

## Overview

This bulletin provides instructions for applying and maintaining floor graphics and sidewalk graphics made with 3M Graphics Products. Instructions cover selecting and preparing a substrate for application, and techniques for applying the graphics and maintaining their quality after installation.

Read this entire instruction bulletin and other relevant technical literature before starting the application. Start with a clean, dry substrate and finish the application by re-brushing all graphic edges.

## Table of Contents

<a href="#">Compatible Products</a> .....	1
<a href="#">Warranted Application Surfaces</a> .....	2
<a href="#">Surface Selection and Preparation</a> .....	3
<a href="#">One Piece Graphic Application</a> .....	5
<a href="#">Applying Floor Graphics with Multiple Panels</a> .....	6
<a href="#">Applying Sidewalk Graphics with Multiple Panels</a> .....	6
<a href="#">Finishing the Application</a> .....	7
<a href="#">Maintenance and Cleaning</a> .....	7
<a href="#">Removal</a> .....	7
<a href="#">Health and Safety</a> .....	8
<a href="#">Warranty Information</a> .....	9

## Compatible Products\*

This section lists a range of 3M Graphics Products that may be suitable for sidewalk and floor graphic projects. Consult the product bulletins for complete information on each product in order to best determine its suitability for specific projects.

\* Product availability varies by region. Contact a local sales representative or application engineer for details.

### Exterior Floor Graphic Films

- [3M™ Scotchcal™ Graphic Film 3662 \(“3662”\)](#)
- [3M™ Safety-Walk™ Slip-Resistant Conformable Tape and Tread 588 \(“588”\)](#)
- [3M™ Safety-Walk™ Slip-Resistant Conformable Tape and Tread 688 \(“688”\)](#)

#### NOTE

Graphics using 3662 should use either 3M™ Scotchcal™ Matte Overlamine 3647 or 3M™ Safety-Walk™ Slip Resistant Fine Resilient Tape 220 or 3M™ Safety-Walk™ Slip-Resistant General Purpose Tape 620 as an overlamine. Do not use an overlamine with 588 or 688.

### Interior Floor Graphic Films

- [3M™ Controltac™ Print Film 40C-10R \(“40C-10R”\)](#)
- [3M™ Controltac™ Print Film 40C-20R \(“40C-20R”\)](#)
- [3M™ Controltac™ Print Film 40C-114R](#)
- [3M™ Envision™ Print Wrap Film 48C-20R \(“48C-20R”\)](#)
- [3M™ Controltac™ Graphic Film IJ160-10](#)
- [3M™ Controltac™ Graphic Film IJ160C-10](#)
- [3M™ Controltac™ Graphic Film IJ180C-10](#)
- [3M™ Controltac™ Graphic Film IJ180Cv3-10](#)
- [3M™ Print Wrap Film IJ180mC-10](#)
- [3M™ Envision™ Print Wrap Film LX480mC](#)
- [3M™ Envision™ Print Wrap Film SV480mC](#)

#### NOTE

For carpeted surfaces, 3M recommends using only 40C-10R, 40C-20R, or 48C-20R.

## Interior Floor Graphic Overlaminates

- [3M™ Scotchcal™ Luster Overlamine 3645 \(“3645”\)](#)
- [3M™ Scotchcal™ Matte Overlamine 3647 \(“3647”\)](#) (exterior and entryway use)
- [3M™ Envision™ Matte Overlamine 8050M \(“8050M”\)](#)
- [3M™ Scotchcal™ Luster Overlamine 8509 \(“8509”\)](#)
- [3M™ Scotchcal™ Luster Overlamine 8510M \(“8510M”\)](#)
- [3M™ Safety-Walk™ Slip Resistant Fine Resilient Tape 220 \(“220”\)](#) (exterior and entryway use)
- [3M™ Safety-Walk™ Slip-Resistant General Purpose Tape 620 \(“620”\)](#) (exterior and entryway use)

**NOTE**

220, 620, and 3647 are only recommended for use with 3662 in the construction of sidewalk graphics.

## Recommended Application Surfaces

The safety and performance of the films listed above are recommended only on the surfaces listed below. Application to any other surface is strictly on a customer test-and-approve basis. Any warranty for any of these projects must be approved in writing by a 3M officer. See the [3M Graphics Warranties Bulletin](#) for additional details.

### Typical Floor Application Surfaces

- Waxed vinyl
- Sealed concrete
- Marble
- Ceramic tile
- Sealed wood
- Terrazzo
- Unsealed concrete outdoors (only for 3662, 588, and 688)

### Typical Sidewalk Application Surfaces

**NOTE**

Only 3M™ Scotchcal™ Graphic Film 3662 is approved for use in the construction of sidewalk graphics.

- Unsealed concrete
- Unsealed asphalt
- Paving bricks

### Slip Resistance for Floor or Sidewalk Sign Graphics

Product	UL 410 SCOF**	DIN 51130 (ZH1/571)	NFSI B101.1 SCOF	NFSI B101.3 DCOF
<b>8509/8510/8050</b>	Pass	-	-	-
<b>3645</b>	Pass	R9	-	-
<b>3647</b>	Pass	R10	-	-
<b>220</b>	-	R10	0.74	0.40
<b>588*</b>	-	R13	>1.00	0.93
<b>688*/620</b>	-	R13	0.60	0.31

\* The 588 and 688 treads are both digital UV inkjet printable. The slip resistance mentioned in the table above refers to unprinted products. The slip resistance of printed products may decrease depending on the total amount of ink coverage.

\*\* Passing requires an average SCOF of 0.5 and individual SCOF of 0.45 when tested in accordance with the latest edition of UL 410.

## Surface Selection and Preparation

### Floor Graphic Substrate Selection

#### CAUTION

Any floor surface, including floor graphics, that is wet due to rain, snow, or other contaminants may become slippery. To avoid personal injury due to slipping:

- Place floor graphics far enough away from entryways that they stay dry.
- Use doormats to reduce moisture at entryways.
- Immediately clean up any water, spills, or other contaminants.

Floor graphics may be damaged by pallets or heavy equipment such as forklifts, as well as by heavy items dragged across the graphic. Where possible, place floor graphics out of the main flow of pallet or heavy equipment traffic. Minor edge chipping is unavoidable.

In general, the floor surface must be secure and in good condition.

- Do NOT install floor graphics over loose tile.
- Do NOT install floor graphics over uneven tile.
- Ensure the floor finish is well bonded to the floor surface. Poorly bonded floor finishes may separate or release from the floor surface, resulting in premature graphic lifting. Additionally, the floor finish may come off with the graphic when the graphic is removed, requiring reapplication of the finish.
- Properly clean the floor surface before applying the graphic. This includes removing any silicone coatings, except in tile grout lines.

#### NOTE

The floor surface application temperature range is 50°F to 100°F (10°C to 37.8°C).

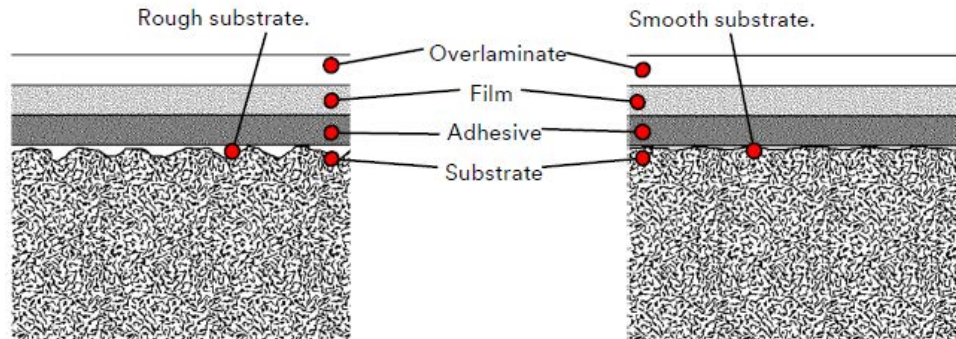
### Floor Graphic Substrate Preparation

All floor surfaces must be cleaned prior to applying floor graphics. This includes surfaces that are sealed, waxed, or painted.

1. Create a solution of 20 drops of detergent per pint (400 ml) of water. Do NOT use soaps or enzyme detergents.
2. Clean the floor where the graphic will be applied, covering an area 6 in. to 8 in. (15.2 cm to 20.3 cm) larger than the graphic on each side with your cleaning solution.
3. Wipe the floor clean.
4. Dry the floor with lint-free paper towels, such as 3M™ Perfect-it™ Wipes, or equivalent. Remove all soil and grit, and discard and replace towels as they become dirty.
5. Remove any oil or grease by wiping the floor with clean, lint-free paper towel moistened with 70% isopropyl alcohol and 30% water. Discard and replace the towels as they become dirty.
6. Wipe the surface completely dry with a lint-free paper towel before the alcohol evaporates to avoid leaving residue.

## Sidewalk Graphic Substrates

Some exterior surfaces are highly textured and may prevent the film adhesive from making enough contact with the substrate to adhere properly. See Figure 1. Use of the products mentioned in this bulletin for sidewalk graphics is to be done on a user test-and-approve basis.



**Figure 1.** Rough and Smooth Surfaces

Note that the graphic only contacts rough substrates at the high points, resulting in lower adhesion. On smooth surfaces, there is more contact between the graphic and the substrate, resulting in higher adhesion. Graphics can be slightly conformed to the texture of rough surfaces with brush tools in order to build higher graphic adhesion.

Sidewalk signs will NOT adhere properly to loose, crumbling, contaminated, wet, or damp substrate surfaces. Ensure that:

- The surface is secure and in good condition.
- The surface has a good internal bond.
- The surface is completely dry.
- The surface (including the expansion joints) is clean.
  - Remove grease, gum, weeds, grass, and other large particles.
- The surface is NOT sealed.
  - Sealed surfaces may result in extremely high adhesion, making graphic removal difficult.
- The surface is cleaned with a broom or brush to remove all loose particles, dust, sand, and gravel prior to application.

### NOTE

Never use any cleaning solvents or solutions, including detergent and water, to clean an application surface or to apply a graphic. The substrate must be dry.

When choosing a graphic's location, consider that sidewalk signs may be damaged by heavy equipment such as snowplows, shovels, and power sweepers as well as by heavy items dragged across the top of the graphic. If possible, locate sidewalk signs out of the flow of heavy equipment traffic. Minor edge chipping is unavoidable.

### NOTE

Sidewalk signs are NOT designed for use in areas with vehicular traffic.

### NOTE

Apply the film at a minimum surface temperature of 70°F (21.1°C). Heat helps bond the adhesive, so the warmer the temperature, the higher the bond.

## Sidewalk Surface Preparation

### NOTE

See the [3M™ Safety-Walk™ Technical Data Sheet](#) for detailed instructions for surface preparation prior to installing Safety-Walk™ products.

The surface must be cleaned with a broom or brush to remove all loose particles, dust, sand, and gravel.

### NOTE

Never use any cleaning solvents or solutions, including detergent and water, to clean a sidewalk graphic application surface or to apply a graphic. The substrate must be dry.

## One Piece Graphic Application

### NOTE

The use of a 3M™ Hand Applicator PA-1 squeegee is sufficient to apply floor graphics. However, for sidewalk graphics, a stiff, nylon bristled brush is the best tool for applying the film. The stiff bristles help work the film's adhesive into the surface's irregularities.

### NOTE

If possible, avoid sharp graphic edges, and cut radii on the corners. This helps prevent premature lifting.

## Position the Graphic

- Determine the position of the graphic on the clean, dry surface before removing the liner.
- Graphics can be aligned to expansion joints or grout lines, but always make sure no graphic edges start or end on an expansion joint or grout line.

## Applying Smaller Graphics

For smaller graphics (typically less than 12 in. (30.5 cm) in both directions):

1. Remove the entire liner and place the graphic on the desired location.
2. Apply the film to the substrate, using firm, overlapping squeegee strokes. Work from the center of the graphic out to the edges.
  - Bridge the film over grouting, seams, stone edges, and expansion joints. Do NOT push the graphics into those areas.

## Applying Larger Graphics

For larger graphics (typically 12 in. [30.5 cm] or larger in either direction):

1. Peel back one edge of the liner several inches to expose the adhesive, then flatten or crease the liner.
2. Apply the exposed film to the substrate in the desired location, using firm squeegee pressure and working from the center to the edges of the graphic.
  - Bridge the film over grouting, seams, stone edges, and expansion joints. Do NOT push the graphics into those areas.
3. Gently remove additional liner from the rest of the graphic, working in 12 in. (30.5 cm) portions. Continue to brush or squeegee the graphic to the substrate, working from the already adhered portion of the graphic, and from the center of the graphic out to the edges. Always use firm pressure and overlapping strokes.
4. Continue in this manner until the graphic is completely applied.

## Applying Floor Graphics with Multiple Panels

### NOTE

Graphics using a Safety-Walk™ component cannot be overlapped, and cannot be cut using 3M™ Knifeless™ Tape. See the [3M™ Safety-Walk™ Technical Data Sheet](#) for detailed instructions for applying Safety-Walk™ products.

1. Position the graphics on the clean floor ensuring proper placement and image alignment.
2. Secure the panels with masking tape to prevent unwanted movement. Allow space for overlapping areas to continue to be worked with.
3. If using 3M™ Knifeless™ Tape Precision Line to cut the butt seam:
  - a. Mark the location of the panel overlaps at each end with masking tape.
  - b. Lift the graphic panels.
  - c. Apply 3M™ Knifeless™ Tape Precision Line to the ground at the center of the overlaps—between the alignment marks—including leaving 6 in. to 8 in. (15.2 cm to 20.3 cm) of Precision Line visible on either side of the application area.
  - d. Lay the graphic panels back on top of the Precision Line.
4. Install all the graphic panels to the ground according to the instructions in the [“One Piece Graphic Application” section on page 5](#). Ensure the images from all panels are registered.
5. Cut the butt seam:
  - a. If utilizing 3M™ Knifeless™ Tape Precision Line, cut the overlap with following the Precision Line instructions in [3M Instruction Bulletin Application: 3M™ Knifeless™ Tape](#). Ensure all of the filament carrier is removed from under the film.
  - b. If cutting directly on the ground, use a sharp blade to cut through both layers of film, using a straight edge to guide the blade. Use a new blade for each overlap, since concrete and other substrates can dull the blade.

### NOTE

Using a knife directly on the ground could damage the substrate.

6. Remove the excess ends (stubs) that were cut from the panels. To remove the bottom stub, fold back the top film to expose the stub, and remove it, working from one end of the graphic to the other.
7. Slowly squeegee the entirety of each seam to the floor, ensuring the panels are flush to each other. Work up the seams—rather than left to right—to avoid creating overlaps.

## Applying Sidewalk Graphics with Multiple Panels

### NOTE

Graphics using a Safety-Walk™ component cannot be overlapped, and cannot be cut using 3M™ Knifeless™ Tape. See the [3M™ Safety-Walk™ Technical Data Sheet](#) for detailed instructions for applying Safety-Walk™ products.

1. Install the first panel according to the instructions in the [“One Piece Graphic Application” section on page 5.](#)
2. Peel back the second panel’s liner edge to align and apply it on top of the first piece with a 3/8 in. (9.5 mm) overlap.

### NOTE

When possible, overlap the panels in the shortest direction to minimize the length of the overlap, as overlaps are more likely to be lifted by foot traffic.

3. Continue applying the new panel following the process in the [“One Piece Graphic Application” section on page 5.](#)
4. Re-brush all edges and corners of the graphic panel using a firm, circular motion with a rivet brush. This works the adhesive into the application surface to provide better bonding and a good edge seal. See Figure 2.
5. Continue applying subsequent panels, following Steps 2 through 4 and staggering overlaps to avoid creating more than three layers of film in any one location. See Figure 3.

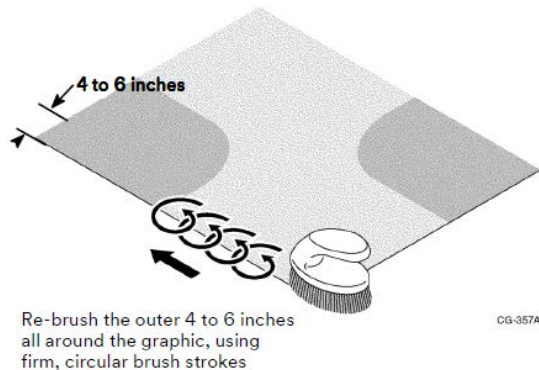


Figure 2. Re-brushing

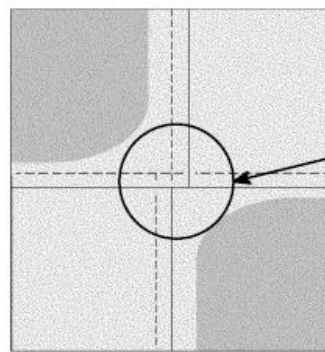


Figure 3. How to Overlap Seams

## Finishing the Application

Sidewalk and floor graphic applications are NOT finished until the edges and corners are re-squeegeed. This ensures a good edge seal.

Re-squeegee the outer 4 in. to 6 in. (10.2 cm to 15.2 cm) all around the graphic, using firm, overlapping strokes with a 3M™ Applicator PA-1. This works the adhesive into the application surface to provide better bonding.

### Special Note on Floor Graphics

Apply wax to any newly installed floor graphics on floors routinely maintained with buffing or scrubbing equipment as soon as possible after application. This protects the graphic from premature wear due to routine floor maintenance.

Following the application and waxing, keep the graphic and the surrounding floor surface clean and dry for at least four hours. Do NOT scrub or buff the area during that time.

## Maintenance and Cleaning

 **CAUTION**

To reduce the risk of personal injury due to trips and falls, remove and replace the entire graphic if there is any lifting from the walking surface

Sidewalk Graphics	Floor Graphics
<ul style="list-style-type: none"> <li>• Sidewalk signs should be mopped or brushed periodically to maintain optimum skid resistance and appearance.</li> <li>• The overlaminates' light texture may pick up dirt. To clean the graphic, use a stiff, nylon-bristled brush or a light duty automatic cleaner and a cleaning agent such as 3M™ Neutral Cleaner, 3M™ General Purpose Cleaner, or Simple Green®. Follow the manufacturer's instructions for use. Do NOT use any cleaning agent that contains solvents, as these can erode the sign material.</li> <li>• Do NOT pressure wash sidewalk signs. Doing so forces water under the graphic, causing the edges to lift and curl.</li> <li>• Clean exposed adhesive from shrunken sidewalk signs with overlaps by spraying the exposed adhesive with 3M™ Industrial Cleaner. Allow the cleaner to sit for one minute, then wipe the surface with a rag or clean it with a stiff, nylon-bristled brush.</li> </ul>	<p>Use routine floor maintenance procedures and equipment to maintain the graphic.</p> <ol style="list-style-type: none"> <li>1. Select a floor finish or wax that meets or exceeds the local area regulations for coefficient of friction performance.</li> <li>2. Clean the graphic prior to waxing it.</li> <li>3. Apply the floor finish or wax according to the manufacturer's recommendations.</li> <li>4. Do NOT use buffing equipment over graphics unless they are waxed regularly.</li> </ol> <p>3M recommends applying four to six coats of wax to floor graphics before buffing them with high-speed, propane-type buffers. The multiple layers of wax reduce the likelihood of graphic edges wearing prematurely during buffing.</p>

## Removal

1. Remove sidewalk graphics by lifting one edge and pulling it off at a high angle (about 135 degrees, or back onto itself) with smooth, even tension. A scraper, such as a putty knife, may be used to lift the edge, if needed.

**NOTE**

For sidewalk graphics:

- Some adhesive residue may remain on typical outdoor surfaces.
- Remove sidewalk signs applied to smooth, sealed surfaces during the coolest part of the day. Cutting the graphic into 2 in.-wide (5.1 cm-wide) strips and then pulling off each strip may also be helpful. Use a razor blade with a safety handle to do this.
- The area under the graphic will initially be cleaner than surrounding surfaces, which may cause a visible shadow where the graphic was placed. This is normal.

**NOTE**

For floor graphics:

- This process may also remove floor wax under the graphic causing the area underneath to have to be rewaxed.
- The area under the graphic will initially be cleaner than surrounding surfaces, which may cause a visible shadow where the graphic was placed. This is normal.



## Health and Safety

### Chemicals

When handling any chemical products, read the manufacturers' container labels and the Safety Data Sheets (SDS) for important health, safety, and environmental information.

[Follow this link to obtain SDS sheets for 3M products.](#)

[Follow this link to obtain information about substances of very high concern \(SVHC\) for EU products.](#)

### Tools and Equipment Usage

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

### Air Quality Regulations

Country, state, or regional volatile organic compound (VOC) regulations may prohibit the use of certain chemicals with VOCs in graphic arts coatings and printing operations. Check with local environmental authorities to determine whether use of this product may be restricted or prohibited.

### Ergonomics

Any activity performed for a long period of time in an awkward position or with a high amount of force is potentially a risk for causing musculoskeletal strain, pain or injury. When applying or removing graphics, follow these practices to improve comfort and avoid injury:

- Alternate your tasks during the application.
- Schedule regular breaks.
- Perform stretches or do exercises to improve circulation.
- Avoid awkward reaching.

## Warranty Information

### Technical Information

Technical information, guidance, and other statements provided by 3M are based upon records, tests, or experience that 3M believes to be reliable, but the accuracy, completeness, and representative nature of such information is not guaranteed. Such information is intended for people with knowledge and technical skills sufficient to assess and apply their own informed judgment to the information. No license to any intellectual property rights is granted or implied with respect to this technical information.

### Product Selection and Use

Many factors beyond 3M's control and uniquely within user's knowledge and control can affect the use and performance of a 3M product in a particular application. Customer is solely responsible for evaluating the product and determining whether it is appropriate and suitable for customer's application, including conducting a workplace hazard assessment, reviewing all applicable regulations and standards, and reviewing the product label and use instructions. Failure to properly evaluate, select, and use a 3M product in accordance with instructions or to meet all applicable safety regulations may result in injury, sickness, death, and/or harm to property.

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3M Center, Building 223-3N-30  
St. Paul, MN 55144

1-800-328-3908  
3M.com/Graphics

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Revision A, December 2024 Please recycle.

