# 3M™ Panagraphics™ III
## Wide Width Flexible Substrate

*For the most current 3M Technical Information available to successfully use this product, please view this Bulletin electronically and click on the blue underlined links to view the relevant documents.*

## For Cut Film Decoration and Inkjet Direct Printing

### 1. Product Description

**A. Product Features**

- 22 mil white-pigmented vinyl substrate with a polyester scrim
- Smooth front surface with a semi-gloss finish
- Decorate first or second surface with inkjet direct printing or first surface with cut film
- Wide, long widths available for seamless backlit signs
- Medium to long-term durability
- Cost effective

**B. Recommended Types of Graphics and End Uses**

When constructed and used as described in this Bulletin, these types of graphics and end uses may be warranted by the 3M™ MCS™ Warranty. Please read the entire Bulletin for details.

- Indoor and outdoor, day and night graphics for backlit signs mounted in a properly designed cabinet or frame

**C. Performance Overview**

3M tests the performance of both individual products and finished graphic constructions. This table shows the best performance expected from this product both without a Warranty Period and with a Warranty Period.

For detailed graphic construction and application options along with specific Warranty Periods, please see the Warranty Information, Section 5 on page 4.

| Expected Performance Life. This is the estimated period of time the product should perform satisfactorily. | |
| --- | --- |
| Undecorated (no direct print or applied film) substrate with no graphic protection and properly mounted in a flat, vertical orientation for outdoor signage. | 6 years Unwarranted Period |
| 3M™ MCS™ Warranty. This is the maximum period of time 3M will warrant the finished graphic performance. | |
| Substrate that is decorated with cut, colored film and with the best overlaminate for outdoor signage. | 9 years Warranty Period |

**D. Limitations of End Uses**

This 3M product is not designed or recommended for the following uses. Please contact us to discuss other options.

- Removing existing graphics and reusing the substrate
- Graphic decoration with more than three layers of film (base films plus overlaminate); see 3M Instruction Bulletin 4.26 for specifics
- Using 3M™ Scotchcal™ Overlaminate 3640GPS or 3642GPS for graphic protection

**Important Note!**

Be sure the printer you are using is capable of supporting the weight and roll diameter of Panagraphics™ III Flexible Substrate to avoid damaging the printer.

## 2. Compatible Products

The following products are approved by 3M for use with the base film covered in this Bulletin, and used for the creation of a graphic that may be eligible for the 3M™ MCS™ Warranty. Click on the blue underlined text to view the Product Bulletin for that product.

See the Warranty Information section to determine which compatible products are approved for your graphic construction.

### A. Cut Film Decoration for 3M™ MCS™ Warranty

Best Choice for Fluorescent Lighting Applications
- 3M™ Scotchcal™ Translucent Film Series 3630
- 3M™ Scotchcal™ Translucent Film IJ3630-20

Best Choice for LED Applications
- 3M™ Envision™ Translucent Film Series 3730
- 3M™ Envision™ Translucent Film IJ3730-50
- 3M™ Envision™ Translucent Film IJ3730-60

Light Management Films
- 3M™ Blockout Films 3635-20b and 3635-22b
- 3M™ Day/night Films 3635-91 and 3635-0171
- 3M™ Dual-Color Film Series 3635-200
- 3M™ Diffuser Film 3635-30 and 3635-70
- 3M™ Envision™ Diffuser Films 3735-50 and 3735-60

Low Cost Translucent Signage
- 3M™ Scotchcal™ Opaque Film Series 50 *for unwarranted graphics only*

### B. Inkjet Inks and Printers for 3M™ MCS™ Warranty

**Important Note!**

Before using flexible substrate Panagraphics lll, determine whether your printer is capable of supporting the weight and roll diameter. To estimate the weight, multiply the roll width by by 54.5 oz (62 kg).

Example:  59 (width in inches) x 54.5 = 3125 oz. (or 201 lb.)

1.5 (width in meters) x 134 = 60 kg

| | Ink Series | Printer |
|---|---|---|
| **(1) Solvent Inkjet Inks** | • 3M™ Piezo Inkjet Ink Series 1500v2 | • EFI™ VUTEk® 150, 2360/3360, 3300/5300 & 3000/5000 Printers |
| | • 3M™ Piezo Inkjet Ink Series 4400 | • HP XLJet 1200 and 1500 Printers |
| | • SIIT GX 3M Ink Series | • Seiko I Infotech ColorPainter™ H Series H-74s, H2-74s, H-104s, H2-104s, & W-64s Printers. |
| | • SIIT SX 3M Ink Series | • Seiko I Infotech ColorPainter™ M-64s Printer |
| **(2) Latex Inkjet Inks** | • HP 3M LX600 Specialty Latex Ink | • HP Designjet L65500; Scitex LX600, LX800, LX820 & LX850; Latex 820 & 850 Printers |
| | • HP LX610 Latex Ink *a 3M™ MCS™ Warranty Component* | • HP Designjet L65500, Scitex LX600, LX800, LX820 & LX850; Latex 820 & 850 Printers |
| | • HP 792 Latex Ink *a 3M™ MCS™ Warranty Component* | • HP Designjet L28500 (Latex 280) Printers. |
| | • HP 881 Latex Ink *a 3M™ MCS™ Warranty Component* | • HP Latex 3000 Printer |
| | • HP 831 Latex Ink *a 3M™ MCS™ Warranty Component* | • HP Latex 360 Printer |

<table>
<tr><td>(3) UV Inkjet Inks and Printers</td><td>

- 3M™ Piezo Inkjet Ink Series 2200UV
- 3M™ Piezo Inkjet Ink Series 2800UV

- EFI™ VUTEk® GS 3M™ Premium UV Inks

- EFI™ VUTEk® GSr 3M™ Premium UV Inks
- EFI™ R3225 3M™ UV Ink
- EFI™ VUTEk® GSLXr 3M Superflex UV Ink *(excludes White Ink)*

</td><td>

- EFI™ VUTEk® PV200 Printer
- EFI™ VUTEk® QS2000, QS3200, QS3220 and QS220 Printers
- EFI™ VUTEk® GS2000, GS3200 & GS3250 Printers, including GS Pro Series
- EFI™ VUTEk® GS5000r & GS3250r Printers
- EFI™ R3225 UV Roll-to-Roll Printer
- EFI™ VUTEk® GS3250LXr and GS5500LXr Pro Printers

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**C. OEM Inkjet Inks and Printers for 3M Performance Guarantee**

- For the most current information, please click here:  3M Performance Guarantee Matrix.

**D. Graphic Protection for Direct Print Graphics**

- 3M™ Scotchcal™ Luster Overlaminate 3619
- 3M™ Scotchcal™ Matte Overlaminate 3620
- 3M™ Scotchcal™ Gloss Overlaminate 3658G
- 3M™ Scotchcal™ Matte Overlaminate 3660M
- 3M™ Scotchcal™ Gloss Overlaminate 8518
- 3M™ Scotchcal™ Luster Overlaminate 8519
- 3M™ Scotchcal™ Matte Overlaminate 8520
- 3M™ Scotchcal™ Ultra Matte Overlaminate 8915

Note: If you are decorating the substrate with film series 3630 or 3730 or films IJ3630 or IJ3730, refer to your decorating film's Product Bulletin for the recommended graphic protection options.

## 3. Characteristics

These are typical values for unprocessed product. Contact your 3M representative for a custom specification.
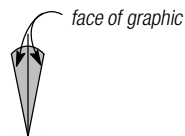
| Characteristic | Typical Value |
|---|---|
| Substrate | White-pigmented vinyl with a polyester scrim |
| Thickness | 0.022 +/- .001 mil (0.054 cm +/- .001) |
| Roll sizes | A variety of widths ranging from 59 inches to 165 inches x 164 feet (150 cm to 419 cm x 50 m) |
| Light transmission | 21% +/- 2% |
| Service temperature range | -22°F to +158°F (-5.5° to +70°C ) |
| Installation temperature | 45°F (7°C ) or higher; *s*ee Attachment and Tensioning Guidelines on page 9 for more details |
| Tensile strength | *Typical* |
| Tear weft | 85 pounds/inch (15 kg/cm) |
| Tear warp | 75 pounds/inch (13.4 kg/cm) |
| Tensile weft | 150 pounds/inch (26.6 kg/cm) |
| Tensile warp | 150 pounds/inch (26.6 kg/cm) |
| Weight | 19 ounces/ sq. yd. (650 gr/m$^2$ ) |
| Maximum finished size | 625 square feet (58 square meters) per warranted face |
| Gloss | 30 (typical) with 60° gloss meter |
| Whiteness index (reflective) | W.I. (E313) = 100 minimum |
| Flammability | ASTM E84 test report or go to the On-line Product Catalog at 3Mgraphics.com All other test reports: call 1-800-328-3908 |

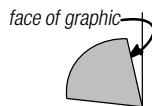| Characteristic | Typical Value |
|---|---|
| Safety and regulatory recognition | UL Recognized Component. Tested and found to comply with UL 879 - Standard for Electric Sign Components. US & Canada file E65361. |

## 4. Definitions

### A. Exposure Types

**U.S. Vertical Exposure**


*face of graphic*

The face of the graphic is +/- 10° from vertical.

**U.S. Non-vertical Exposure**


*face of graphic*

The face of the graphic is greater than 10° from vertical and greater than 5° from horizontal. This includes non-vertical surfaces of vehicle wraps or fleet graphics.

**U.S. Horizontal Exposure**


*face of graphic*

The face of the graphic is +/- 5° from horizontal.

**U.S. Desert Southwest Exposure**

Any outdoor graphic exposed to solar energy more than half of the daylight hours in Arizona, New Mexico and the desert areas of California, Nevada, Utah and Texas is subject to reduced warranties. A detailed map is available at 3Mgraphics.com under Warranties.

### B. Graphic Construction

The products used to make a graphic, which may include film and/or flexible substrate, graphic protection, ink, printer and application tape.

### C. Graphic Protection

Overlaminate films or clear coats used to protect the graphic and/or change gloss.

### D. Graphic Types

*As identified in Product Warranty Matrices*

**Indoor Signs**   Stationary graphics applied indoors and *not* exposed to the elements.

**Outdoor Signs**   Stationary graphics applied outdoors and exposed to the elements.

## 5. Warranty Information

### A. Warranty Coverage Overview

The Warranty coverage for each graphic is based on the user(s) both reading and following all applicable and current 3M Product and Instruction Bulletins. 3M will honor eligible graphics for the Warranty Period stated in the base film's Product Bulletin that is current when the film was purchased. The Warranty Period may be reduced and stipulations may apply for certain constructions and applications, as covered in this Bulletin.

The following is made in lieu of all other express or implied warranties, including any implied warranty of merchantability or fitness for a particular purpose or implied warranty arising out of a course of dealing, custom or usage of trade.

### B. 3M Basic Warranty

This product is warranted to be free of defects in materials and manufacture at the time of shipment and to meet the specifications stated in this Product Bulletin and as further set forth in the 3M Graphics Warranties Brochure.

### C. Limited Remedy

3M will replace or refund the price of any 3M materials that do not meet this Warranty within the specified time periods. These remedies are exclusive.

**D. Limitation of Liability**

Except where prohibited by law, 3M SHALL NOT UNDER ANY CIRCUMSTANCES BE LIABLE TO PURCHASER OR USER FOR ANY DIRECT (EXCEPT FOR THE LIMITED REMEDY PROVIDED ABOVE), INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, LABOR, NON-3M MATERIAL CHARGES, LOSS OF PROFITS, REVENUE, BUSINESS, OPPORTUNITY, OR GOODWILL) RESULTING FROM OR IN ANY WAY RELATED TO SELLER'S PRODUCTS, SERVICES or THIS BULLETIN. This limitation of liability applies regardless of the legal or equitable theory under which such losses or damages are sought including breach of contract, breach of warranty, negligence, strict liability, or any other legal or equitable theory.

**E. Additional Limitations**

See the 3M Graphics Warranties Brochure at 3Mgraphics.com, which gives the terms, additional limitations of the Warranty, if any, and limitations of liability.

**F. 3M™ MCS™ Warranty**
Subject to Stipulations set forth in Section H, below

Finished graphics constructed with the materials specified and the exposure specified in the Warranty Period, Section F(2), are eligible for the 3M™ MCS™ Warranty. For warranties for other exposures, see Section H(1) on page 7.

*See Section 4 for complete definitions of these graphic types:*
OUT = Outdoor Signs
IN = Indoor Signs

**(1) Certificate of 3M™ MCS™ Warranty Requirement**

Only graphics manufacturers having a current Certificate of 3M™ MCS™ Warranty are eligible to extend this Warranty to their customers.

**(2) Warranty Period**
for Finished Graphics
in a Standard U.S. Vertical Exposure

| Film | Ink Series | Graphic Protection | Outdoor |
|------|-----------|--------------------|---------|
| **Unprinted Cut Film Decoration Applied to Panagraphics III Substrate** | | | |
| 3630 3730 | None | None | 6 |
| | None | 3658G, 3660M | 9 |
| **Screen Printed Cut Film Decoration Applied to Panagraphics III Substrate** | | | |
| 3630 3730 | Refer to 3M Product Bulletin 3630/3730 for ink and graphic protection recommendations. | | 5 |
| **Inkjet Printed Cut Film Decoration Applied to Panagraphics III Substrate** | | | |
| IJ3630-20 IJ3730-50 IJ3730-60 | Refer to 3M Product Bulletin IJ3630/3730. All constructions shown in that Bulletin carry the same warranty when applied to Panagraphics III. | | |

*Warranty Period for Finished Graphics, In Years*

| Direct Printed with Solvent Inks and Printers | EFI™ VUTEk® 150, 2360/ 3360, 3300/5300, 3000/5000 Printers | | HP XLJet Series 1200, 1500 Printers | | Seiko I Infotech ColorPainter™ H-74s, H2-74s, H-104s, H2-104s & W-64s Printers | |
|---|---|---|---|---|---|---|
| | **3M™ Ink Series 1500v2** | | **3M™ Ink Series 4400** | | **GX 3M Ink Series** | |
| **Graphic Protection** | OUT | IN | OUT | IN | OUT | IN |
| 3619, 3620, 3658G, 3660M | 6 | 8 | 6 | 8 | 6 | 8 |
| 8518, 8519, 8520, 8915❖ | 4 | 8 | 4 | 8 | 4 | 8 |
| none | 2 ■ | 2 ■ | 2 ■ | 3 ■ | — | — |

| Direct Printed with Solvent Inks and Printers | Seiko I Infotech ColorPainter™ M-64s Printers | |
|---|---|---|
| | **SX 3M Ink Series** | |
| **Graphic Protection** | OUT | IN |
| 3619, 3620, 3658G, 3660M | 6 | 8 |
| 8518, 8519, 8520, 8915❖ | 4 | 8 |
| none | — | — |

See Key to symbols on page 6.

| Direct Printed with Latex Inks and Printers | HP Designjet L65500; Scitex LX600, LX800, LX820, LX850; Latex 820, 850 Printers | | HP Designjet L65500; Scitex LX600, LX800, LX820, LX850; Latex 820, 850 Printers | | HP Designjet L26100, L26500, L28500; Latex 210, 260, 280 Printers | |
|---|---|---|---|---|---|---|
| | **HP 3M LX600 Specialty Latex Ink** | | **HP LX610 Latex Ink** *a 3M™ MCS™ Warranty Component* | | **HP 792 Latex Ink** *a 3M™ MCS™ Warranty Component* | |
| Graphic Protection | OUT | IN | OUT | IN | OUT | IN |
| 3619, 3620, 3658G, 3660M | 5 | 7 | 5 | 7 | 5 | 7 |
| 8518, 8519, 8520, 8915 | 4 | 6 | 4 | 6 | 4 | 6 |

| Direct Printed with Latex Inks and Printers | HP Latex 3000 | | HP Latex 3000 | |
|---|---|---|---|---|
| | **HP 881 Latex Ink** *a 3M™ MCS™ Warranty Component* | | **HP 881 Latex Ink** *a 3M™ MCS™ Warranty Component* | |
| Graphic Protection | OUT | IN | OUT | IN |
| 3619, 3620, 3658G, 3660M | 4 | 6 | 4 | 6 |
| 8518, 8519, 8520, 8915 | 3 | 5 | 3 | 5 |

| Direct Printed with UV Inks and Printers | EFI™ VUTEk® QS2000, QS3200, QS3220, QS220 Printers | | EFI™ VUTEk® GS5000r and GS3250r Printers | | EFI™ VUTEK® GS2000, GS3200, GS3250 Printers, including GS Pro Series | |
|---|---|---|---|---|---|---|
| | **3M™ Ink Series 2800UV** | | **GSr 3M™ Premium UV Inks** | | **GS 3M™ Premium UV Inks** | |
| Graphic Protection | OUT | IN | OUT | IN | OUT | IN |
| 3619, 3620, 3658G, 3660M | 6 ▸▸ | 8 | 5 ▸▸ | 8 | 5 ● | 8 |
| 8518, 8519, 8520, 8915 | 4 ▸▸ | 8 | 4 ▸▸ | 8 | 4 ● | 8 |
| none | 2 ▸▸ | 3 | 2 ▸▸ | 3 | 2 ● | 3 |

| Direct Printed with UV Inks and Printers | EFI™ VUTEk® GS3250LXr and GS5500LXr Pro Printers | | EFI™ VUTEk® R3225 UV Roll-to-Roll Printer | | EFI™ VUTEk® PV200 Printers | |
|---|---|---|---|---|---|---|
| | **EFI™ VUTEk® GSLXr 3M Superflex UV Ink** *Warranty excludes white ink* | | **EFI™ R3225 3M™ UV Ink** | | **3M™ Ink Series 2200UV** | |
| Graphic Protection | OUT | IN | OUT | IN | OUT | IN |
| 3619, 3620, 3658G, 3660M | 4 | 6 | 5 | 8 | 6 | 8 |
| 8518, 8519, 8520, 8915 | 3 | 5 | 4 | 8 | 4 | 8 |
| none | — | — | 2 | 3 | 2 | 3 |

**Key**

● **White Ink:** This Warranty Period excludes the white ink in the EFI™ VUTEk® GS 3M™ Premium UV Inks.

▸▸ **For Three Layer Prints Where a White Ink is Used:** The maximum total ink laydown should be set to 660%, (280% colors +100% white + 280% colors).

■ **For 1500v2, Direct Inkjet Printing:** Printing in double strike mode is required to ensure adequate backlit color density and image durability.

■ **For 4400, Direct Inkjet Printing:** Printing in SD backlit mode is required to ensure adequate backlit color density and image durability.

❖ **Overlaminate 8915** is not approved for or warranted for use with Seiko I Infotech's GX 3M Ink Series.

**G.  Maximum Warranted Size of Sign Face**

A maximum finished sign face of 625 square feet (58 square meters) per single sign face will be warranted when the seams are fabricated by 3M or a 3M Warranted Seaming Contractor. Contact Technical Service at 1-800-328-3908 for more information.

**H.  General Warranty Stipulations for 3M™ MCS™ Warranty**

These stipulations apply to graphics covered by the 3M™ MCS™ Warranty. Specific provisions of these stipulations are found in the 3M Graphics Warranties brochure at 3Mgraphics.com.

| | | |
|---|---|---|
| **(1)** **Reduced Warranty Period for Other Graphic Exposures** | For the exposure shown below, multiply the Warranty Period (in years) from the applicable warranty in Section F(2), for your graphic construction, by the percentage shown for the intended graphic exposure. This is the reduced warranty. | |

| If the Graphic Exposure is: | Multiply Warranty Period by this Percentage | Calculation Examples |
|---|---|---|
| U.S. Desert Southwest Vertical | 70% (0.7) | 0.7 x 6 years = 4.2 years<br>0.7 x 9 years = 6.3 years |

**(2)** **Abrasion and Loss of Gloss**

Abrasion damage and loss of gloss are not covered by any 3M warranty. This is considered normal wear and tear. However, to help maintain the appearance of your graphic, use the recommended graphic protection whenever:

- it is required for the construction and end use as shown in the Warranty Period tables.
- the graphic is exposed to abrasive conditions, harsh cleaners or chemicals.

**(3)** **Application Outside the U.S.**

Contact the 3M organization for that country.

**(4)** **Graphics Made with Components Not Sold or Recommended by 3M**

The 3M™ MCS™ Warranty does not, under any circumstances, cover graphics made with inks, film, graphic protection or application tapes not sold or recommended by 3M.

The user is solely responsible for the graphic appearance, performance and durability of graphic constructions that include any non-recommended or non-qualified products.

**I.** **3M Basic Warranty for Substrate Decorated with Film Series 50 in U.S. Vertical Exposure**

The 3M materials recommended in the film and graphic protection combinations shown below have been tested and are believed to be good solutions when used as recommended in the 3M Bulletins.

These products are covered by the 3M Basic Product Warranty and are guaranteed to be free of physical and manufacturing defects. Expected Performance Life is a good faith estimate of how long product may perform satisfactorily based on 3M testing. **There is no warranty for printability, visual appearance, fitness for use or durability.** See the 3M Graphics Warranties Brochure for the complete warranty and remedy details.

*Panagraphics III Substrate Decorated with Film Series 50*

| Applied Unprinted Cut Film | | | |
|---|---|---|---|
| | | **Expected Performance Life**, in Years | |
| **Film** | **Graphic Protection** | **Outdoor** | **Indoor** |
| 50 | 8519, 8520, None | 3 | 5 |

**6.** **Factors that Affect Graphic Performance Life**

The actual performance life of a graphic is affected by:

- use of 3M compatible products, properly processed.
- decorating or imaging method.
- proper selection and preparation of the substrate.
- application methods.
- angle and direction of exposure.
- environmental conditions.
- cleaning methods.

**7.** **Graphics Manufacturing**

⚠ CAUTION

Before using any equipment, always follow the manufacturers' instructions for safe operation.

**A. Making Graphics with Film Series 50, 3630, 3730, IJ3630, IJ3730**

- Film series 50, 3630, or 3730 for substrate decoration
  - Image the film according to the methods described in 3M Product Bulletin 50 or 3M Product Bulletin 3630/3730.
  - Use a *wet application* method or dry, hand/roll lamination method.
  - See 3M Instruction Bulletin 5.30 for substrate preparation and wet application techniques.
- Films IJ3630 or IJ3730 for substrate decoration
  - Image the film and apply an approved graphic protection as described in 3M Product Bulletin IJ3630/3730.
  - Use a *dry application* method or a dry, hand/roll lamination method.
  - See 3M Instruction Bulletin 5.30 for substrate preparation and 3M Instruction Bulletin 5.5 for dry application methods.
- Apply no more than three layers (two layers of base film and an overlaminate) to the substrate.
- The minimum recommended decorating temperature is 60°F (15°C). Also see Tensioning and Attachment Guidelines on page 9.

**B. Direct Inkjet Printing**

This substrate can be direct printed using the solvent, latex or UV inkjet ink series recommended in this Bulletin.

For the best results, follow the printing guidelines and procedures in the Product & Instruction Bulletin for the ink series you are using.

**(1) Total Ink Coverage**

Backlit images require greater density. This can be achieved by using the printer's double strike input mode (if available). When using this mode, you have reached the maximum total ink coverage when you can no longer obtain color consistency throughout the graphic and/or the graphic cannot be adequately dried after printing.

**For most graphics:** 300% total ink coverage.

**For three layer printers with white ink:** 660%, (280% colors +100% white + 280% colors maximum).

**For 1500v2, direct inkjet printing:** Printing in double strike mode is required to ensure adequate backlit color density and image durability.

**For 4400, direct inkjet printing:** Printing in SD backlit mode is required to ensure adequate backlit color density and image durability.

**C. Double-sided Inkjet Printing for Backlit Images**

Double-sided Inkjet printing allows for a balanced day/night graphic appearance. A backlit image with proper color density can be achieved by printing a single strike image directly on both the first and second surface of the substrate. The second surface print must be reversed and registered to the first surface print. Consult with your printer manufacturer for process guidance.

**(1) Adequately Dry Graphics**

**Important Note!**

Inadequate drying can result in graphic failure including curling, increased shrinkage and adhesion failure, which are not covered under any 3M Warranty.

Always build enough time into your process to ensure adequate drying of the image before doing further processing. Refer to the ink's Product Bulletin for important details on drying.

When direct printing on Panagraphics™ Ill Flexible Substrate, an inadequately dried image may result in these problems, which are not covered by any 3M Warranty:

- prevent the overlaminate from adhering well.
- distort the image if the printed substrate is rolled immediately.
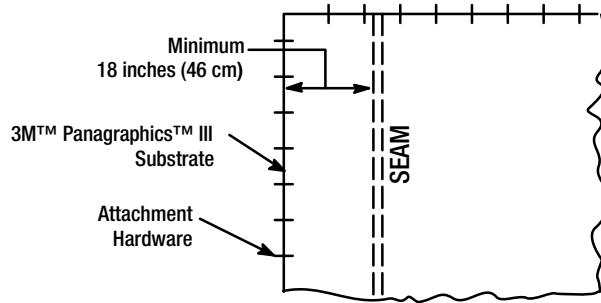- cause transport problems when printing the second side.

**D. Graphic Protection**

To maximize the performance of your sign, 3M recommends using one of the approved graphic protection options specified in this Product Bulletin to provide additional resistance to abrasion or wear due to frequent cleaning. Always use only the graphic protection options recommended in this Bulletin for this substrate. See 3M Product Bulletin GP-1 for more details about these options.

### E. Planning for a Seam

Plan your sign face so that the seam is at least 18 inches (46 cm) away from any attachment hardware that is perpendicular (at right angles) to the seam.



### 8. Application and Installation

In addition to other Bulletins specified in this document, the following Bulletins provide details that you may need to successfully apply a graphic.

- Scoring and cutting. 3M Instruction Bulletin 4.1.
- Hot and cold roll lamination for 3M overlaminates. 3M Instruction Bulletin 4.22.
- Using 3M application tapes; premasking and prespacing for films. 3M Instruction Bulletin 4.3.
- Application, substrate selection, preparation and substrate-specific application techniques. 3M Instruction Bulletin 5.1.
- Cleaning and repairing decorated awnings and sign facings. 3M Instruction Bulletin 6.1.

### 9. Attachment and Tensioning Guidelines

#### A. Attaching and Tensioning

- 3M recommends attaching and tensioning this substrate in a cabinet at a temperature of 45°F (7°C ) or higher, whether the work is being done in a fabricator's shop or in the field.
- Any existing attachment system used currently should be tested prior to actual application.

#### B. Cold Temperature Field Installation

- Artificially warm the decorated substrate to at least 45°F (7°F ) before attaching or tensioning the sign face in a cabinet or frame.
- Do not stress the decorated substrate by folding, crimping, creasing, or forming it around corners. In cooler temperatures, the films applied to the substrate become less flexible and may crack if handled roughly.
- Check and re-tension large sign faces as needed when the temperature warms to more than 60°F (15°C). A large sign face is one that is more than 275 square feet (25 m$^2$) and has a height that exceeds 11 feet (3.3 m) or a width that exceeds 25 feet (7.5 m).

### 10. Cleaning

Use only mild detergent and water for cleaning. Clean the finished graphic annually. Clean the graphic more often in unusually dirty environments to maintain a good appearance. See 3M Instruction Bulletin 6.5 for details.

### 11. Shelf Life, Shipping and Storage

See 3M Instruction Bulletin 6.5 for details.

Also refer to the film's Product Bulletin for details on proper handling of the film.

#### A. Shelf Life and Storage

This substrate may be stored for up to 6 months undecorated and up to an additional 6 months decorated under the following conditions:

- Original container
- Away from direct sunlight
- In a cool, dry environment
- Bring all media to print room temperature before using

### B. Rolling a Finished Sign Face for Shipping

Follow these guidelines if the graphics already have been applied to the substrate.

**Selecting a Core Size**

- For a graphic with a single film layer, use a core at least 3 inches (7.6 cm) in diameter.
- For a graphic with multiple film layers, use a core at least 6 inches (15 cm) in diameter.

**Rolling the Graphic**

- Roll the graphic with the graphics facing out to help prevent damage.
- Do not use masking tape, which may stain the substrate, to secure the roll.

## 12. Health and Safety

⚠️ CAUTION

When handling any chemical products, read the manufacturers' container labels and the Safety Data Sheets (SDS) for important health, safety and environmental information. To obtain SDS sheets for 3M products go to 3M.com/MSDS, or by mail or in case of an emergency, call 1-800-364-3577 or 1-651-737-6501.

When using any equipment, always follow the manufacturers' instructions for safe operation.

### A. Building Codes that May Apply to 3M Flexible Substrates

The user is responsible for determining and complying with all applicable building codes that affect the use of materials in interior and exterior banner and sign face applications, including flammability standards. For information on flammability requirements, contact your local building code officials.

## 13. Bulletin Change Summary

Modified and new content is marked with a black bar in the margin. Added Note about confirming your printer can support the substrate weight and roll diameter. Add recommended light management films within Compatible Products section. Discontinued 3M™ Piezo Inket Ink Series 6200 for Agfa :Jeti 3312, 3318, 3324, 5024 [Gandinnovations] Printers, 3M™ Piezo Inkjet Ink Series 2200UV for EFI™ VUTEk® PV200 Printer, 3M™ Piezo Inkjet Ink Series 2200UV for Durst Rho 160R and 351R Printers. Added SIIT SX 3M Ink Series for Seiko I Infotech ColorPainter™ M-64s Printer, HP 792 Latex Ink for several HP Designjet Printers, HP 881 Latex Ink for HP Latex 3000 Printer, HP 831 Latex Ink for HP Latex 360 Printer, and EFI™ VUTEk® GSLXr 3M Superflex UV Ink for EFI™ VUTEk® GS3250LXr and GS5500LXr Pro Printers. Added requirement for Certificate of 3M™ MCS™ Warranty. The 3M Related Literature section has been replaced by direct links to the most current versions of Bulletins or warranty information you may need to successfully use this product. All links are blue underlined text.