



Piezo Ink Jet Printing

with 3M™ Piezo Ink Jet Ink Series 6700

Table of Contents

Description	1
Product Line	1
Compatible Products and Equipment	1
Health and Safety	2
Understanding Printing with Solvent-Based Piezo Ink Jet Inks	3
The Role of the Piezo Press Operator	3
About Solvent-Based Piezo Inks Used in This Printer	3
Solvent's Affect on Media	3
How to Manage the Total Physical Amount of Ink on Media	3
Keys to Successful Printing and Application	4
Specific Media Processing Recommendations	5
Selective Strike Settings	6
Using Overlaminates, Clear Coats and Application Tapes	8
Recommended Overlaminates, Clear Coats and Application Tapes	9
Handling Finished Graphics	10
Shelf Life, Storage and Shipping	10
Waste Disposal	10
Warranty and Disclaimers	10
3M Related Literature	10

More Information on the Web

Find out more about piezo ink jet printing, including software profiles that help ensure successful printing by visiting our website at www.scotchprint.com. Then click on *business partner login*, which is located under the Scotchprint® logo.

To enter the *business partner login* area, you must be a Scotchprint® Graphics Authorized Manufacturer or 3M Piezo Ink Jet Registered Fabricator. If you are not, please contact your 3M sales representative or Lisa Burns (ljburns3@mmm.com or 651-736-9719).

Description

3M™ Piezo Ink Jet Ink Series 6700 makes attractive, multicolor graphics. These pigmented inks are weather resistant and have excellent color retention. They are intended for use in Océ's Arizona 180 printer

Product Line

This information is subject to change. Be sure this is the most current Product Bulletin. See 3M Related Literature at the end of this bulletin.

Product No.	Color
6791	Magenta
6792	Yellow
6795	Black
6796	Cyan
6781	Light Magenta
6786	Light Cyan

Compatible Products for Warranted Graphics

Note: For details on using a particular film or substrate for piezo ink jet printing, please refer to that product's Product Bulletin.

4 mil Films

- 3M™ Controltac™ Plus Graphic Film RG160-10
- 3M™ Controltac™ Plus Graphic Film Series RG162
- 3M™ Scotchcal™ Removable Graphic Film RG3470
- 3M™ Scotchcal™ Changeable Graphic Film RG3555
- 3M™ Scotchcal™ Perforated Window Graphic Film RG8171

2 mil Films

- 3M™ Controltac™ Plus Graphic Film RG180-10
- 3M™ Controltac™ Plus Graphic Film with Comply™ Performance RG180C-10
- 3M™ Scotchcal™ Graphic Film RG3630-20
- 3M™ Scotchcal™ Graphic Film RG3650-114

Reflective Films

- 3M™ Scotchlite™ Removable Reflective Graphic Film with Comply™ Performance RG680CR-10
- 3M™ Scotchlite™ Plus Flexible Reflective Graphic Film RG680-10
- 3M™ Scotchlite™ Graphic Film RG5100R

Banner Materials

- 3M™ Banner Material RG8450
- 3M™ Single-Sided Banner Material RG8451
- 3M™ Banner Material RG8452

Compatible Products continued on the next page.

Compatible Products, continued.

Note: Films with the RG designation indicate that the material is reverse-wound onto the core for use on the Arizona printer.

Clear Coats and Overlaminates

- 3M™ Screen Print Gloss Clear 1920DR
- 3M™ Scotchlite™ Screen Print Gloss Clear 2920DR
- 3M™ Screen Print Gloss Clear 9720UV
- 3M™ Scotchcal™ Luster Overlamine 3645
- 3M™ Scotchcal™ Luster Overlamine 8519
- 3M™ Scotchcal™ Matte Overlamine 8520
- 3M™ Scotchcal™ Luster Overlamine 8908
- 3M™ Scotchcal™ Matte Overlamine 8909
- 3M™ Scotchcal™ Optically Clear Overlamine 8914

Application Tapes

- 3M™ Premasking Tape SCPM-3, SCPM-44X
- 3M™ Prespacing Tape SCPS-2, SCPS-55

Health and Safety

Caution

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 <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.

Ventilation

Provide local and/or general exhaust ventilation in the print drying areas to prevent a buildup of solvent vapors and to maintain levels of solvents below the limit for worker exposure. An experienced industrial ventilation engineer and/or a certified industrial hygienist can help evaluate your ventilation requirements and design based on your site process conditions. Océ Display Graphics Systems, the printer's manufacturer, also provides ventilation information. Please refer to their literature also.

Note: Additional environmental, health and safety information is available in EHS Bulletin 6700, which is available on the Scotchprint® Graphics Network (Extranet site). See page 1 for more information on how to access this site.

Understanding Printing with Solvent-Based Piezo Ink Jet Inks

The Role of the Piezo Press Operator

An operator who understands pre-press operations and the relationship between media characteristics, printer setup, total ink coverage and drying time can produce graphics that achieve the performance expectations of the media and the customer. The operator should also work with the graphic designer and/or color conversion operator so there is a common understanding of print and media parameters.

A wide variety of printing substrates (media) can be used with piezo ink jet printing. Although 3M media have been extensively tested in laboratory conditions, the knowledge and skill of the operator is a key factor in producing high quality graphics.

About Solvent-Based Piezo Inks Used in This Printer

The inks used in this printer contain a very high percentage of solvent. If the solvent is not evaporated quickly through heat and air, it may significantly affect post-printing operations and how the media handles when applying it.

Solvent's Affect on Media

Normally, the solvents in piezo inks do not damage the media or adhesive unless the solvent remains too long on the media and is also absorbed by the adhesive. When the media is not sufficiently dried immediately after processing, it may result in edge curling, shrinkage, aggressive adhesive and/or stretching, all of which contribute to handling and performance problems. The more solvent you can eliminate, the better the media performance.

How to Manage the Total Physical Amount of Ink on Media

Testing shows that properly managing the total physical amount of ink laid down in any area on the graphic results in better image quality, less ink usage, quicker drying times and greater throughput. It also helps ensure good media performance.

To help you achieve these goals, we have established maximum Total Ink Coverage for each 3M media. Total ink coverage is the total percentage of all inks (CMYK) used in the darkest shadow regions of the graphic. For example, CMYK values of 60%, 60%, 60% and 100% produces a total ink coverage of 280%.

Note: Depending on the software you are using or the color printing reference books you use, total ink coverage may be called: total area coverage; total dot area; max CMYK; maximum ink amount; total ink limit; total printing dot.

There is a common misconception that because the ratio of ink solids to solvent is very low, the only way to achieve satisfactory density is to use high ink coverage. Testing shows that in many cases you can achieve very good density with lower total ink coverage with little or no loss of quality. The rest of this section discusses options for managing the total ink coverage.

Setting Total Ink Coverage During Color Separation

The best results can be achieved when total ink coverage is taken into consideration by the graphic designer and set during pre-press operations.

The graphic designer and/or color separator should always discuss printing parameters with the piezo press operator so that the total ink coverage can be set during separation. The typical methods of color separation are Adobe Photoshop®, ICC-based color management, third party color separation packages and direct conversion to CMYK at the time of scanning.

Part of establishing the total ink coverage is determining maximum black. We recommend limiting black ink to the minimum level necessary to achieve a maximum density. For example, if you review a series of black patches in 1% increments from 90% to 100%, a visible difference in density usually stops being noticeable between 94% to 100% of total black.

Correcting Total Ink Coverage During Printing

If the total ink coverage on a color-separated image is too high for the media and your RIP software supports ink limiting, you may be able to use this function to reduce the total physical amount of ink on the media.

For example, in 3M's **Scotchprint® Graphic Maker Software**, the ink limiting feature manipulates the print data to reduce the amount of ink used while maintaining color balance for the best possible image quality. It does this by limiting the number of ink spots that are printed over the top of one another without restricting the 100% solid colors (cyan, magenta, yellow and black). Ink limiting can be set for none, 100%, 150%, 200% or 250%. For complete details refer to the Graphic Maker User's Manual.

If you are not using Graphic Maker software, consult your RIP software manual for how to limit ink.

If you do not have print time ink limit functions

You may need to re-separate your image for correct total ink coverage.

Keys to Successful Printing and Application

There are many keys to successful printing and application. If we had to pick just two it would be total ink coverage and drying. However, because of the variety of media used and the different operating conditions of each shop, all of the following keys are important to overall success.

Very short term graphics, such as promotional posters and banners, may not require this level of consideration.

1. Discuss the project with the graphic designer and/or color separator.

Make sure the designer and/or color separator know the parameters and printing recommendations for both the media and printer being used for each graphic.

2. Discuss the project with the media applicator.

Work with the media applicator so you are both aware of any special handling or application techniques that may be needed for the selected media construction. Any combination of high total ink coverages, hot application temperatures, and irregular application surfaces may make applying the media more difficult.

Be aware that all 4 mil media with an overlamine will tent over rivets; this is true for all printing technologies.

3. Select the right media for your type of graphic and application needs.

- Each media has specific intended uses and applications, which are described in the media's Product Bulletin.
- Do not use rolls of media that are damaged; it can result in printer failure.
- Condition the media for 24 hours in the same environment as the printer prior to printing.

4. Understand the unique processing characteristics needed for each media.

- Specific Media Processing Recommendations* on page 5 are guidelines we have developed that help provide the best graphic results with the media you are using.
- An overlamine or clear coat* is required for graphics subjected to abrasion such as road debris and automatic/power washing, harsh cleaners, or chemicals. Some window graphic film and all graphics for floors require an overlamine.
- Clear and translucent films for backlit signs require special consideration.* These films tend to be more sensitive to shrinkage due to high total ink coverage. Film that is not sufficiently dried prior to creating an overlap or seam may shrink and result in a light leak. Rather than increasing the total ink coverage to increase the density of the backlit image, we recommend printing two layers

of film at lower ink levels. Refer to the appropriate instruction bulletin for the technique.

5. Use the correct printer profile.

Each media has a unique printer profile that helps ensure successful printing. If you do not have the correct one, refer to pages 6 and 7.

6. Limit the Total Ink Coverage.

Refer to the "How to Manage the Total Physical Amount of Ink on Media" on the previous page.

Too much ink on the media results in media characteristic changes including shrinkage, loss of changeability, loss of positionability (3M™ Controltac™ Plus Graphic Films) and air release features (3M™ Controltac™ Plus Graphic Film with Comply™ Performance), as well as inadequate drying, overlamine lifting, difficult application and/or poor graphic performance.

7. Don't take shortcuts when drying graphics.

Graphics that seem dry to the touch may still be saturated with solvent. This causes the graphic to become soft and stretchy and the adhesive may become too aggressive. Use the maximum drying setting available for your printer that will not distort or damage the media.

If the graphics don't seem to be drying sufficiently in the printer, we recommend increasing drying time or drying temperature in the printer, or using an auxiliary dryer to complete the drying (2 hours @ 150 should be sufficient), or air drying. Air drying is less effective than oven drying. The average air drying for graphics printed with a total ink coverage of 300% is about 12 hours; graphics printed with higher total ink coverage may require up to 24 hours.

Remember, reducing total ink coverage reduces solvents and therefore reduces drying time.

These are problems that may occur due to insufficient drying.

- If the media you are using is a Controltac Plus graphic film, the positionability feature will be significantly reduced if the film is not sufficiently dried.
- You may notice some problems, such as blocking or embossing, when the graphic is unrolled prior to application.
- An overlamine may be difficult to apply.

Too high a drying temperature can distort the printing media, resulting in:

- Transport problems in the printer.
- Wrinkling when the printed graphic is overlaminated or premasked.

8. Prepare test graphics.

The default settings in the printer for drying temperature and time, and the preselected settings in the software for total ink coverage and linearization, may not be the optimum for the graphic that you are printing.

You'll save time and money if you print test graphics for each media type you use. Print the graphics at different printer settings, total ink coverage and drying

times. We recommend starting your tests with the total ink coverage at 250% to 270%. Refer to Specific Media Processing Recommendations on page 5 for guidelines. Keep these samples for future reference.

If the graphic is wound on a spindle or core during printing, check to see that the graphic does not emboss or block after being dried in the printer.

9. Follow all standard good operation and maintenance procedures.

Specific Media Processing Recommendations

Note: For the full product names of the 3M products listed on this page, please see page 1.

Do not exceed the recommended selective strike settings. This is a software and printer function that allows you to manipulate how many double strikes of color are printed in the same place.


Media	Total Ink Coverage (Maximum)	Overlaminates or Clear Coat?	Lifting on Corrugations and/or Tenting on Rivets	Other Considerations
RG160-10	300%	YES, fleet graphics	Tenting possible at high total ink coverage	
RG162	300%	YES, selected applications	Tenting possible at high total ink coverage	
RG160-114	300%	YES, selected applications	Tenting possible at high total ink coverage	
RG180-10	300%	YES, fleet graphics	Possible at high total ink coverage	
RG180C-10	300%	YES, fleet graphics	Possible at high total ink coverage	
RG680-10	300%	YES, fleet graphics		
RG680CR	300%	YES, fleet graphics		
RG3470	300%	YES, selected applications	Tenting possible at high total ink coverage	
RG3630-20	300%			Pay close attention to Key 4, page 4.
RG3555	300%	YES, selected applications	Possible at high total ink coverage	Possibly some shrinkage at this coverage level and default printer drying time and temperature.
RG3650-114	300%			Pay close attention to Key 4, page 4.
RG5100R	300%	YES, selected applications		


Continued on the next page

Note: For the full product names of the 3M products listed on this page, please see page 1.

Media	Total Ink Coverage (Maximum)	Overlamine or Clear Coat?	Lifting on Corrugations and/or Tenting on Rivets	Other Considerations
RG8171	300%	YES, an overlamine		Due to the perforations in this film, it is harder to match the image quality of a solid film. Higher total ink coverage increases drying issues; the film may lift from liner, stick to liner when rolled up, wrinkle when being overlaminated. Retained solvent can cause film to lift from substrate after application.
RG8450	300%			Banner material is susceptible to blocking or embossing when rolled, especially if the graphic is not totally dried.
RG8451	300%			
RG8452	270%			

Selective Strike Settings

 Caution
Before handling any chemical products, always read the container label and the MSDS.

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

Selective strike is a software and printer function that allows an increase of ink coverage (solid density) so that no pattern or banding shows while still using the minimum amount of ink laydown necessary. Too little ink laydown results in partial fills of solid areas with the white of the media showing through. Too much ink laydown may result in ink smearing or running.

The procedures for establishing selective strike are different in Scotchprint® Graphic Maker Software Version 4.2 or higher than when using 3M™ Cactus™ Large-Format Print Software. Both procedures follow.

Selective Strikes Settings - Scotchprint® Graphic Maker Software Version 4.2 or Higher

Graphic Maker Software version 4.2 or higher has user-selectable selective strike settings in 12.5 percent increments. A suggested starting point when using any of the recommended media is given below.

Note: Caution must be used with high selective strikes. Too high an ink coverage results in inadequate ink drying or changes to the characteristics of the media.

Percent Selective Strike Settings for Graphic Maker Software Version 4.2 or higher						
Media	Color					
	C	M	Y	K	LM	LC
RG160-10	150	150	137.5	150	Off	Off
RG162-10	112.5	112.5	112.5	112.5	Off	Off
RG162-114	112.5	112.5	112.5	112.5	Off	Off
RG180-10	112.5	125	112.5	112.5	Off	Off
RG180C-10	112.5	125	112.5	112.5	Off	Off
RG680-10	112.5	125	112.5	112.5	Off	Off
RG680CR	112.5	125	112.5	112.5	Off	Off
RG3470	112.5	112.5	112.5	112.5	Off	Off
RG3555	112.5	112.5	112.5	112.5	Off	Off
RG3630-20	112.5	125	125	137.5	Off	Off
RG3650-114	112.5	125	125	137.5	Off	Off
RG5100R	112.5	125	112.5	112.5	Off	Off
RG8171	112.5	125	112.5	112.5	Off	Off
RG8450	112.5	125	112.5	112.5	Off	Off
RG8451	137.5	150	137.5	125	Off	Off
RG8452	137.5	150	137.5	125	100	100

Note: For Graphic Maker Software versions 5.1 and higher, substitute 100% for Off. The 100% setting is equivalent to Off.

Note: For the full product names of the 3M products listed on this page, please see page 1.

Graphic Maker Software Parameters

The following table lists suggested initial parameters for calibration and printing.

Graphic Maker Software Parameters				
Media	Calibration			Printing
	Light Color Max Limit	Spot Size	Dot Gain	Ink Limit
RG160-10	70	2.0	17	200%
RG162-10	100	2.0	17	200%
RG162-114	100	2.0	17	200%
RG180-10	70	2.0	17	200%
RG180C-10	70	2.0	17	200%
RG680-10	70	2.0	17	200%
RG680CR-10	70	2.0	17	200%
RG3470	100	2.0	17	200%
RG3555	100	2.0	17	200%
RG3630-20	70	2.0	17	200%
RG3650-114	70	2.0	17	200%
RG5100R	70	2.0	17	200%
RG8171	70	2.0	17	200%
RG8450	70	2.0	17	200%
RG8451	100	3.5	17	200%
RG8452	100	2.0	17	200%

Selective Strike Settings - 3M™ Cactus™ Large-Format Print Software

- Open Edit>Preferences>General, Color Correction.
- Set the Color Correction Profile to the flatcurves.ocp.
- Set the Calibration for 3M Screening to the Arizona 6 color Cal file for your media.
- Click on the Image Options tab.
 - Set Tiff Halftoning to 3M Halftoning.
 - Set Tiff section Color Correction to Curves.

Note: Do not use Tables as is usually done with halftoning in Cactus software. This change only applies while you are trying to determine the proper selective strike or printing the test chart to create an OCP using the 3M Halftoning. Once selective strike has been determined, reset to Tables.

- Set Postscript Halftoning to 3M Halftoning.
- Set Postscript section Color Correction to Curves.

- Print the Calibration test chart, Test.Chart.RGB.tiff located in the Calibration Images folder of the 3M Cactus Suite.

Printer Settings

A key factor to obtaining image quality, expected durability, and application performance of a finished graphic is the total ink laydown, drying temperature and time.

Too low a drying temperature or too short a drying time results in:

- Under-dried ink that embosses when the printed graphic is wound onto a take-up roll.
- Increased stretchiness of the media and stickiness of the adhesive resulting in application problems.

Too high a drying temperature can distort the printing media, resulting in:

- Transport problems in the printer.
- Wrinkling when the printed graphic is overlaminated or premasked.

Too high total ink coverage causes drying problems, resulting in:

- Media changes affecting post processing, application, and expected durability.

The following table summarizes the thickness, drying and ink laydown recommendations for the piezo ink jet media.

Recommended Settings Using 8 Pass, 2X, BiDirectional mode

Printer Settings Summary			
Product	Thickness	Drying Conditions	
		Time	Temp.
RG160-10	11.3 mil	1.5 seconds	49°C
RG162-10	11.6 mil	1.5 seconds	45°C
RG162-114	11.6 mil	1.5 seconds	45°C
RG180-10	10.0 mil	1.5 seconds	45°C
RG180C-10	10.0 mil	1.5 seconds	45°C
RG680-10	14.0 mil	1.5 seconds	45°C
RG680CR	14.0 mil	1.5 seconds	45°C
RG3470	11.6 mil	1.5 seconds	45°C
RG3555	11.6 mil	1.5 seconds	45°C
RG3630-20	10.4 mil	3.0 seconds	45°C
RG3650-114	10.4 mil	3.0 seconds	45°C
RG5100R	13.5 mil	1.5 seconds	45°C
RG8171	12.6 mil	1.5 seconds	47°C
RG8450	15.0 mil	1.5 seconds	42°C
RG8451	12.0 mil	1.5 seconds	44°C
RG8452	14.0	1.5 seconds	44°C

Note: For the full product names of the 3M products listed on this page, please see page 1.

Recommended Settings Using 4 Pass, 2X, BiDirectional Mode

When image quality is a critical requirement, we recommend using the 8 pass mode. The 8 pass mode gives the inks more time to dry and reduces printing artifacts and impressions.

Printer Settings Summary			
Product	Thickness	Drying Conditions	
		Time	Temp.
RG160-10	11.3 mil	1.0 seconds	55°C
RG162-10	11.6 mil	1.0 seconds	54°C
RG162-114	11.6 mil	1.0 seconds	54°C
RG180-10	10.0 mil	1.0 seconds	54°C
RG180C-10	10.0 mil	1.0 seconds	54°C
RG3470	11.6 mil	1.0 seconds	54°C
RG3555	11.6 mil	1.0 seconds	54°C
RG8450	15.0 mil	1.0 seconds	45°C
RG8451	12.0 mil	1.0 seconds	47°C
RG8452	14.0 mil	1.0 seconds	47°C

Using Overlaminates, Clear Coats and Application Tapes

Note: See the table on page 7 for an overview of film and overlaminate/clear coat recommendations as of the date of publication. Please refer to the film Product Bulletins for complete details.

Refer to Instruction Bulletin 4.22, *Cold Roll Lamination*, for applying overlaminates.

Refer to Instruction Bulletin 3.11 for printing details on using clear coat 1920DR.

Refer to Instruction Bulletin 3.18 for printing details on using clear coat 2920DR.

When to Use an Overlaminate or Clear Coat

Graphics That Require Protection To Be Warranted

Most graphics, even durable, piezo ink jet printed graphics, require additional protection under certain conditions. When using ink series 6700, the durability of the graphics is reduced when frequently subjected to any of the following environments: road debris or impinging foreign debris, foreign material rubbing on the graphic, power washing equipment, aggressive brushing, occasional chemical spillage such as acids and alkalis, and petroleum products such as gasoline spills at pumps.

Therefore, to protect the ink and graphics and receive the Warranted Durability, an overlaminate or clear coat is required when the graphic is used in such environments.

Graphics That Specifically Require An Overlaminate Or Clear Coat

- Graphics on the exterior of vehicles and railroad rolling stock
- Any graphics exposed to the abrasive or harsh environments mentioned above
- All graphics for floors (use overlaminate 3645)
- Window graphics that require optical clarity (use overlaminate 8914)

Graphics That Do Not Require Protection To Be Warranted

If the graphics are not exposed to the environments listed above, an overlaminate or clear coat is not required to receive the Warranted Durability. However, for graphics applied in high contact areas such as bus shelters, hallways, etc., using an overlaminate or clear coat will provide additional protection.

How to Select an Overlaminate or Clear Coat

Typically, an overlaminate or clear coat is selected based on the following criteria. Refer to the overlaminate or clear coat’s Product Bulletin for details.

1. Intended application: make sure the film and overlaminate or clear coat you select are recommended for your end use
2. Type of available processing equipment (screen printing, laminator or other coater)
3. Desired durability
4. Gloss
5. Cost

When to Use an Application Tape

The type of 3M application tape to use depends on the type of graphic produced.

- Use premasking tape if there is very little exposed liner.
- Use prespacing tape if graphics have large amounts of exposed liner or are kiss cut.

Refer to the table above for the appropriate application tape. Refer to the Instruction Bulletin 4.3, June 2000 or later, for more complete information on applying the recommended application tape.

Note: For the full product names of the 3M products listed

on this page, please see page 1.

Recommended Overlaminates, Clear Coats and Application Tapes

This is an overview of film and overlaminate/clear coat recommendations as of the date of publication. Please refer to the film Product Bulletins for complete details.

	Ink 6700	Films with Comply	Overlaminate or Clear Coat ¹							
			8519 8520	8908 ² 8909 ²	3645 ³	8914 ⁴	1920DR ⁵	2920DR ⁵	9720UV ⁵	8530 ⁸
Film										
RG160-10	●		●	●			●		●	●
RG162-10	●				●					
RG162-114	●				●					
RG180-10	●		●	●			●		●	●
RG180C-10	●	● ⁶	●	●			●		●	●
RG3470	●		●	●			●		●	
RG3555	●		●	●			●		●	●
RG3630-20	●		●	●			●		●	
RG3650-114	●		●	●			●		●	
RG8171	●					●	●		●	
RG680-10	●		● ⁷	● ^{2,7}				●	●	
RG680CR-10	●	● ⁶	● ⁷	● ^{2,7}				●	●	
RG5100R	●		● ⁷					●	●	
RG8450	●		●				●		●	●
RG8451	●		●	●			●		●	●
RG8452	●		●	●			●		●	●
Application Tape ¹										
Premasking Tape	SCPM-3	SCPS-55	SCPM-3	SCPM-3	None	Do NOT use an Application Tape	SCPM-3	SCPM-3	SCPM-3	SCPM-3
Prespacing Tape	SCPS-2	SCPS-55	SCPS-2	None	None		SCPS-2	SCPS-2	SCPS-2	None

¹ See **Using Overlaminates, Clear Coats and Application Tapes**, page 8.

² Do not use overlaminates 8908 and 8909 for use on fleet graphics, reflective film or certain banners. Check the film bulletin for details.

³ Overlaminate 3645 is required for floor graphics.

⁴ Use overlaminate 8914 when optically clear window graphics are required.

⁵ Clears 1920DR, 9720UV and 2920DR must be screen printed to be warranted. Do not use these clears on interior graphics. In addition, 9720UV must be UV cured.

⁶ Films with Comply performance use only premasking tape SCPM-55.

⁷ Do not use matte overlaminates on graphics made with reflective film.

⁸ Designed for use only with the Seal Graphics AS1600, SW3000 Liquid Laminator or PrintSeal 1000.

Note: For the full product names of the 3M products listed on this page, please see page 1.

Handling Finished Graphics

- Be sure ink series 6700 is dry before packaging the finished graphic.
- Ship the finished graphic lying flat or rolled. To roll, wrap the graphic, media-side out, onto a core that is 5 inches (130 mm) or larger in diameter. These methods help to prevent the liner from wrinkling or popping off.
- Put a slip sheet, such as 3M™ Easy Release Liner SCW-33, on the face of the printed side of these types of graphics: a graphic that is premounted on panels, panels that have graphics on both sides, or a liner that is printed by a customer.
- Store the graphics in a clean, dry area.
- Store the graphics out of the direct sunlight and at a temperature less than 100°F (38°C).

Shelf Life, Storage and Shipping

- Store the inks in their original packaging.
- Store the inks at 32° to 95°F (0° to 35°C).
- Use the inks within one year of purchase.
- Ink series 6700 is classified as non-hazardous by the Department of Transportation. The inks are non-regulated when transported via ground and air.

Waste Disposal

Waste from the printer includes ink waste, solvent waste, printer blotting cloth and felt absorber, and plastic bottles. We encourage you to handle all waste in a responsible manner. Some general guidelines are provided below.

Inks and Solvents

The inks and solvents are considered non-hazardous waste according to U.S. EPA requirements. Even though the inks and solvents are classified as non-hazardous, non-regulated waste, the EPA requires that any ink or solvent waste must be incinerated in an industrial or commercial facility. Do not pour the inks or solvents down the drain, or put in the general trash, or in a landfill. Since regulations vary, consult applicable regulations or authorities before disposal.

Printer Blotting Cloth and Felt Absorber

The printer blotting cloth and felt absorber can be disposed of in the general trash or in a landfill if free liquid cannot be squeezed out. If inks can be squeezed out, the blotting cloth and felt absorber should be incinerated in an industrial or commercial facility.

Plastic Ink Bottles

Once bottles are empty of free liquid, dispose of the bottles in the general trash or in a landfill. The ink bottles are made of High-Density Polyethylene (HDPE) plastic as indicated by the recycling number “2”. Check with your local recycler regarding recycling the bottles in your area.

Warranty and Disclaimers

The information contained and techniques described herein are believed to be reliable, but 3M makes no warranties, express or implied, including but not limited to any implied warranty of merchantability or fitness for a particular purpose. 3M shall not be liable for any loss or damages, whether direct, indirect, special, incidental or consequential, in any way related to the techniques or information described herein.

Attention:

Scotchprint® Graphics Authorized Manufacturers

Visit our password-protected website (www.scotchprint.com, then Login) for exclusive product information, services and product promotions for 3M's Scotchprint) Graphics Authorized Manufacturers.

Ask your Commercial Graphics Division sales representative to sign you up today!

3M Related Literature

Before starting any job, be sure you have the most recent product and instruction bulletins.

Listed below is related 3M technical literature that may be of interest. You may view and print these Bulletins from our Web site at www.scotchprint.com, or order them via our Fax-on-Demand (FOD) system. Call one of these phone numbers to order the desired bulletins, and specify the FOD document number provided in the chart.

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

Subject	Bulletin No.	FOD No.
Product Bulletins		
3M™ Piezo Ink Jet Ink Series 6700	6700	4512
3M™ Screen Printing Ink Series 1900	1900	2501
3M™ Scotchlite™ Screen Printing Ink Series 2900	2900	2512
3M™ Screen Printing Ink Series 9700UV	9700	2507
3M™ Scotchcal™ Overlaminat Film 3645	3645	1508
3M™ Scotchcal™ Overlaminat 8519 and 8520	8519/ 8520	4524

Product Bulletins continued on the next page.

Product Bulletins, continued.

Subject	Bulletin No.	FOD No.
3M™ Piezo Ink Jet Protective Clear 8530	8530	4565
3M™ Scotchcal™ Luster Overlamine 8908	8908	3554
3M™ Scotchcal™ Matte Overlamine 8909	8909	3565
3M™ Scotchcal™ Optically Clear Overlamine 8914	8914	3542
3M™ Controltac™ Plus Graphic Film RG160-10	RG160-10	4558
3M™ Controltac™ Plus Graphic Film RG162-10 and RG162-114	RG162-10	4523
3M™ Controltac™ Plus Graphic Film RG180-10	RG180-10	4518
3M™ Controltac™ Plus Graphic Film with Comply™ Performance Series RG180C-10	RG180C-10	4555
3M™ Scotchlite™ Plus Flexible Reflective Graphic Film RG680-10	RG680-10	4522
3M™ Scotchlite™ Removable Graphic Film with Comply™ Performance Film Series RG680CR	RG680CR	4554
3M™ Scotchcal™ Removable Graphic Film RG3470	RG3470	4516
3M™ Scotchcal™ Changeable Graphic Film RG3555	RG3555	4548
3M™ Scotchcal™ Translucent Graphic Film RG3630-20	RG3630-20	4520
3M™ Scotchcal™ Graphic Film RG3650-114	RG3650-114	4519
3M™ Scotchlite™ Reflective Graphic Film RG5100R	RG5100R	4562
3M™ Scotchcal™ Perforated Window Graphic Film RG8171	RG8171	4517
3M™ Banner Material RG8450	RG8450	4518
3M™ Single Sided Banner Material RG8451	RG8451	4551

Subject	Bulletin No.	FOD No.
3M™ Banner Material RG8452	RG8452	4571
Instruction Bulletins		
Design of graphics	2.1	5501
Screen printing with ink 1900	3.11	6011
Screen printing with ink series 9700 UV	3.4	6004
Screen printing with line ink series 2900	3.18	6018
Making backlit signs with piezo printed film	4.26	6526
Making digitally imaged, single and double-sided promotional banners	4.15	6515
Making backlit signs with piezo printed films	4.26	6526
Using 3M application tapes; premasking and prespacing for films	4.3	6503
Cold roll lamination	4.22	6522
Scoring and cutting	4.1	6501
Application, substrate selection, preparation and substrate-specific application techniques	5.1	7001
Application, special applications and vehicles	5.4	7004
Application, general procedures for interior and exterior dry applications	5.5	7005
Applying 3M graphic films with Comply™ Performance	5.31	7031
Storage, handling, maintenance, removal	6.5	8505

3M, Controltac, MCS, Scotchcal and Scotchlite are trademarks of 3M. Scotchprint is a registered trademark of 3M in the US and other countries. Photoshop is a registered trademarks of Adobe Systems Incorporated.

Bulletin Change Summary

Changed 3M™ Scotchcal™ Changeable Graphic Film RG5100 to 3M™ Scotchcal™ Reflective Graphic Film RG5100R. This affected several tables throughout the bulletin. Clear 9720UV can now be used with this ink series on selected films. This affects the table on page 9.



Commercial Graphics Division
 3M Center, Building 220-6W-06
 PO Box 33220
 St. Paul, MN 55144-1000
 General Info. 1-800-374-6772
 Technical Info. 1-800-328-3908
 Fax 1-651-736-4233
 Fax-on-Demand 1-800-364-0768 US/Canada or 1-651-732-6506 International
 Fax-on-Demand Document Number 6538
 www.scotchprint.com

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
 52-5-270-0400
 Fax 52-5-270-2299

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

©3M 2004. All rights reserved

For the United Kingdom and Republic of Ireland

Health & Safety

Refer to the package label and the Material Safety Data Sheet for health, safety, and handling information on the products referenced in this bulletin. For 3M products, if necessary, you may contact our Toxicology/Product Responsibility Department on 01344 858000.

Important Notice to Purchaser

The 3M products described in this publication are covered by a 3M warranty and limitation of liability.

3M's warranty provides that if 3M finds that goods are defective in material or workmanship they will be replaced or the price refunded at 3M's option but note that 3M does not accept liability for other direct losses (except for personal injury or death) or consequential losses relating to defective products or from information supplied by 3M.

Purchasers and users of 3M products, and not 3M supplying companies, are always solely responsible for deciding on the suitability of the 3M product for their required or intended use.

Technical Assistance

For help on specific questions relating to 3M Commercial Graphics Division Products, contact your local Technical Service Representative.

Commercial Graphics Department
3M United Kingdom PLC
3M Centre
Cain Road
Bracknell
Berkshire
RG12 8HT
Tel: 01344 857850
Fax: 01344 857939
e-mail: commgraphics.uk@mmm.com
www.3m.com/uk/graphicsolutions
www.scotchprint.com/uk

Sales Assistance

Commercial Graphics Group
3M United Kingdom PLC
3M House
28 Great Jackson Street
Manchester
M15 4PA
Tel: (0161) 237 6394
Free Fax: (0800) 378127
e-mail: commgraphics.uk@mmm.com
www.3m.com/uk/graphicsolutions
www.scotchprint.com/uk

3M Ireland, 3M House, Adelphi Centre,
Upper Georges Street,
Dun Laoghaire, Co Dublin, Ireland
Tel: 01280 355, Fax 01 280 3509
e-mail: commgraphics.uk@mmm.com
www.3m.com/uk/graphicsolutions
www.scotchprint.com/uk