Envision™ Print Wrap Film
480Cv3

Product Bulletin

Product Description

This high performance non-PVC and phthalate-free film offers great conformability for a wide range of long term applications, such as indoor and outdoor signs, fleet, vehicle graphics, watercraft, textured walls and graphics exposed to occasional spills of petroleum products.

Due to its excellent conformability it allows even fleet and vehicle graphics installation on recesses and deep channels.

To protect graphics 3M recommends using the non-PVC and phthalate-free 3M™ Envision™ Gloss Wrap Overlaminate 8548G. Film 480Cv3 and overlaminate 8548G offer several environmental benefits. They contain no added chlorine or halogens, are made in part from bio-based materials and are manufactured using 60% less solvents than standard cast films. For more information about these benefits, visit 3Mgraphics.com/Sustainability.
This product is designed for digital UV and Latex printing and screenprint solvent and UV.
Digital printing performance with any kind of solvent inks is limited. Please contact 3M for further information.

3M™ Controltac™ minimizes the initial contact area of the adhesive and allows the applicator to reposition the graphic during application.
This effects easier installation of large formats in a wide temperature range.

3M™ Comply™ are air release channels allowing fast and easy, bubble-free installation of graphics.

Product Line	Screen and inkjet printing	480Cv3	white, opaque, glossy, permanent adhesive (grey) with Comply™v3 adhesive.

Product Characteristics

These are typical values for unprocessed products.
Contact your 3M representative for a custom specification.

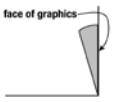
Physical & Application

Material	non-PVC polymer	
Surface finish	glossy	
Thickness (film)	50 µm (0.05 mm)	
Adhesive type	solvent acrylic, pressure-sensitive, repositionable	
Adhesive appearance	grey	
Liner	double-sided Polyethylene coated paper	
Adhesion	approx. 20 N/25 mm	FTM 1: 180° peel, substrate: glass; cond: 24 h 23°C/50%RH
Application method	dry only!	
Applied shrinkage	< 0.1 mm	FTM 14
Application temperature	+4°C	minimum (air and substrate)
Notice!	compound curves: min. appl. temp.: 16°C	
Service temperature	-60°C to +107°C	
Surface type	flat to curved, incl. rivets and deep corrugations	
	use for walls:	moderately-textured surfaces and simple curved architectural elements
Substrate type	aluminum, glass, PMMA, PC*, ABS, paint	
	use for walls:	concrete block, brick, industrial stucco and tile

PC*, PETG*: Might require drying with heat before use

	Graphic removal	Fair to remove with heat and/or chemicals from supported substrates.
Storage	Shelf life	No liability is given for ease or speed of removal of any graphic. Pay attention to adequate air and substrate temperature. 2 years from the date on the original box. Up to 2 years unprocessed, or processed within 1 year of processing.
	Storage conditions!	+4°C to +40°C, out of sunlight, original container in clean and dry area.
Flammability	Flammability standards are different from country to country. Ask your local 3M contact for details, please.	

Durability

Unprocessed film	The following durability data are given for unprocessed film only!
3M™ MCS™ Warranty	In addition, 3M provides a warranty on a finished applied graphic within the framework of 3M™ MCS™ warranty program.
Climatic zones	Graphic durability is largely determined by the climate and the angle of exposure. Find below a table showing the durability of a product according to the angle of exposure and the geographical location of the application. Zone 1 Northern Europe, Italy (north of Rome), Russia Zone 2 Mediterranean area without North Africa, South Africa Zone 3 Gulf area, Africa
Exposure types	Vertical:  The face of the graphic is ±10° from vertical.
	Non-vertical:  The face of the graphic is greater than 10° from vertical and greater than 5° from horizontal.
	Horizontal:  The face of the graphic is ±5° from horizontal.
	Interior: Interior means an application inside a building without direct exposure to elements.

Vertical outdoor exposure	Zone 1	Zone 2	Zone 3
white	12 years	10 years	8 years
Non-vertical outdoor exposure	**Zone 1**	**Zone 2**	**Zone 3**
white	6 years	5 years	4 years
Horizontal outdoor exposure	**Zone 1**	**Zone 2**	**Zone 3**
white	3 years	2.5 years	2 years
Interior application	**Zone 1**	**Zone 2**	**Zone 3**
interior	12 years	12 years	12 years

Limitations of End Uses

3M specifically does not recommend or warrant the following uses, but please contact us to discuss your needs to recommend other products.

Graphics applied to

- flexible substrates incl. 3M™ Panaflex™ Awning and Sign Facing 945GPS and 3M™ Panagraphics™ III Wide Width Flexible Substrate.
- low surface energy substrates or substrates with low surface energy coating.
- mortar joints deeper or higher than 3.1 mm and square-cut or undercut mortar joints.
- painted or unpainted wallboards, gypsum boards and wallpapers.
- stainless steel.
- surfaces with poor paint to substrate adhesion.
- watercraft when the graphic is applied below the static water line.
- watercraft graphics that are not edge sealed.
- vehicles which will be subject to stone chip damage.
- surfaces that are not clean.

Graphic removal from

- signs or existing graphics that must remain intact.
- vehicles which do not have the original OEM paint applied.

Important Notice

- 3M Commercial Graphics Division products are not tested against automotive manufacturer specifications!
- Graphics printed with UV inkjet inks and applied on recesses or deep channels will show ink cracking in the streched areas. Some UV inks will show a change of gloss. Ask your local 3M representative for UV ink solutions from 3M which can be used for recessed or deep contour applications.
- Abrasion damage and loss of gloss are not covered by any 3M warranty. This is considered normal wear and tear.

Tips for successful textured wall applications

This film is designed to be effective on many of the most common moderate textures found in public stadiums, arenas and similar environments.

Notice

- Due to the wide variation in substrate texture, we encourage you to verify that the film and 3M techniques described in this Bulletin and Instruction Bulletin 5.37 are suitable for each of your applications.

  > Instruction Bulletin 5.37 'Application, Maintenance and Removal of Textured Wall™ Films' <

- 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 below.
- Film is more susceptible to lifting from deep or undercut mortar joints than shallow ones (about 3 cm 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.
- Water may accumulate behind graphics applied to unsealed substrates, resulting in water bubbles that cause lifting.

Test Application Instructions

3M testing shows that the following test, which uses a small piece of film, is adequate for judging good adhesion to and appearance on textured surfaces. One of the following applicator tools will be needed for this test

Tools needed

3M™ Textured Surface Applicator TSA-1. Do not attempt this test using a standard squeegee. You will not be successful.
Industrial heat gun with an electronic readout, capable of achieving and sustaining > 500°C
Approximately 0.5 m² of film
Heat and burn-resistant gloves

Application

Perform the test in an inconspicuous place on each type of substrate you plan to use for each of the larger graphics
Set the gun to > 500°C
Work at a speed that allows the film to be heated enough to make it conformable
Overheating damages the film; under–heating does not permit conformability
Hold the heat gun about 1 inch above and immediately in front of the roller
Start at an outside top corner and work straight across to the other side using this technique: Heat the film in front of the roller for about 1 second and then begin following closely with the roller, pushing firmly. Move at a slow, steady pace
Roll all the way to the edge
Move the roller down about 5 cm and repeat until the film is fully applied
If the film lifts immediately, the application technique may not have been satisfactory, or the texture is too severe for the film. Do not attempt to go over the sample again; try another one.

Test Time

If possible, leave the film in place for one week, then check for good adhesion and acceptable removal

Graphics Manufacturing

Graphic protection can improve the appearance, performance and durability of printed graphics. Any printed graphic exposed to abrasive conditions (including vehicles), harsh cleaners or chemicals must include graphic protection in order to be warranted.

When to use an overprint clear or overlaminate

See instruction bulletin GPO 'graphic protection options' for further information about selection and use of protective overlaminates and printable clears.
> Product Bulletin Graphic Protection Options <

Shipping finished graphics

Flat, or rolled film side out on 130 mm (5 inch) or larger core. These methods help to prevent the liner from wrinkling or application tape, if used, from popping off.

Converting Information Inkjet Printing

A too high total physical ink amount on the film results in media characteristic changes, inadequate drying, overlaminate lifting, and/or poor graphic performance. The maximum recommended total ink coverage for this film is 270%.

Adequately Dry Graphics

Inadequate drying can result in graphic failure including curling, increased shrinkage and adhesion failure, which are not covered under warranty. Build enough time into your process to ensure adequate drying of the graphic.
Poorly dried film becomes soft and stretchy, and the adhesive becomes too aggressive. 3M recommends at least a minimum drying time of 24 hrs before further processing. Dry the graphic unrolled or at least as a loose wound roll standing upright.

Converting Information Screen Printing

Formulations and processing conditions can affect ink durability. Refer to the 3M 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. Use equipment designed to handle high viscosity materials and make sure the coating is evenly applied to the specifications given in the clear's Instruction Bulletin.

Application

See product bulletin ATR ‘application tape recommendations’ for information about selection and use of suitable application tapes for this product, please.

> Product Bulletin Application Tape Recommendations <

Refer to Instruction Bulletin 5.1 ‘select and prepare substrates for graphic application’, for general application information.

>Instruction Bulletin 5.1 'select and prepare substrates for graphic application'<

Refer to Instruction Bulletin 5.46 ‘Application of 480Cv3 on substrates with recesses’, for special application information.

> Instruction Bulletin 5.46 'application of substrates with recesses and removal '<

Refer to Instruction Bulletin 5.44 'Application and Maintenance of Petroleum Pump Graphics' for graphics exposed to occasional spills of petroleum products. Such graphics must be protected with overlaminate 8548G.

>Instruction Bulletin 5.44 'Application and Maintenance of Petroleum Pump Graphics'<

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).

Refer to Instruction Bulletin 6.5 ‘storage, handling, maintenance and removal of films and sheetings’, for general maintenance and cleaning information.

>Instruction Bulletin 6.5 'Storage, Handling, Maintenance and Removal of Films and Sheetings'<

Remarks

This bulletin provides technical information only.

Important notice

All questions of warranty and liability relating to this product are governed by the terms and conditions of the sale, subject, where applicable, to the prevailing law.
Before using, the user must determine the suitability of the product for its required or intended use, and the user assumes all risk and liability whatsoever in connection therewith.

Additional Information

Visit the web site of your local subsidary at www.3Mgraphics.com for getting more:

- details about 3M™ MCS™ Warranty and 3M Performance Guarantee
- additonal instruction bulletins
- a complete product overview about materials 3M is offering

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