Product Data Sheet

Date: May 2010
Supercedes: New

Product Description
3M Decorative Radiant Film 76929SR is a transparent decorative pressure sensitive adhesive film incorporating 3M Radiant Light Film which gives varying colour effects. The surface has a protective layer offering scratch resistance.

Physical Properties
Not for specification purposes
(Calipers are nominal values)

<table>
<thead>
<tr>
<th></th>
<th>nominal values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protective Layer</td>
<td>36 micron Hardcoated Polyester</td>
</tr>
<tr>
<td>Facestock</td>
<td>33 micron 3M Radiant Light Film CM592</td>
</tr>
<tr>
<td>Adhesive</td>
<td>Acrylic Adhesive, 31 gsm</td>
</tr>
<tr>
<td>Liner</td>
<td>100 micron Polyester</td>
</tr>
<tr>
<td>Total Product Calliper</td>
<td>125 micron (without release liner)</td>
</tr>
</tbody>
</table>

Key Features
• Protective layer comprising a 36 micron polyester film, with a scratch resistant transparent ‘hardcoat’. This offers scratch and scuff resistance to normal handling and product application including roll-on applicators or soft ‘squeegee’ smoothing on top of hardcoated surface. The hardcoat will also offer a high degree of scratch resistance in normal use as an overlaminating film.
• Laminated under the protective layer is a unique 3M Radiant Film technology. This produces varying colour effects under different light and viewing angles. Different colour effects can be achieved by applying the product to different coloured backgrounds.
• Acrylic adhesive offering high clarity and good adhesion to many surfaces. It is particularly suited for wetting out on the surface of printed labelstock as an overlaminate, or on smooth panels such as metal, glass and plastics. The adhesive has good resistance to UV exposure, temperature and moisture.
• The 100 micron polyester liner contributes towards improved die cutting and the thickness enables easy liner removal particularly for large sheets. This liner also enables the finished product to be handled as sheets, for example as decals.
• Note: This product is not suitable for printing due to the protective hardcoat.

Application Ideas
• Decorative film applied to the interior of exterior facing glass windows.
• Transparent overlaminating applications of plastic, glass or metal panels such as point of sales check-outs, internal shop or office partitions.
• Unique overlaminate for decorative labels for consumer and industrial products, such as cosmetics, sporting equipment and domestic electronic appliances.
• Unique appearance for promotional labels or signs.
• Promotional decals.

Performance Characteristics
Not for specification purposes

Standard Test Conditions are 23°C and 50% Relative Humidity

180° Peel Adhesion tested using FINAT Test Procedure FTM 1 (300mm/min)
90° Peel Adhesion tested using FINAT Test Procedure FTM 2 (300mm/min)

<table>
<thead>
<tr>
<th>Adhesion</th>
<th>20 Minutes at Standard Conditions</th>
<th>72 Hours at Standard Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>180° Peel N/25mm</td>
<td>90° Peel N/25mm</td>
</tr>
<tr>
<td>Stainless Steel</td>
<td>17.4</td>
<td>11.1</td>
</tr>
<tr>
<td>ABS</td>
<td>15.9</td>
<td>10.9</td>
</tr>
<tr>
<td>Polycarbonate</td>
<td>21.8</td>
<td>11.4</td>
</tr>
<tr>
<td>Polypropylene</td>
<td>11.2</td>
<td>5.0</td>
</tr>
<tr>
<td>Glass</td>
<td>11.3</td>
<td>-</td>
</tr>
</tbody>
</table>

Glass | 16.2 | Not tested | 10.4 | Not tested |

<table>
<thead>
<tr>
<th>Adhesion</th>
<th>72 Hours at 40°C and 95% RH</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>180° Peel N/25mm</td>
</tr>
<tr>
<td>Stainless Steel</td>
<td>22.6</td>
</tr>
<tr>
<td>ABS</td>
<td>7.7</td>
</tr>
<tr>
<td>Polycarbonate</td>
<td>5.1</td>
</tr>
<tr>
<td>Polypropylene</td>
<td>5.4</td>
</tr>
<tr>
<td>Glass</td>
<td>16.4</td>
</tr>
</tbody>
</table>

Liner Release tested using FINAT Test Procedures
FTM 3 (180° removal of liner from face material at 300mm/min)
FTM 4 (180° removal of liner from face material at 10m/min)

<table>
<thead>
<tr>
<th>Liner Release</th>
<th>Rate of Removal</th>
<th>Release Force</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>FTM 3</td>
<td>300 mm per min</td>
<td>10</td>
<td>cN/50mm</td>
</tr>
<tr>
<td>FTM 4</td>
<td>10 m per min</td>
<td>12.2</td>
<td>cN/25mm</td>
</tr>
</tbody>
</table>

ABS | 19.6 | 19.6 | 15.3 | 15.4 |
Polycarbonate | 21.3 | 24.6 | 15.1 | 15.1 |
Polypropylene | 5.5  | 5.4  | 8.5  | 8.5  |

Window Applications (Installation Instructions)

When the product is applied to the interior of windows, there are special considerations required with regard to preparation, installation technique and future care, such as cleaning. Recommendations are outlined below.

Surface Preparation for Window Application

Important Note:
- 3M Decorative Radiant Film 76929SR should only be installed by professional window film installers. Please contact 3M if you require further information or guidance.

Prior to Application:
- Examine glass surfaces to receive film and verify that they are free from defects and imperfections which will affect the final appearance. Note such deficiencies in writing to owner/architect prior to commencing film application.
Unsuitable Surfaces

- Some glass surfaces will not be suitable to achieve a smooth adhesive wet out. Examples would include ‘frosted glass’ or any other non-smooth surface. It should be the responsibility of the window fitter to determine if the glass surface is not suitable
- Coloured or printed glass surfaces may not be suitable from the standpoint of adhesive wet-out and visual effect.

Preparation:

- Use protective cloths to cover interior finishes near window.
- Turn off or temporarily cover heating and / or air conditioning / ventilation ducts whilst film installation is taking place.
- Clean window and window framing thoroughly with a cleaning solution consisting of 90% water and 10% ammonia. Blade inside surface of window glass with industrial razors to ensure removal of foreign contaminants. Tape and seal cracked or deteriorating window sealant.
- Place towel or other absorbent material on window sill or sash to absorb moisture accumulation generated by film application.
- Thoroughly rinse glass from top to bottom with pressure spray tank.
- Squeegee entire glass surface.
- Dry glass edges and window frames using a lint-free towel.

Installation:

- Cut film edges neatly and square at a uniform distance of 1/8” (3mm) to 1/16” (1.5mm) of window sealant. Use new blade tips after 3 to 4 cuts.
- Spray slip solution, consisting of approximately 25ml of Johnson® Baby Shampoo or dishwashing liquid to 5 liter of water, on window glass and adhesive to facilitate proper positioning of film.
- Apply film to glass and lightly spray film with slip solution.
- Squeegee to remove water.
- Spray slip solution to film and squeegee for a second time.
- Bump film edge with a lint-free towel wrapped around edge of a 5-way tool.
- Wipe frame edge dry.
- Inspect installation to ensure proper application.
- Upon completion of film application, allow 30 days for moisture from film installation to dry thoroughly and allow film to dry flat with no moisture dimples when viewed under normal viewing conditions.

Cleaning

- After application of film, wash film using common window cleaning solutions, including ammonia solutions, 30 days after application. Do not use abrasive type cleaning agents or bristle brushes to avoid scratching film. Use synthetic sponges or soft cloths.
• After installation, remove left over material, debris and any protective covers from the work area. Use necessary means to protect film before, during and after installation, including storage in original packaging.

**Important Considerations When Applying To Plastic Substrates**

3M assumes no liability for bubbling of films due to outgassing. A method of determining whether outgassing may be a problem is as follows.

• Apply a 5 by 5 inch (135mm x 135mm) piece of polyester film, or the product 76929SR to the plastic substrate. Alternatively use Reflective Film 680 which allows very little gas to escape.

• Wait for 24 hours, or if possible, oven bake for 2 hours at 65°C (150°F) or 5 minutes at 176°C (350°F).

• If bubbles appear under the film, the substrate is outgassing. Repeat the test daily until bubbles do not appear. This repeat test can give an indication if the bubbles caused by outgassing are likely to disappear. If outgassing continues after repeated tests, contact the plastic manufacturer for assistance.

• If no bubbles appear, the material is not outgassing.

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**Window Applications**

<table>
<thead>
<tr>
<th>(Compliance)</th>
<th>UV-resistance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not for specification purposes</td>
<td>The film, applied to glass was exposed to the following;</td>
</tr>
<tr>
<td></td>
<td>UVB-313 lamps --- 2000hrs</td>
</tr>
<tr>
<td></td>
<td>UVA-340 lamps --- 3000hrs</td>
</tr>
<tr>
<td></td>
<td>Xenon Arc ---- 1500hrs</td>
</tr>
<tr>
<td></td>
<td>Heat @ 60C ---- 700hrs</td>
</tr>
<tr>
<td></td>
<td>Heat 40C &amp; Humidity 95% ---- 700hrs</td>
</tr>
</tbody>
</table>

**Processing**

**Printing:**
This product is not suitable for printing due to the scratch resistant surface treatment

**CONVERTING**

**Die Cutting:**
Where conversion is made into die cut shapes, rotary die cutting is recommended. Small die cuts should be evaluated carefully. Winding tensions should be kept at a minimum to help prevent the adhesive from oozing.

**Packaging:**
Finished die cuts should be stored in plastic bags.

**Special Considerations**
For maximum bond strength, the surface should be clean and dry. Isopropyl alcohol is a typical cleaning solvent.

**NOTE:**
When using solvents, read and follow the manufacturer's precautions and directions for use.

For best bonding conditions, application surface should be at room temperature or higher. Low temperature surfaces, below 5°C can cause the adhesive to become so firm that it will not develop maximum contact with the substrate. Higher initial bonds can be achieved through increased rubdown pressure.
Window Applications (Warranty)

Scope
This warranty applies to the combination of 3M Decorative Radiant Film 76929SR attached to the interior of windows.

The warranty does not cover the applying and fitting (installation) of the product to window. This is the responsibility of the window fitter. 3M recommend this is carried out by a professional window fitter.

Warranty and Limited Remedy
The 3M product will be free from defects in material and manufacture for a period of three (3) years from the date of installation. 3M MAKES NO WARRANTIES OR CONDITIONS, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY IMPLIED WARRANTY ARISING OUT OF A COURSE OF DEALING, CUSTOM, OR USAGE OF TRADE. User is responsible for determining whether the 3M product is fit for a particular purpose and suitable for user’s method of application. If the 3M product is proven to be defective within the warranty period stated above, your exclusive remedy and 3M’s sole obligation shall be, at 3M’s option, to replace or repair the 3M product or refund the purchase price of the 3M product. In no event shall 3M be liable for the labour or installation costs of replacing the 3M product.

Limitation of Remedies And Liability
Except where prohibited by law, 3M will not be liable for any loss or damage arising from the 3M product, whether direct, indirect, special, incidental, or consequential, regardless of the legal theory asserted, including contract, warranty, negligence, or strict liability.

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