancement Film (BEF 2 T 155n and BEF 4 GT 90/24) **3M™ Brightness Enhancement Film (BEF3 T 155n and BEF3 M2 155n)**

Description

The prismatic structure of 3M Brightness Enhancement Film (BEF) allows you to manage the angle of light exiting from your display. 3M BEF Films work by utilizing the principles of refraction and total internal reflection. The process of refracting usable light towards the viewer and reflecting most of the remaining light back into the display is called recycling. This form of light management can be done with a single sheet of 3M BEF Film or two sheets crossed at 90 degrees to each other. 3M BEF Films can also be used with 3M Dual Brightness Enhancement Films (DBEF) and 3M Enhanced Specular Reflector (ESR) to further increase the efficiency of your display.

3M™ BEF 2 T 155n and BEF4 GT 90/24 Films - 3M Auto Grade BEF Films. 3M BEF2 T 155n film is a non-halogenated acrylic resin prismatic structure coated on a polyester substrate. 3M BEF2 T 155n film is the highest performance member of this non-halogenated resin family, and incorporates structural features which help avoid wet-out, which is an optical coupling that can mar the appearance of an LCD display.

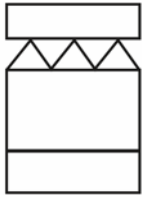
3M BEF4 GT 90/24 Film is an even brighter and thinner higher gain resin version with 90/24 prisms for additional moiré avoidance, thinness, and brightness gain.

3M™ BEF3 T 155n and BEF 3 M2 155n Films - This is a newer 3M Auto Grade BEF Film, featuring similar structural elements to 3M BEF2 Film, but utilizing a randomized prism pattern for increased wet-out and reflective moiré avoidance.

It has just slightly lower gain than 3M BEF2 Film. It is also available in an M2 (Matte) version. The Matte version softens the brightness fall-off at the edges and may allow the elimination of a separate diffuser from the display.

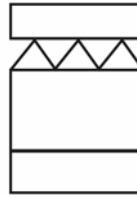
The figures below illustrate the film's basic constructions. All dimensions are approximate, and the figures are not drawn to scale

**3M™ Brightness Enhancement Film BEF2
T 155n**



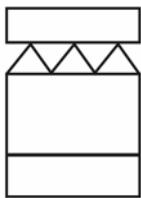
Removable Liner 40 microns
 Prismatic Structure . . .
 Polyester Substrate
 Removable Liner 40 microns
 Delivered Thickness . . . 230 microns
 Applied Thickness 150 microns
 (excluding liners)

**3M™ Brightness Enhancement Film BEF4
GT 90/24**



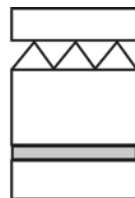
Removable Liner 40 microns
 Prismatic Structure . . .
 Polyester Substrate
 Removable Liner 40 microns
 Delivered Thickness . . . 170 microns
 Applied Thickness 90 microns
 (excluding liners)

**3M™ Brightness Enhancement Film BEF 3
T 155n**



Removable Liner 40 microns
 Prismatic Structure . . .
 Polyester Substrate
 Removable Liner 40 microns
 Delivered Thickness . . . 235 microns
 Applied Thickness 155 microns
 (excluding liners)

**3M™ Brightness Enhancement Film BEF 3
M2 155n**



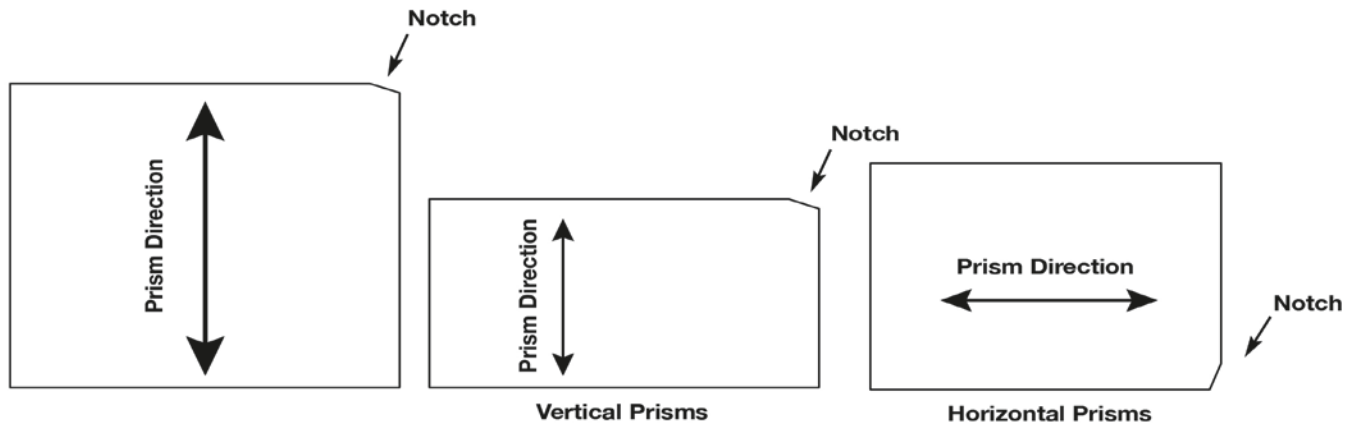
Removable Liner 40 microns
 Prismatic Structure . . .
 Polyester Substrate and Matte . . .
 Removable Liner 40 microns
 Delivered Thickness . . . 234 microns
 Applied Thickness 154 microns
 (excluding liners)

Formats

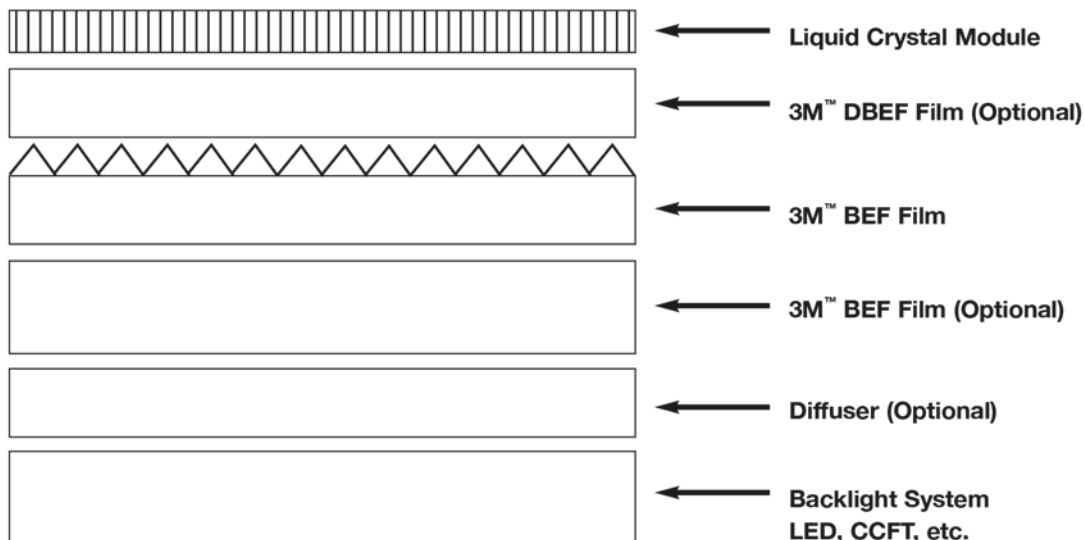
Reference the current price sheet or call customer service (1-800-553-9215) for information on part sizes.

To help you orient the film, the sheets will have a 70 degree chamfer notch in upper right hand corner. That will be prism side facing you with clear liner side and 70 degree chamfer in upper right hand corner. Hold the sheets with the 70 degree chamfer in the upper right-hand corner to identify the prism direction in vertical direction as shown below.

Orient the chamfer to the lower right hand corner to have the prisms run horizontally as illustrated below. When held like this, you will be looking at the upper surface with the prismatic structure, which must face the LC glass module, and away from the backlight. The smooth (non-prism side of film) will have the colored premask. The smooth side of the film will face down toward light guide or light source. Remove premask(s) after cutting to size and installing.



Typical Application



General Converting, Assembly, and Handling Recommendations

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

The 3M™ Brightness Enhancement Film (BEF) family increases on-axis brightness by compressing light into a narrower viewing angle. It is mounted with the prisms running either vertically or horizontally. The compressed viewing angle will be primarily on the plane that is 90 degrees away from the direction of the prisms. In other words, if the prisms are running vertically, the viewing angle will be compressed in the horizontal plane, and with a slight compression in the vertical plane. Likewise, if the prisms are running horizontally, then the viewing angle will be compressed in the vertical plane, with a slight compression in the horizontal plane.

As is shown in the “Typical Application” above, 3M BEF Film must always be mounted with the prisms facing the LC module, and away from the backlight. If a second sheet of 3M BEF Film is to be used to gain even greater brightness, its prism direction must be 90 degrees away from the prism direction of the first sheet, and the viewing angle will then be compressed in both the horizontal and vertical planes.

If a sheet of the 3M DBEF Film family is to be included for maximum brightness, it should always be mounted on top of the 3M BEF Film, closest to the LC module.

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 Display Materials & 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 Display Materials & Systems Product to determine whether it is suitable for user’s particular purpose and suitable for user’s method of application. 3M Display Materials & Systems’ statements, engineering/technical information, and recommendations are provided for user’s convenience, but their accuracy or completeness is not warranted.

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