Product Bulletin LX480Cv3 / SV480Cv3

Release E, Effective October 2014 *(Replaces D Jul '14)*
See Bulletin Change Summary at end of Bulletin

3M™ Envision™ Print Wrap Film LX480Cv3
3M™ Envision™ Print Wrap Film SV480Cv3

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.

Use LX480Cv3 with Latex Inkjet Inks
Use SV480Cv3 with Solvent Inkjet Inks
Use LX480Cv3 or SX480Cv3 with UV Inkjet or Screen Print Inks

1. Product Description

A. Product Features

- High performance, 2-mil white, non-PVC film with a luster finish
- Pressure-activated adhesive for easy sliding, tacking, snap up and repositioning
- Non-visible air release channels for fast and easy, bubble-free installations
- Refer to the Compatible Products and Warranty Information sections for the recommended printing platforms.
- Ideal for long-term graphic applications on smooth surfaces
- Ideal for short-term wall graphics on moderately textured surfaces
- Flexible, highly conformable over compound curves, corrugations, deep channels, and rivets, and requires less heat during application than vinyl films
  - Stretch graphic constructions using selected inks with the 3M™ Envision™ Gloss Wrap Overlaminate 8548G or 3M™ Envision™ Luster Wrap Overlaminate 8549L without primer or relief cuts while maintain lifting resistance; see details and exceptions in Section 9.C, on page 16.
- Removable film, resists tearing in cooler temperatures for fast removal

This product offers several environmental benefits. For more information about these benefits, visit 3Mgraphics.com/Sustainability .

- Non-PVC, phthalate-free film
- Contains no added chlorine or halogens
- LX480Cv3, 8548G, and 8549L made in part from bio-based materials
- Manufactured using 58% less solvent

Also visit 3Mgraphics.com/EnvisionWrap to see actual demonstrations using film LX480Cv3 and SV480Cv3.

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 eligible for the 3M™ MCS™ Warranty or the 3M Performance Guarantee. Please read the entire Bulletin for more details.

- Indoor and outdoor graphics and signs, including point-of-purchase and displays
- Fleet, vehicle, watercraft and transit graphics and wraps
  - Commercial vehicles and fleet trucks and trailers; emblems or striping
  - Personal vehicle graphics and wraps
  - Watercraft graphics (above the static water line only)
  - Bus graphics
  - Rail cars and lead cars of trains, light rail and subways
  - Non-vertical and horizontal vehicle wraps, watercraft and transit when protected with overlaminate 8528, 8548G, or 8549L
- Small format original equipment manufacturer's (OEM) decorative and identification graphics, cautionary and safety labeling
- Smooth and textured walls graphics
  - Graphics applied to indoor smooth wall surfaces
  - Graphics applied to indoor or outdoor moderately textured surfaces when protected with overlaminate 8548G or 8549L

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 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 7.

Expected Performance Life. This is the estimated period of time the product should perform satisfactorily.	
Unprinted film with no graphic protection, applied to a flat, smooth, vertical outdoor surface.	11 years Unwarranted Period
3M™ MCS™ Warranty. This is the maximum period of time 3M will warrant the finished graphic performance.	
Printed film with the best 3M ink and graphic protection option, applied to a flat, vertical, vehicle surface.	7 years Warranty Period
3M Performance Guarantee. This is the maximum period of time 3M will warrant the performance of the 3M materials used.	
Printed film with the best ink and graphic protection option, applied to a flat, vertical, vehicle surface.	4 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.

(1) Unsuitable End Uses for This Film

- Do not use for graphics applied to:
  - stainless steel (we recommend using 3M™ Controltac™ Graphic Film IJ181 instead).
  - non-3M films.
  - watercraft when the graphic is below the static water line.
  - watercraft graphics that are not edge sealed.
  - painted substrates with poor paint to substrate, or paint-to-paint bond.
  - substrate surfaces that are not cleaned properly.
  - to rooftops on straight trucks, semi-tractors and semi-trailers with overlaminate 8548G or 8549L.
- Do not use prespacing tape for cut and weeded applications where the tape must adhere to the exposed liner.

- Do not use film without graphic protection for:
  - printed vehicle graphics.
  - watercraft graphics.
  - graphics exposed to abrasive conditions, harsh cleaners or chemicals.
  - horizontally-exposed outdoor applications.
- Do not use for graphics that require removal from:
  - applications with poor paint-to-substrate adhesion.
  - existing graphics that must remain intact; damage may occur during removal of film.
  - watercraft.
  - outdoor, horizontal applications (except graphics using overlaminate 8528, 8548G, or 8549L as described in this Bulletin).
- Do not use for graphics subjected to gasoline vapors or spills, including those at or on gas pumps, automobile fuel-tank ports, watercraft or top-feeding, petroleum tankers.

E. Wall Graphics

This 2-mil film may be used for indoor smooth or textured surface wall graphics. However, the user is responsible for determining the product's suitability, including adhesion and, if required, removal characteristics. Due to the wide variability of wall surfaces, neither finished graphics nor removal is warranted, even for removable or changeable films. 3M Instruction Bulletin 5.37 provides comprehensive information for the most successful wall graphics film selection and application.

F. Important Information About Bus Applications

Film used on buses must not be applied so as to restrict the safe use of emergency window exits. See the most current version of 3M Instruction Bulletin 5.4 for details.

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 or 3M Performance Guarantee. 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. Inkjet Inks and Printers for 3M™ MCS™ Warranty

Ink Series	Printer
(1) Solvent Inkjet Inks (SV480Cv3)	
• 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
• 3M™ Piezo Inkjet Ink Series 4800	• HP Scitex TJ8300 & TJ8350 Industrial Presses
• SIIT GX 3M Ink Series	• Seiko I Infotech ColorPainter™ H Series H-74s, H2-74s, H-104s, H2-104s, W-54s & W-64s Printers
• SIIT SX 3M Ink Series	• Seiko I Infotech ColorPainter™ M-64s Printer
(2) Latex Inkjet Inks (LX480Cv3)	
• 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 L26100, L26500 & L28500 Latex 210, 260 & 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

(3) UV Inkjet Inks and Printers (LX480Cv3 and SV480Cv3)

3M™ Piezo Inkjet Ink Series 2200UV	EFI™ VUTEk® PV200 Printer
3M™ Piezo Inkjet Ink Series 2800UV	EFI™ VUTEk® QS2000, QS3200, QS3220 and QS220 Printers
EFI™ VUTEk® GS 3M™ Premium UV Inks	EFI™ VUTEk® GS2000, GS3200 & GS3250 Printers, including GS Pro Series
EFI™ VUTEk® GSr 3M™ Premium UV Inks	EFI™ VUTEk® GS5000r & GS3250r Printers
EFI™ R3225 3M™ UV Ink	EFI™ R3225 UV Roll-to-Roll Printer
EFI™ VUTEk® GSLXr 3M Superflex UV Ink *(excludes White Ink)*	EFI™ VUTEk® GS3250LXr Pro Printer
EFI™ VUTEk® GSLXr 3M Superflex UV Ink *(excludes White Ink)*	EFI™ VUTEk® GS5500LXr Pro Printer
Mimaki LF-200 Ink Series *Manufactured by 3M*	Mimaki UJV-160, JFX-1631 & 1615R Printers
Mimaki UV Ink LUS-200 *Manufactured by 3M*	Mimaki UJV500-160 Printer

B. Screen Printing Inks for 3M™ MCS™ Warranty (LX480Cv3 and SV480Cv3)

- 3M™ Screen Printing Ink Series 1900 (Solvent), *line color and four color*
- 3M™ Screen Printing UV Ink Series 9800, *line color and four color*

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

- 3M™ Scotchcal™ Gloss Overlaminate 8518
- 3M™ Scotchcal™ Luster Overlaminate 8519
- 3M™ Scotchcal™ Matte Overlaminate 8520
- 3M™ Scotchcal™ Gloss Overlaminate 8528
- 3M™ Envision™ Gloss Wrap Overlaminate 8548G *(required for textured wall applications)*
- 3M™ Envision™ Luster Wrap Overlaminate 8549L *(required for textured wall applications)*
- 3M™ Scotchcal™ Ultra Matte Overlaminate 8915
- 3M™ Screen Print Matte Clear 1930
- 3M™ Screen Print UV Gloss Clear 9800CL
- 3M™ Screen Print Gloss 1920DR
- 3M™ Screen Print UV Gloss Clear 9740i
- 3M™ Screen Print Low Gloss Clear 9730UV

E. Other Products

- 3M™ Premasking Tape SCPM-3
- 3M™ Premasking Tape SCPM-44X
- 3M™ Prespacing Tape SCPS-55
- 3M™ Edge Sealer 3950
- 3M™ Edge Sealer Tape 8914
- 3M™ Vehicle Channel Applicator Tool VCAT-2
- 3M™ Roller L (larger hard roller)
- 3M™ Roller S (small hard roller)

F. Tools for Textured Wall Surfaces

- 3M™ Textured Surface Applicator TSA-1
- 3M™ Textured Surface Applicator TSA-2
- 3M™ Textured Surface Applicator TSA-3
- 3M™ Textured Surface Applicator TSA-4
- Industrial heat gun with an electronic readout, capable of achieving and sustaining 1000°F (537°C). See 3M Instruction Bulletin 5.37 for examples of suitable heat guns.
- Heat and burn resistant gloves

Note: Do not attempt to apply this film to textured wall surfaces using a standard squeegee; you will not be successful.

3. Characteristics

These are typical values for **unprocessed film**; processing may change the values. Contact your 3M representative for a custom specification.

A. Physical Characteristics

Characteristic	Value
Material	High performance non-PVC polymer
Film color	White, opaque
Thickness	**Without adhesive:** 2 mil (0.05 mm) **With adhesive:** 3-4 mil (0.08-0.10 mm)
Adhesive	Pressure-activated (slide, tack, snap up, reposition) with air release channels
Adhesive color	Gray
Film Liner	Polyethylene-coated paper
Adhesion, Typical *24 hours after application*	ABS 2-4 pounds/inch (0.36-0.72 kg/cm) Acrylic enamel 2-4 pounds/inch (0.36-0.72 kg/cm) Aluminum, anodized 5-7 pounds/inch (0.89-1.26 kg/cm) Aluminum, etched 4-6 pounds/inch (0.72-1.08 kg/cm) Fruehauf pre-painted panels 2-4 pounds/inch (0.36-0.72 kg/cm) Automotive clear coats 3-5 pounds/inch (0.54-0.89 kg/cm)
Tensile strength	11-13 pounds/inch at 73°F (1.98-2.34 kg/cm at 23°C)
Chemical resistance	• Resists mild alkalis, mild acids, and salt • Excellent resistance to water *(does not include immersion)* • Resists occasional fuel spills
Flammability	ASTM E84 reports available on the On-line Product Catalog at 3Mgraphics.com

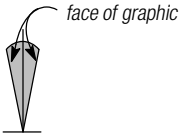
B. Application Characteristics

Characteristic	Value
Finished graphic application recommendation	**Sign and vehicle applications:** • **Surface type:** Flat, with and without rivets, simple curves, compound curves, corrugations and deep channels • **Substrate type:** ABS resins, aluminum, chrome, glass, fiberglass reinforced plastics, paint (check adhesion to powder-coated or water-based paints), fiberglass with gel coat **Wall applications:** Indoor smooth surface walls, moderately-textured surfaces such as concrete block, brick, industrial stucco and tile, as found on flat walls and/or simple curved architectural elements such as columns. See 3M Instruction Bulletin 5.37 for details. **Application temperature:** *(air and substrate)* • Flat without rivets: 40°-100°F (4°-38°C) • Curves or corrugations with rivets: 50°-100°F (10°-38°C) • Compound curves and/or watercraft: 60°-90°F (16°-32°C) • Walls: 40°-100°F (4°-38°C) **Application method:** Dry
Applied shrinkage	Less than 0.015 inches (0.4 mm)
Temperature range after application	-65°to 225°F (-60° to 107°C)
Graphic removal	**Most substrates:** Removable with heat and/or chemicals within the Warranty Period at 50°F (10°C) minimum (air and substrate) **Wall applications:** Varies with type of substrate; using heat enhances removal of film; may leave adhesive residue, may remove some surface paint or finish, may damage mortar.

4. Definitions

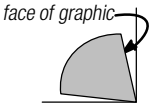
A. Exposure Types

U.S. Vertical Exposure



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

U.S. Non-vertical Exposure



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

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 Tools and Support, 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 Period Matrices

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

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

OEM Labels and decorative graphics produced for and used by original equipment manufacturers. May also be called decals.

Vehicle Types

Vehicle. Buses, vans, passenger vehicles, delivery trucks, pickup trucks, enclosed trailers. Certain restrictions may apply as noted in the applicable Product Bulletin.

Straight Trucks, Semi-Tractors and Semi-Trailers. Straight trucks, semi-tractors and semi-trailers used for commercial business purposes. Excludes air shields.

Recreational Vehicle (RV). Vehicles used for personal pleasure, such as campers, motor homes and trailers, that are not used in connection with any commercial or business enterprise.

Watercraft. Boats intended for personal pleasure such as runabouts and speedboats having aluminum and/or smooth fiberglass/gel coat bodies, including boats used in fishing tournaments and off-shore racing boats, but not 1 to 3 person personal watercraft or other boats used in connection with commercial or business enterprise. 3M specifically excludes all other recreational vehicles from this definition.

Rail. Rail cars and lead cars of trains, light rail and subways, but not locomotives or engines.

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 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 Product 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.

Note: When used to produce wall graphics, this film is only covered by the 3M Basic Product Warranty. See Section 7, on page 13 for the Expected Performance Life (unwarranted time period) of a wall graphic and key factors that affect its performance.

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 Performance Guarantee

Subject to Stipulations set forth in Section H, on page 11

Graphics constructed with the 3M materials specified and in the exposure specified in the Warranty Period, Section F(1), may be eligible for the 3M Performance Guarantee. This Warranty only covers the performance of the recommended 3M products used in the graphic construction when imaged with the printers and OEM inks listed in the most current version of the 3M Performance Guarantee Matrix at 3Mgraphics.com. The Matrix may also list certain restrictions for using the film covered in this Bulletin. For Warranty Periods for other exposures, see Section H(1), on page 11.

(1) Warranty Period

for 3M Performance Guarantee in a Standard U.S. Vertical Exposure

See Graphic Type Descriptions in Section 4 on page 6
VEH = Commercial Vehicle, Fleet Truck and Trailer, Bus, Personal Vehicles
OUT = Outdoor Signs
WATER = Watercraft Graphics
IN = Indoor Signs

Warranty Period for 3M Product Performance, in Years

Film	Graphic Protection	VEH	OUT, IN	WATER	Inks & Printers [2]
LX480Cv3 SV480Cv3	8518, 8519 8520, 8915	3	3	2	See the 3M Performance Guarantee Matrix
	8528[1],8548G[1], 8549L[1]	4	3	2	
	1920DR	3	3	—	
LX480Cv3	9740i	3	3	—	

[1] For overlaminate 8528, 8548G, or 8549L horizontal Warranty Period for vehicle graphics, see Section H(1) on page 11.
[2] Some of the graphic protection products and graphic types may not be approved for this film on certain printing platforms. Always refer to the 3M Performance Guarantee Matrix.

G. 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 G, may be eligible for the 3M™ MCS™ Warranty. For warranties for other exposures, see Section H on page 11.

(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) INKJET Warranty Period

for Finished Graphics in a Standard U.S. Vertical Exposure

See Graphic Type Descriptions in Section 4 on page 6
VEH = Commercial Vehicle, Fleet Truck and Trailer, Bus, Personal Vehicles
OUT = Outdoor Signs
WATER = Watercraft Graphics
IN = Indoor Signs

INKJET Warranty Period for Finished Graphics, in Years

INKJET SOLVENT PRINTERS and INKS Use Film SV480Cv3	SIIT ColorPainter™ H-74s, H-104s, H2-74s, H2-104s, W-54s, W-64s Printers				SIIT ColorPainter™ M-64s Printers				EFI™ VUTEk® 150, 2360/ 3360, 3300/5300, 3000/5000 Printers			
	SIIT GX 3M Ink Series				SIIT SX 3M Ink Series				3M Ink Series 1500v2			
Graphic Protection	VEH	OUT	WATER	IN	VEH	OUT	WATER	IN	VEH	OUT	WATER	IN
8518, 8519, 8520, 8915●	7	4	2	8	7	4	2	8	7	4	2	8
8528■	7/3	4	2	8	7/3	4	2	8	7/3	4	2	8
8548G, 8549L■	7/2	4	2	8	7/2	4	2	8	7/2	4	2	8
1920DR	3	3	2	5	3	3	2	5	3	3	2	5

■ = Overlaminate 8528, 8548G, or 8549L: first number represents the vertical Warranty Period and the second number the horizontal Warranty Period on vehicle graphics. Please see Section H(1) on page 11.
● = Overlaminate 8915 is not approved or warranted for use with SIIT GX 3M Ink Series.

INKJET Warranty Period for Finished Graphics, in Years

INKJET SOLVENT PRINTERS and INKS Use Film SV480Cv3	HP Scitex XL 1200, XL 1500 Printers				HP Scitex TJ8300 and TJ8350 Industrial Presses			
	3M Ink Series 4400				**3M Ink Series 4800**			
Graphic Protection	VEH	OUT	WATER	IN	VEH	OUT	WATER	IN
8518, 8519, 8520, 8915	7	4	2	8	7	4	2	8
8528■	7/3	4	2	8	7/3	4	2	8
8548G, 8549L■	7/2	4	2	8	7/2	4	2	8
1920DR	—	—	—	—	3	3	2	5

INKJET LATEX PRINTERS and INKS Use Film LX480Cv3	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	VEH	OUT	WATER	IN	VEH	OUT	WATER	IN	VEH	OUT	WATER	IN
8518, 8519, 8520, 8915	5	4	2	7	5	4	2	7	5	4	2	7
8528, 8548G, 8549L■	5/2	4	2	7	5/2	4	2	7	5/2	4	2	7
1920DR	2	2	—	3	2	2	—	3	2	2	—	3

INKJET LATEX PRINTERS and INKS Use Film LX480Cv3	HP Latex 3000 Printer				HP Latex 360 Printer			
	HP 881 Latex Ink a 3M™ MCS™ Warranty Component				**HP 831 Latex Ink** a 3M™ MCS™ Warranty Component			
Graphic Protection	VEH	OUT	WATER	IN	VEH	OUT	WATER	IN
8518, 8519, 8520, 8915	5	3	2	5	5	3	2	5
8528, 8548G, 8549L■	5/2	3	2	5	5/2	3	2	5
1920DR	2	2	—	3	2	2	—	3

INKJET UV PRINTERS and INKS Use Film LX480Cv3 and SV480Cv3	Mimaki UJV-160, JFX-1631 & 1615R Printers				EFI™ VUTEk® PV200 Printer				EFI™ VUTEK® GS2000, GS3200, GS3250 and GS Pro Series Printers			
	Ink Series LF-200 Manufactured by 3M				**3M Ink Series 2200UV**				**GS 3M™ Premium UV Inks**			
Graphic Protection	VEH	OUT	WATER	IN	VEH	OUT	WATER	IN	VEH	OUT	WATER	IN
8518, 8519, 8520, 8915	7	4	2	8	7	4	2	8	7	4	2	8
8528■	7/3	4	2	8	7/3	4	2	8	7/3	4	2	8
8548G, 8549L■	7/2	4	2	8	7/2	4	2	8	7/2	4	2	8
1920DR	—	—	—	—	—	—	—	—	3	2	—	5
9740i	—	—	—	—	5	4	2	8	5	3	2	8

■ = Overlaminate 8528, 8548G, or 8549L: first number represents the vertical Warranty Period and the second number the horizontal Warranty Period on vehicle graphics. Please see Section H(1) on page 11.

● = Overlaminate 8915 is not approved or warranted for use with SIIT GX 3M Ink Series.

INKJET Warranty Period for Finished Graphics, in Years

INKJET UV PRINTERS and INKS Use Film LX480Cv3 and SV480Cv3	EFI™ VUTEk® QS2000, QS3200, QS3220, QS220 Printers				EFI™ VUTEk® GS5000r, GS3250r Printer				EFI™ VUTEk® GS3250LXr & GS5500LXr Pro Printers			
	3M Ink Series 2800UV				**GSr 3M™ Premium UV Inks**				**GSLXr 3M Superflex UV Ink** Warranty excludes white ink			
Graphic Protection	VEH	OUT	WATER	IN	VEH	OUT	WATER	IN	VEH	OUT	WATER	IN
8518, 8519, 8520, 8915	7	4	2	8	7	4	2	8	7	3	2	5
8528■	7/3	4	2	8	7/3	4	2	8	7/2	3	2	5
8548G, 8549L■	7/2	4	2	8	7/2	4	2	8	7/2	3	2	5
1920DR	—	—	—	—	3	2	—	5	—	—	—	—
9740i	5	4	2	8	5	3	2	8	5	2	2	5

INKJET UV PRINTERS and INKS Use Film LX480Cv3 and SV480Cv3	EFI™ R3225 UV Roll-to-Roll Printer				Mimaki UJV500-160 Printer			
	R3225 3M™ UV Inks				**Mimaki UV Ink LUS-200** Manufactured by 3M			
Graphic Protection	VEH	OUT	WATER	IN	VEH	OUT	WATER	IN
8518, 8519, 8520, 8915	5	4	2	8	5	4	2	8
8528■	5/3	4	2	8	5/3	4	2	8
8548G, 8549L■	5/2	4	2	8	5/2	4	2	8
1920DR	3	2	—	5	3	2	—	5
9740i	5	3	2	8	5	3	2	8

■ = Overlaminate 8528, 8548G, 8549L: the first number represents the vertical Warranty Period and the second number the horizontal Warranty Period on vehicle graphics. Please see Section H(1) on page 11.

(3) SCREEN PRINT Warranty Period for Finished Graphics in a Standard U.S. Vertical Exposure

See Graphic Type Descriptions in Section 4
VEH = Commercial Vehicle, Fleet Truck and Trailer, Bus, Personal Vehicles
OUT = Outdoor Signs
IN = Indoor Signs
RAIL = Railcars and Lead Cars
OEM = OEM Graphics

SCREEN PRINT Warranty Period for Finished Graphics, in Years

Graphic Protection (LX480Cv3 and SV480Cv3)	Screen Print SOLVENT Ink Series 1900				Screen Print UV Ink Series 9800				Screen Print UV Ink Series 9800 Metallic			
	VEH	RAIL	IN OUT	OEM	VEH	RAIL	IN OUT	OEM	VEH	RAIL	IN OUT	OEM
1920DR, air dry	5	5 ◆	5	5	—	—	—	—	—	—	—	—
1920DR, oven dry	6 ■	6 ◆■	5 ■	5 ■	—	—	—	—	—	—	—	—
1930	2	2 ◆	2	2	—	—	—	—	—	—	—	—
9730UV	3	3 ◆	3	3	3	3 ◆	3	3	—	—	—	—
9740i	6	6 ◆	5	5	7	7 ◆	5	5	5	—	5	5
9800CL	—	—	—	—	5	5 ◆	5	5	5	—	5	5

◆ = Warranty for vertical railroad applications when printed with line color inks only.
■ = Warranty requires oven drying the last color of ink series 1900 and screen print 1920DR for 2 hours at 150ºF (65ºC).

(4) Paint Refurbishing Reimbursement Remedy

a. For Commercial Vehicles

This remedy applies to commercial vehicles (e.g., automobiles, vans, buses), and specifically does not include Personal Vehicles or Watercraft. Refer to 3M Instruction Bulletin 5.36 for complete details.

- A *Pre-Installation and Inspection Report* (in Bulletin 5.36) must be completed *prior to graphic installation* and submitted with any claim for paint damage sustained during the removal of 3M removable or changeable graphic film from vehicles.
- A separate report for each vehicle involved in a claim is required.

b. For Watercraft

This remedy applies to Watercraft only and specifically does not include any other type of vehicle. Refer to 3M Instruction Bulletin 5.42 for complete details.

- A *Pre-Installation and Inspection Report* (in Instruction Bulletin 5.42) must be completed *prior to graphic installation* and submitted with any claim.
- A separate report for each watercraft involved in a claim is required.
- Graphics must be applied above the static water line.
- Graphics must be cut at seams and all edges and seams and edges must be sealed.

H. General Warranty Stipulations for 3M™ MCS™ Warranty and 3M Performance Guarantee

These stipulations apply to both the 3M™ MCS™ Warranty and 3M Performance Guarantee. General provisions for these stipulations are covered in the 3M Warranty Brochure at 3Mgraphics.com.

(1) Reduced Warranty Exposures for Other Graphic Exposures

For each graphic exposure shown below, multiply the Warranty Period (in years) in the applicable warranty, Sections F(1) on page 8, G(1) on page 8, and G(2) on page 10 for your graphic construction by the percentage shown for the intended graphic exposure. This is the reduced warranty.

If the Graphic Exposure is:	Use this Percentage of U.S. Vertical Exposure Warranty Period:	Calculation Examples
U.S. Non-vertical	50% (0.5)	0.5 x 5 years = 2.5 years 0.5 x 3 years = 1.5 years
Desert Southwest Vertical	70% (0.7)	0.7 x 5 years = 3.5 years 0.7 x 3 years = 2.1 years
Desert Southwest Non-vertical	35% (0.35)	0.35 x 5 years = 1.75 years 0.35 x 3 years = 1.05 years
Horizontal	0%	0

(2) Overlaminate 8528, 8548G, or 8549L ONLY Horizontal Warranty Period

Printed film as specified in this bulletin for vehicle graphics with following overlaminate:

3M™ MCS™ Warranty Period

Overlaminate 8528 using solvent or UV inks:
U.S. = 3 years; Desert S.W. = 2.1 years
Overlaminate 8548G, or 8549L using solvent or UV inks:
U.S. = 2 years; Desert S.W. = 2.1 years
Overlaminate 8528, 8548G or 8549L using latex inks or 8548G:
U.S. = 2 years; Desert S.W. = 1.4 years

3M Performance Guarantee Warranty Period

Overlaminate 8528, 8548G, or 8549L:
U.S. = 2 years; Desert S.W. = 1.4 years

(3) Removal Warranty with Heat or Chemicals

a. For 3M™ MCS™ Warranty and 3M Performance Guarantee Only

Within the stated Warranty Period, if this film cannot be removed with heat and/or chemicals, or if more than 30% of the adhesive residue remains on the substrate, 3M will reimburse a reasonable portion of extra removal costs.

b. Removal Warranty Exceptions

The following exceptions are not covered by the Removal Warranty.

- Substrate damage due to:
  - removing film from a pre-existing graphic.
  - removing film that was applied to painted wallboard or any unapproved substrate.
  - removing film from paint that is not firmly bonded to the substrate.
- No guarantee is made for:
  - ease or speed of removal of any graphic.
  - removal from paint that is improperly cured.
  - removal from aged paint or metals, surface oxidation or chalking; user must test, approve and accept liability for such applications.
  - removal from horizontally-exposed outdoor applications (except graphics using overlaminate 8528, 8548G, or 8549L as described in this Bulletin).

(4) 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, **including printed vehicle or watercraft graphics**, is exposed to abrasive conditions, harsh cleaners or chemicals.

(5) Application Outside the U.S.

Contact the 3M organization for that country.

(6) Application to Glass

3M accepts no liability for glass breakage when using this film for window graphics. See 3M Instruction Bulletin 5.1 for details.

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

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

The **3M Performance Guarantee** does not, under any circumstances, cover OEM inks, even those approved by 3M for this program, or any type of 3M product failure that results from their use.

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

6. Factors that Affect Graphic Performance Life

The actual performance life of a graphic is affected by:

- the combination of 3M-recommended graphics products.
- adequate ink drying or curing.
- selection and preparation of the substrate.
- surface texture.
- application methods.
- angle and direction of sun exposure.
- environmental conditions.
- cleaning or maintenance methods.

Note: See Section 7B for specific factors that affect the performance of wall graphics.

7. Wall Graphic Performance

To ensure that this film meets your specific needs for producing wall graphics, 3M recommends that graphic manufacturers test this film for satisfactory printing, cutting, adhesion and, if needed, removal characteristics for the intended end uses. See 3M Instruction Bulletin 5.37. This information does not imply a Warranty Period.

A. Expected Performance Life for Textured Surface Graphics

- **Indoor:** greater than 2 years in most applications
- **Outdoor:** 6-12 months when not used in the freezing and thawing cycles described below; graphics perform much longer in dry, temperate environments

B. Factors that Influence Performance Life for Textured Surface Graphics

- **Installation techniques.** Improper installation techniques result in edge curling, lifting and/or poor adhesion.
- **Adhesion for outdoor graphics.** When testing film adhesion, the film is unlikely to be durable in outdoor applications if it can be easily removed from a textured surface (using a force of <2 pound/lineal inch (0.36 kg/cm)).
- **Outdoor graphics exposed to water from rain or irrigation systems.** Water can be trapped behind graphics applied outdoors, leading to lifting as well as the creation of mold.
- **Surface temperature.** Textured substrates that reach temperatures in excess of 135°F (57°C) may exhibit lifting, especially in mortar joints.
- **Texture variation.** More than 1/8 inch (3 mm) variation in high and low spots of substrate texture and mortar joints, as well as square cut or undercut mortar joints, may exhibit lifting.
- **Freezing and thawing cycles.** For a textured masonry wall that has both an indoor facing side and an outdoor facing side and no effective moisture barrier, moisture vapor transmission occurs naturally when the indoor surface has a room environment that is warmer and moister than the outdoor surface. When a graphic is applied to the outdoor wall and there are cycles of outdoor freezing and thawing, moisture can be trapped between it and the wall and result in graphic lifting, as well as in spalling both within the wall and on the outdoor facing wall. Such damage can be unsightly and costly to repair.
- **Removal.** Unsound substrates, paint, texture-finished wallboard and textured wallpaper may be damaged upon graphic removal.

8. Graphics Manufacturing

⚠ **CAUTION**

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

A. Inkjet Printing

(1) Ink

Always read and follow the ink manufacturer's written instructions on usage.

(2) Total Ink Coverage

The maximum recommended total ink coverage for this film is:

- **270%** when printed with all approved 3M solvent inkjet inks.
- **280%** when printed with all approved 3M UV inkjet inks and latex ink.
- **250%** when printed on the Mimaki JV5 Series printer with HS ink series (3M Performance Guarantee).

Do not exceed the recommended total ink coverage for the ink series used on this film. Too high a total physical ink amount on the film results in media characteristic changes, incomplete drying, overlaminate lifting, and/or poor graphic performance. For additional details about total ink coverage, refer to the Product & Instruction Bulletin for 3M inks or the 3M Performance Guarantee Matrix for OEM inks.

(3) Completely Dry Graphics

Important Note!

Incomplete drying can result in graphic failure including curling, increased shrinkage and adhesion failure, which are not covered under warranty.

Always build enough time into your process to ensure complete drying of the graphic. Poorly dried film may become soft and stretchy, and the adhesive may become too aggressive. This can cause difficulty when applying graphic protection and rolling or applying the graphic. See the ink's Instruction Bulletin for more details.

(4) Printing on Sheeted Film

3M does not recommend inkjet printing on sheeted film because material handling can contaminate the film's surface and affect print quality.

(5) Screen Printing

Formulations and processing conditions can affect ink durability. Refer to the Product and Instruction Bulletins for your ink for limitations and proper usage.

Graphic protection can improve the appearance, performance and durability of your graphic. A clear coat also prevents chalking on unprinted films.

Whether you apply screen print clears with traditional screening methods or roller coating, use equipment designed to handle high viscosity materials and make sure the coating is evenly applied to the specifications in the clear's Instruction Bulletin.

B. Cutting

The following are common cutting methods for this film. See 3M Instruction Bulletin 4.1 for details.

(1) Cutting Methods

- Bandsawing
- Hot kiss cutting
- Hot and cold steel-rule die cutting
- Drum-type electronic cutting
- Flat-bed electronic cutting
- Guillotine
- Hand cut
- Knifeless™ Tape. 3M recommends using this product with this film. See http://knife-lesstechsystems.com/Home.aspx for details, including videos and ordering information

(2) Size of Cut Text

These values are based on upper case Helvetica medium type. Weeding can be more difficult with smaller text.

- **Minimum stroke width:** 0.25 inch (6.35 mm)
- **Minimum height:** 3.0 inch (76.2 mm)
- **Minimum radius for end of stripe:** 0.125 inch (3.18 mm)

C. Graphic Protection

Graphic protection may improve the appearance, performance and durability of the graphic. Always use only the graphic protection options recommended in this Bulletin for this film. See 3M Product Bulletin GP-1 for more details about these options.

- Overlaminates must be cold or hot roll applied. When overlaminating UV inkjet printed graphics, 3M recommends using hot roll lamination to help minimize a silvered graphic appearance caused by bubbles being trapped within the valleys of a graphic. See 3M Instruction Bulletin 4.22 for details.
- For textured wall applications, the film must be protected with overlaminate 8548G or 8549L.

D. Application Tapes

(1) When to Use Premasking Tape

- Use as an application aid to increase stiffness, and to prevent stretching and damage during application.
- Use when little or no liner is exposed.

(2) When to Use Prespacing Tape

- Use to hold cut and weeded letters or graphics in registration after removing the film liner.
- Use to protect cut graphic parts from scratching or damage during application.
- Use when large amounts of liner are exposed.

Important Note!

Prespacing tape does not adhere to the exposed liner of films with Comply adhesive but it does adhere to the top of the film. Therefore, prespacing tape may still be useful when applying large graphics—even large cut graphics—with some smaller cut and weeded graphics to hold the elements in alignment. Use 3M™ Controltac™ Graphic Film IJ180 or 3M™ Controltac™ Graphic Film with Comply™ Adhesive IJ180C for more intricately cut and weeded graphics.

(3) How to Select an Application Tape

Determine whether you want to premask the graphic or prespace cut pieces of film such as letters. Then locate the graphic protection used on your graphic in the table below, and use the corresponding tape. See 3M Instruction Bulletin 4.3 for complete details.

EXAMPLE: To premask a film includes overlaminate 8519, use premasking tape SCPM-3. To prespace a film that includes 1920DR, use prespacing tape SCPS-55.

Important Note!

Do not use application tapes on top of a graphic protected with 8518, 8528, or 8548G as the adhesive may dull the high gloss finishes of these overlaminates.

Select the tape based on what is on top of the graphic

Tape	None	8519 8520 8915 8549L	1920DR 1930	9730UV 9740i 9800CL	8518 8528 8548G
Premasking SCPM-3	■	■	■	—	—
Premasking SCPM-44X	—	—	—	■	—
Prespacing SCPS-55	■	■	■	■	—

— = Use of an application tape is not recommended in this construction.

9. Application and Installation

Install the film using the dry application method.

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

- Application, special applications and vehicles. 3M Instruction Bulletin 5.4.
- Application, general procedures for indoor and outdoor dry applications. 3M Instruction Bulletin 5.5.
- 3M™ Vehicle Channel Applicator Tools. 3M Product & Installation Bulletin V-Tools.

A. Pressure-activated Adhesive

- The pressure-activated adhesive on this film offers:
  - smooth sliding into position on a substrate;
  - fast finger tacking to check position; and
  - easy snap up and repositioning when you need it.
- The **snap up and reposition feature is lost:**
  - when firm pressure with a squeegee or other application tool is applied.
  - at application temperatures above 100°F (38°C) even if only light finger pressure was used for tacking.
  - if any part of the film is removed from the original liner and reapplied to the same or another liner.
  - solvent from inkjet ink or liquid clear has not completely dried or cured, which affects both slideability and snap up.

B. Working with Air Release Channels

Air release channels are a characteristic of films with Comply adhesive. Films designated as Cv3 offer the ultimate in invisible air release channels.

- The channels will be damaged and effective air removal affected if you remove and attempt to change liners or reapply the same liner.
- For the best results, always work from the center out to the edges of the graphic to allow trapped air to exit through the air release channels. If the channels are closed off by firm pressure and air is trapped, use an air release tool to aid in removing air bubbles. See 3M Instruction Bulletin 5.4 for details.

Video 

See how 3M's Comply adhesive technology works.

C. Stretching the Film

for Inkjet Printed Graphics

For best results, use the stretching guidelines in the table below.

When stretching at higher levels (complex curves, deep contours, around rivets and textured walls), primer and/or relief cuts are required. See 3M Instruction Bulletin 5.36 for complete details.

Inkjet Printing ONLY	Film	Graphic Protection	Expected Stretch Capability
Latex	LX480Cv3	8518, 8519, 8520, 8528, 8915, 8548G, or 8549L	Up to 130% without primer or relief cuts Example: a 10 inch (25 cm) piece of processed film can stretch up to 13 inches (33 cm)
Solvent	SV480Cv3	8518, 8519, 8520, 8528, 8915, 8548G, or 8549L	Up to 150% without primer or relief cuts Example: a 10 inch (25 cm) piece of processed film can stretch up to 15 inches (38cm)

For UV inks, see Section D(1) on page 17.

D. Heating the Film

Because films LX480Cv3 and SV480Cv3 react to heat from a torch differently than other typical vinyl films, 3M recommends using a heat gun instead of a torch to provide better control and distribution of heat on the film.

Note: This film may be heated with a torch provided the installer is highly skilled and understands the properties of this material.

(1) Graphics Printed with UV Inkjet Inks are Heat Sensitive

UV inkjet inks will crack if too much heat is used during graphic application, **especially when the film is stretched** into complex curves, deep contours, around rivets and textured walls. This will limit the amount of stretching you can do when applying this film. When using a heat gun or other heat source during application, make sure the film surface temperature does not exceed 212°F (100°C).

Using additional heat in the post-application process may also cause UV inkjet ink to crack.

For the best results, **always do a test application** of a UV printed graphic to determine how much heat can be used without damaging the image. Also see 3M Instruction Bulletin 5.36.

E. 3M™ Tape Primer 94

Although films LX480Cv3 and SV480Cv3 do not require the use of Primer 94, it is good practice to use this primer to maximize adhesion on any area where the film will be stretched or stressed.

F. Application to Vehicles

Read and follow all instructions, and complete the *3M Automobiles, Vans and Buses Pre-installation Inspection Record* in 3M Instruction Bulletin 5.36 before manufacturing or applying any graphic to a standard vehicle, van or bus.

G. Application to Watercraft

Read and follow all instructions, and complete the *3M Watercraft Graphics Pre-installation Inspection Record* in 3M Instruction Bulletin 5.42 before manufacturing or applying any graphic to a watercraft.

H. Application to Walls

See 3M Instruction Bulletin 5.37 for detailed instructions on how to apply graphic film to smooth and textured wall surfaces and to complete the Pre-installation Worksheet and Customer Checklist prior to applying wall graphics to ensure a successful application.

Video

Watch a rough wall installation and also visit the 3M Graphics Video Library to see other videos about techniques for installing wall graphics.

(1) Tips for Successful Textured Wall Applications

On textured surfaces, the film and adhesive must conform to irregular high and low spots, which often includes mortar joints. This film is designed to be effective on many of the most common moderate textures found in public stadiums, arenas and similar environments. However, due to the wide variation in substrate texture, you should verify that the film and 3M techniques described in this Bulletin and 3M Instruction Bulletin 5.37 are suitable for each of your applications.

- Use an installer trained in 3M's techniques and with access to the required 3M tools.
- Test each different textured surface you are considering at each location. See the instructions in the following section.
- Use a 3 inch (76 mm) per second rate of speed for application. (Typically, this is 1 inch (25 mm) per second faster than most wall films.)
- Film is more susceptible to lifting from deep or undercut mortar joints than shallow ones (about 1/8" (3 mm) deep). Instruction Bulletin 5.37 discusses the various types of mortar joints.
- In most cases, minor lifting does not detract from the impact of your customer's message, nor from the overall durability of the graphic. Edge lifting, which is usually most noticeable at mortar joints, may be susceptible to picking and tearing if the graphic is at pedestrian level and within reach.
- Avoid extremes in temperatures.
  - Freeze/thaw cycles that trap moisture behind graphics can cause lifting.
  - Water may accumulate behind graphics applied to unsealed substrates, resulting in water bubbles that cause lifting.
  - Intense direct sunlight may cause lifting.

I. Application to Other Substrates

3M offers several detailed Instruction Bulletins to help you achieve a successful graphic installation. Please see **Application and Installation**.

J. Edge Sealing

Edge sealing minimizes the adverse effects of rigorous use or prolonged or severe exposure conditions, including power-washing, by providing a water and contaminant-tight seal between a graphic film and substrate. Refer to 3M Product & Instruction Bulletin Edge Sealers for details.

10. Maintenance and Cleaning

Use a cleaner designed for high-quality painted surfaces. The cleaner must be wet, non-abrasive, without strong solvents, and have a pH value between 3 and 11 (neither strongly acidic nor strongly alkaline.) See 3M Instruction Bulletin 6.5.

11. Removal

- **For most substrates:** removal requires heat and/or chemicals. The ease and rate of removal depends on a number of factors. See 3M Instruction Bulletin 6.5 for details. Follow the procedures for using 3M™ Controltac™ Film Remover R-221 and Adhesive Remover R-231 and for additional removal details.
- **For wall applications:** removal varies by the type of substrate. Using heat may ease the removal.

12. Shelf Life, Storage and Shipping

A. Shelf Life

Total shelf life: 3 years from the date of manufacture on the original box.
If you do process the film, do so within 2 years and apply within 1 year.
If you do not process the film, apply it within 3 years.

B. Storage Conditions

- 40° to 100°F (4° to 38°C)
- Out of sunlight
- Clean dry area
- Original container
- Bring the film to print room temperature before using

C. Shipping Finished Graphics

Flat, or rolled printed side out on 6 inch (15 cm) or larger core. This helps prevent the application tape, if used, from popping off.

13. 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.

⚠ CAUTION

Be aware that graphics installed on textured walls outdoors can develop mold or mildew on top of or behind the graphic, which may be a health concern for some individuals, especially during graphic removal.

14. Bulletin Change Summary

Modified and new content is marked with a black bar in the margin. To expand the printing platforms for the Envision Wrap Film, film 480Cv3 has been replaced by film LX480Cv3 and SV480Cv3. Please see page 1 and the Warranty Matrices to determine which one is best suited for your needs. Discontinued 3M™ Piezo Inkjet Ink Series 2700UV for Durst Rho 160R & 351R Printers. Added Compatible Products 3M™ Envision™ Luster Wrap Overlaminate 8549L, 3M™ Piezo Inkjet Ink Series 1500v2 for EFI™ VUTEk® 150, 2360/3360, 3300/5300 & 3000/5000 Printers, 3M™ Piezo Inkjet Ink Series 4400 for HP XLJet 1200 and 1500 Printers, 3M™ Piezo Inkjet Ink Series 4800 for HP Scitex TJ8300 & TJ8350 Industrial Presses, HP 831 Latex Ink for HP Latex 360 Printer, and EFI™ VUTEk® GSLXr 3M Superflex UV Ink for GS5500LXr Pro Printers. All graphics made with these Envision films now require graphic protection to be eligible for a warranty. Removed RV from Paint Refurbishment Remedy. Changed Expected Performance Life for Textured Wall Graphics Outdoor from 3-6 to 6-12 months. Use the proper total ink coverage values as specified in Section 6. Added Screen Printing section within Graphics Manufacturing. Added important information for the stretchability of these films with various graphic protection options.

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