### Reflective Polarizer Films

<table>
<thead>
<tr>
<th>Product Description</th>
<th>Structure</th>
<th>Thickness [µm]</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>3M APF-QWP (on-glass reflective polarizer)</td>
<td>28 ± 3</td>
<td></td>
<td>• Reflective polarizer for lamination to the rear absorbing polarizer with a quarter wave plate applied to improve brightness and wide viewing angles.</td>
</tr>
<tr>
<td>3M APF-V3-26 (on-glass reflective polarizer)</td>
<td>26 ± 3</td>
<td></td>
<td>• Reflective polarizer for lamination to the rear absorbing polarizer with a surface designed for maximum brightness and wide viewing angles.</td>
</tr>
<tr>
<td>3M APF-T35 (on-glass reflective polarizer)</td>
<td>35 ± 3</td>
<td></td>
<td>• Reflective polarizer for lamination to the rear absorbing polarizer with a surface designed for maximum brightness and wide viewing angles.</td>
</tr>
</tbody>
</table>

### Brightness Enhancement Films

<table>
<thead>
<tr>
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<th>Structure</th>
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<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>3M DBEF6-160 (backlight matte coated reflective polarizer)</td>
<td>160 ± 15</td>
<td></td>
<td>• Thinner high performance RP available through backlight channel.</td>
</tr>
<tr>
<td>3M DBEF6-160</td>
<td>160 ± 15</td>
<td></td>
<td>• Matte coating provides defect hiding performance for low haze systems.</td>
</tr>
<tr>
<td>3M DBEF6-160</td>
<td>160 ± 15</td>
<td></td>
<td>• Anti-static properties for improved handling and debris control.</td>
</tr>
</tbody>
</table>

### Diffuser Films

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</tr>
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<tbody>
<tr>
<td>3M DBEF6-160</td>
<td>160 ± 15</td>
<td></td>
<td>• Designed to enable removal of a top diffuser for thinner design.</td>
</tr>
</tbody>
</table>

### Reflector Films

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<th>Structure</th>
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<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>3M EDR-95v2 (diffuse mid-sized MOF)</td>
<td>95 ± 8</td>
<td>* Improves the light recycling efficiency of a backlight across the visible spectrum</td>
<td></td>
</tr>
<tr>
<td>3M ESR-80v2 (specular mid-sized MOF)</td>
<td>100 ± 5</td>
<td>* Improves the light recycling efficiency of a backlight across the visible spectrum</td>
<td></td>
</tr>
<tr>
<td>3M ESR-100</td>
<td>100 ± 4</td>
<td>* Surface designed for reduced wet out and stake holding.</td>
<td></td>
</tr>
</tbody>
</table>

### Product Description

- **Reflective Polarizer Films**: Increase in-module brightness 35% to 40% & widen viewing angles.

### 3M Display Enhancement Films

**Enhance visual quality.**
Wide viewing angle and increased brightness.
Improved sunlight readability.
Enables use of higher resolution and higher color gamut systems.

**Weight Reduction**
Thinner brightness enhancement films.
Smaller battery than a similarly performing unit without 3M films.

**Power Efficiency**
Adds a ‘virtual battery’ by reducing power consumption.
Maximizes power efficiency. Provides a ‘virtual battery’ by reducing power consumption.

**Environmentally Stable**

Enhanced Visual Quality
Weight Reduction
Thickness Reduction
Power Efficiency
Environmentally Stable

# Anatomy of a notebook film stack.

## Notebook Optical Films

### 3M Solutions

- **Reflective Polarizer – On Glass / Backlight**
  - 3M APF-QWP: 27 µm, on glass
  - 3M APFO-155: 27 µm, on-glass
  - 3M APF-155: 33 µm, on glass
  - 3M APF-145: 33 µm, on glass
  - 3M APF-140: 33 µm, on glass

- **Top 3M BEF**
  - 3M BEF-ODT-155: 155 µm, durable high gain
  - 3M BEF-ODT-145: 145 µm, durable high gain
  - 3M BEF-ODT-90: 30 µm, durable high gain, matte

- **Bottom 3M BEF**
  - 3M BEF-ODT-155: 155 µm, durable high gain
  - 3M BEF-ODT-145: 145 µm, durable high gain
  - 3M BEF-ODT-90: 30 µm, durable high gain

- **Bottom Diffuser**
  - 3M UDF2-50: 50 µm, ultra-diffusing for even light distribution

- **Back Reflector**
  - 3M ESR-100: 100 µm, diffuse
  - 3M ESR-80v2: 80 µm, specular
  - 3M ESR-10: 100 µm, specular

### Reflective Polarizer – On Glass / Backlight

#### Conventional

- **Backlight Solution**
  - 3M DBEF6-160
  - 3M BEF2-DT-155
  - 3M UDF2-50
  - 3M ESR-100
  - +43% Brighter
  - -30% Backlight Power
  - +53% Brighter
  - -35% Backlight Power

#### On-Glass Solution

- 3M APF-QWP
- 3M BEF2-DT-155
- 3M UDF2-50
- 3M ESR-100
- +53% Brighter
- +53% Brighter

### Reduce thickness.

#### Typical

- 3M DBEF6-160
- 3M BEF2-DT-155
- 3M UDF2-50
- 3M ESR-100
- 278 um thickness reduction
- Equivalent brightness

#### Thin & Bright

- 3M APF-QWP
- 3M BEF4-DTMH-LS-95
- 3M BEF4-DT-90
- 3M UDF2-50
- 3M ESR-80v2

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3M™ Advanced Polarizer Film Quarter Wave Plate (APF-QWP)
3M™ Dual Brightness Enhancement Film (DBEF)
3M™ Brightness Enhancement Film (BEF)
3M™ Ultra Diffuse Film (UDF)
3M™ Enhanced Diffuser Reflector (EDR)
3M™ Enhanced Specular Reflector (ESR)