



# Scotchcal™

## Graphic Film for Textured Surfaces IJ8624, RG8624, FN8624 and 8624 ES

### For Piezo Inkjet and Electrostatic Printing

#### Product Description

These are 2-mil removable graphic films designed for either solvent-based piezo inkjet printing or electrostatic printing. When heated and applied with 3M's application tools and techniques, these films conform to moderately textured surfaces on both flat and curved substrates, including concrete block, brick, industrial stucco and tile similar to those surfaces commonly found in sports arena, stadiums, restaurants, retail and other public venues.

#### Graphic Protection

Graphic protection prevents abrasion and adds stiffness that makes some applications easier. Using an overlamine generally improves removal characteristics. See the Compatible Products section for the recommended graphic protection for your printing method.

##### *Piezo Inkjet Printing*

Graphic protection is not always required, but it is recommended.

##### *Electrostatic Printing*

Graphic protection is required to protect the toners.

#### Recommended Types of Graphics and End Uses

When constructed and used as described in this Bulletin, these types of graphics and end uses are covered by 3M's Basic Product Warranty. Please read the entire Bulletin for details.

- Graphics applied to indoor or outdoor moderately textured surfaces. See Application Characteristics on page 2 for details.

#### CAUTION

Be aware that graphics installed 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.

#### Compatible Products

##### **3M Graphic Materials**

For complete details about graphic construction options, recommended uses and durability, refer to the Product Bulletin for the base film or substrate (media) you are using. See 3M Related Literature at the end of this bulletin.

##### **Piezo Inkjet Printing**

- 3M™ Scotchcal™ Graphic Film for Textured Surfaces IJ8624 or RG8624
- Any piezo inkjet ink or printer (test and approve)
- 3M™ Scotchcal™ Luster Overlamine for Textured Surfaces 8524

##### **Electrostatic Printing**

- 3M™ Scotchcal™ Graphic Film for Textured Surfaces 8624 ES
- Scotchprint® Electronic Graphics System
- Scotchprint® Toner Series 8700/8800 ES
- 3M™ Trident Transfer Media
- 3M™ Scotchcal™ Luster Overlamine 8519
- 3M™ Scotchcal™ Matte Overlamine 8520
- 3M™ Screen Printing Gloss Clear 1920DR
- 3M™ Piezo Inkjet Protective Clear 8530

## Characteristics

### Physical Characteristics

Characteristic	Value
Material	Vinyl
Color	White
Thickness	<b>Without adhesive:</b> 2 mils (0.05 mm) <b>With adhesive:</b> 3 to 4 mils (0.08 to 0.10 mm)
Adhesive type	Pressure sensitive
Adhesive color	Gray pigmented for excellent hiding power
Liner	Layflat polyethylene coated paper
Adhesion <i>24 hours after application</i>	Adhesion depends on the substrate material, texture and application technique. See Test Procedure on page 3.
Chemical resistance	Resists mild alkalis, mild acids, and salt Excellent resistance to water ( <i>this does not include immersion</i> )
Flammability	Call 1-800-328-3908 for information

### Application Characteristics

Finished graphic application recommendation	<b>Application surfaces:</b> 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 Instruction Bulletin 5.37 for details. <b>Substrate temperature:</b> 40° to 100°F (4° to 38°C)
Applied film shrinkage	0.015 inches (0.4 mm)
Graphic removal	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

## Warranty

### 3M Basic Product Warranty

This product has been tested and is believed to be a good product when used as recommended in this bulletin. The film is covered by the 3M Basic Product Warranty and is guaranteed to be free of physical and manufacturing defects. There is no warranty for printability, visual appearance, fitness for use or durability.

### Warranty and Limited Remedy

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: all 3M products are 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. 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. In no case shall 3M be liable for any direct, indirect, or consequential damages, including any labor or non-3M materials charges.

See the Graphics Market Center Warranty Brochure, which gives the terms, additional limitations of the warranty, if any, and limitations of liability.

## Expected Performance Life

Films IJ8624 and 8624 ES are durable, high performance cast films with excellent imaging capability. To ensure that these films meet your specific needs, 3M recommends that graphic manufacturers test this film for satisfactory printing, cutting, adhesion and removal characteristics for the intended end uses. This information does not imply a warranted durability period.

### *Expected Performance Life*

- Indoor: greater than 2 years in most applications
- Outdoor: 3-6 months when not used in the freezing and thawing cycles described below; graphics perform much longer in dry, temperate environments

### *Key Factors That Influence Performance Life*

- 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).
- 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 may exhibit lifting, especially in mortar joints.
- Texture variation. More than 1/8 inch 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 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.
- Smooth surfaces. Use other appropriate films for adjacent smooth surfaces. Contact your 3M sales representative for assistance.

## Fabrication

### **Piezo Inkjet Printing**

When printed with solvent-based piezo inkjet ink, you can expect similar printing results to 3M™ Controllac™ Graphic Film IJ180.

Refer to the ink manufacturer's Product and Instruction Bulletins for printing details.

### **Electrostatic Printing**

Print the image onto the transfer media, then use heat and pressure to transfer the image to film 8624 ES. See the 3M Related Literature section for the bulletins that describe these processes.

## Application

### *Important Note*

- Application of this film requires the use of high heat, 3M's textured surface applicator tools and unique application techniques. To help ensure a successful application, please view the 3M DVD, *Textured Walls Application*, or arrange for a training class. Contact your local 3M sales representative to assist you with either of these options.
- Salt passing through masonry may become trapped behind films. Salt collection on the masonry surface for extended periods of time may cause staining or discoloration.

To support your training, comprehensive application techniques are available in the most current version of Instruction Bulletin 5.37.

## 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 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.
- Film is more susceptible to lifting from deep or undercut mortar joints than shallow ones (about 1/8" 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.

### *Piezo Inkjet Printing Only*

- Using overlaminate 8524 in piezo inkjet graphic construction may make removal easier.

## Test Application Instructions

### Tools

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.

- 3M™ Power Grip Magic Pad Rivet Applicator CMP-1
- 3M™ Textured Surface Applicator TSA-1
- 3M™ Textured Surface Applicator TSA-3

Note: Do not attempt this test using a standard squeegee. You will not be successful.

Note: Some uses of these 3M tools are described and claimed in 3M Patents and pending Patent applications.

- Industrial heat gun with an electronic readout, capable of achieving and sustaining 1000°F (537°C). See Instruction Bulletin 5.37 for examples of suitable guns.
- Heat and burn-resistant gloves
- Film samples
  - *Piezo Inkjet Printing Only*  
Approximately 1 square foot of film IJ8624. The marketing sheet you may have received from your sales representative is made from film IJ8624 and may be used. Five yard rolls of film IJ8624 are also available.
  - *Electrostatic Printing Only*  
At least a 1 square foot sample of 3M™ Scotchcal™ Graphic Film for Textured Surfaces 8624 ES or 3M™ Controltac™ Graphic Film 8620 ES.

### Substrate Preparation

Pre-cast concrete material can have an oily surface and be speckled with dust because of the production process. These characteristics inhibit good adhesion.

If you have poor adhesion, use TSP (tri-sodium phosphate) and water according to the manufacturer's instructions, or use 3M™ All Purpose Cleaner and Degreaser, diluted as recommended. Scrub the surface with a brush. Vacuum with a wet-dry vacuum, then allow to dry until it both looks and feels dry to the touch.

 **CAUTION**

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*Risks of Using Heat Sources*

- To reduce the risk of a serious burn, we recommend always protecting the hand that is holding the applicator tool with a heat-resistant glove.
  - Do not use heat sources near solvent mixtures or residues, or in areas where solvent vapors may be present at hazardous levels.
  - Never use an open-flame heat source in this process.
  - Heat guns are capable of degrading roller and film. Do not point the heat gun directly at the roller. Use care not to overheat and burn the film.
  - Provide adequate ventilation.
  - Always read and following the heat gun manufacturer's recommendations for use.
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Procedure

1. Application technique
    - a. Perform the test in an inconspicuous place on each type of substrate you plan to use for each of the larger graphics.
    - b. Set the gun to 1000°F (537°C).
    - 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. Detailed troubleshooting is provided in the most current version of Instruction Bulletin 5.37.
  2. Wear a heat-resistant glove on the hand that holds the applicator tool (TSA-1, TSA-3 or CMP-1).
  3. If you are using the TSA-1 or TSA-3 roller:
    - a. Hold the heat gun about 1 inch above and immediately in front of the TSA-1 or TSA-3 roller.
    - b. Start at an outside top corner and work straight across to the other side using this technique: Heat the film directly 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.
    - c. Roll all the way to the edge.
    - d. Move the roller down about 2 inches and repeat Step 3 until the film is fully applied.
- Note: The 1-inch width of the TSA-3 roller will prevent you from moving down 2 inches. See FIGURE 1.

FIGURE 1



4. If you are using the CMP-1 pad:
  - a. Heat the film for about 1 second and immediately press the film firmly with the CMP-1 pad for about another second to conform the film around the texture.
  - b. Move to the next section of film—about 1/2 the width of the pad—heat the film and press firmly with the pad.
  - c. Continue with this procedure across the width of the film sample and then start a new row, working in this manner until the film is fully applied.
  - d. Do the next pass across the film by moving down about 1/2 the width of the pad. Repeat Step 4 until the film is fully applied. Refer to FIGURE 2.

FIGURE 2



**CMP-1 PAD:**  
Heat the film, tip the gun away and immediately press the heated film firmly with the pad.

5. 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.
6. If possible, leave the film in place for one week, then check for good adhesion and acceptable removal. Note that film 8620 ES typically shows more lifting than film 8624 ES.

See Instruction Bulletin 6.5 for details.

## Shelf Life, Storage and Shipping

### Shelf Life

Total shelf life: 2 years  
Up to 2 years unprocessed, *OR* process within 1 year *and* apply within 1 year of processing

### Storage Conditions

- 100°F (38°C) maximum; do not freeze
- Out of sunlight
- Clean dry area
- Original container

### Shipping Finished Graphics

Be sure graphics are fully dried before rolling

Ship flat or rolled printed side out. Graphics with an overlaminate should be rolled on a 6 inch (16 cm) or larger core; unlaminated graphics may be rolled on a 3 inch (8 cm) core.

## Health and Safety



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

To obtain MSDS sheets for 3M products:

- By fax, call 1-800-364-0768 in the US and Canada or 1-650-556-8417 for all other locations.
- Electronically, visit us at [www.3M.com/MSDS](http://www.3M.com/MSDS).
- 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.

## 3M Related Literature

Before starting any job, be sure you have the most current Product and Instruction Bulletins.

The information in 3M Product and Instruction Bulletins is subject to change. Current Bulletins are available at [www.3Mgraphics.com](http://www.3Mgraphics.com) or through our Fax-on-Demand system. The following applicable Bulletins provides information and processes you need to properly make the graphics described in this Bulletin. Additional Bulletins may be needed as indicated in the 3M Related Literature section of other 3M components you use.

### Fax on Demand Phone Numbers

United States or Canada: 1-800-364-0768  
International: 1-651-732-6506

	<b>Subject</b>	<b>Bulletin No.</b>	<b>FO D No.</b>	
<b>Product Bulletins</b>	Electrostatic Printing	Scotchprint® Toner Series 8700/8800	8700 3514	
		3M™ Trident Transfer Paper	Trident 3567	
		3M™ Scotchcal™ Luster Overlaminates 8519 and 8520	8519/8520 4524	
		3M™ Screen Printing Ink Series 1900 and Overprint Clear VI0402	1900 2501	
		3M™ Piezo Inkjet Protective Clear 8530	8530 4565	
	Piezo Inkjet Printing	3M™ Scotchcal™ Luster Overlaminates 8524	8524 3577	
<b>Instruction Bulletins</b>		Design of graphics	2.1 5501	
		Scoring and cutting	4.1 6501	
		Screen printing with ink series 1900	3.12 6012	
		Transferring and laminating electrostatically printed images	4.7 6507	
		Using toner series 8700/8800	4.12 6512	
		Cold roll lamination	4.22 6522	
		A Guide to Understanding and Applying Graphics to Common Indoor and Outdoor Wall Surfaces	5.37 7037	
		Storage, handling, maintenance, removal	6.5 7505	
	<b>Warranties</b>		3M Graphics Center Warranty Brochure	9503

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### Bulletin Change Summary

Important information on expected performance life has been added to page 2. This bulletin now covers both piezo inkjet film and electrostatic film for textured surfaces.



Commercial Graphics Division  
3M Center, Building 220-12E-04  
PO Box 33220  
St. Paul, MN 55144-3220 USA  
General Info. 1-800-374-6772  
Technical Info. 1-800-328-3908  
Fax 1-651-736-4233

3M Canada  
P.O. Box 5757  
London, Ontario  
Canada N6A 4T1  
1-800-265-1840  
Fax 519-452-6245

3M México, S.A. de C.V.  
Av. Santa Fe No. 55  
Col. Santa Fe, Del. Alvaro Obregón  
México, D.F. 01210  
52-55-52-70-04-00  
Fax 52-55-52-70-22-77

3M Puerto Rico, Inc.  
Puerto Rico Industrial Park  
P.O. Box 100  
Carolina, PR 00986-0100  
787-620-3000  
Fax 787-750-3035

Fax-on-Demand document number: 3575 Fax-on-Demand ordering: 1-800-364-0768 US/Canada; 1-651-732-6506 International  
[www.3mgraphics.com](http://www.3mgraphics.com)

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