## Film Series 3630 Film Series 3730

## **Product Description**

- 2-mil, vinyl translucent films, available in crisp, clear colors (many with simulated PANTONE® color references)
- · For screen printing, cut graphics, and thermoforming
  - Use Film Series 3630 for fluorescent or LED lighting applications
  - Use Film Series 3730 for LED applications

#### **Quick Links**

3M Graphics Warranties Technical Information Selector Safety Data Sheets (SDS)

Some of these links lead to web-based resources that are not product-specific.

#### **Product Features**

- 3M™ Scotchcal™ Translucent Film Series 3630 and 3M™ Envision™ Translucent Film Series 3730 (the "Products") have matte surface finishes to eliminate glare and provide uniform color in reflected and transmitted light
- Pressure-sensitive, non-removable adhesive adheres to rigid and flexible substrates alike
- Synthetic, lay-flat liner is unaffected by water or humidity
- Cut electronically
- Thermoformable
- Not removable
- Expected performance life of seven years (unwarranted period for unprinted film with no graphic protection, applied to a flat, vertical, outdoor surface)

## Recommended Types of Graphics and End Uses

- For indoor or outdoor use on internally-illuminated sign faces
- First and second surface application on rigid substrates
- First surface applications only on flexible substrates
- Thermoforming on rigid plastic substrates
- For use with fluorescent bulbs or LEDs. For best results, 3M recommends:
  - film 3630 for fluorescent or LED light applications
  - film 3730 for LED applications

When constructed and used as described in this bulletin, these types of graphics and end uses may be warranted by the 3M™ MCS™ Warranty or the 3M Performance Guarantee. Please read the entire bulletin for details.

## **Special Considerations**

3M recommends weeding before thermoforming when using film with red pigments. The red pigments available to film manufacturers today can stain plastic when thermoformed.

3M helps users match day/night colors when the same color density is required in frontlit and backlit graphics to maximize a sign's effectiveness. Please contact 3M for assistance when this is a concern.

## **Recommended Compatible Products**

#### Screen Printing Inks

- 3M™ Screen Printing Ink Series 1900
- 3M<sup>™</sup> Screen Printing UV Ink Series 9800







#### **Films**

- 3M™ Day/Night Film 3635-91
- 3M™ Diffuser Film 3635-30
- 3M™ Diffuser Film 3635-70
- 3M™ Envision™ Diffuser Film 3735-50
- 3M<sup>™</sup> Envision<sup>™</sup> Diffuser Film 3735-60
- 3M™ Blockout Film 3635-20B
- 3M™ Blockout Film 3635-22B
- 3M™ Dual-Color Film Series 3635-200

#### Substrates

- 3M<sup>™</sup> Panagraphics<sup>™</sup> III Wide-Width Flexible Substrate
- 3M™ Envision™ Flexible Substrate FS-1
- Flat, rigid substrates (see "Application Characteristics" on page 3)

## **Graphic Protection**

- 3M™ Scotchcal™ Gloss Overlaminate 3658G
- 3M™ Scotchcal™ Matte Overlaminate 3660M
- 3M™ Screen Print Gloss Clear 1920DR
- 3M™ Screen Print UV Gloss Clear 9740i
- 3M<sup>™</sup> Screen Print UV Gloss Clear 9800CL

## Certificate of 3M™ MCS™ Warranty

Graphic manufacturers who produce digitally printed graphics made with all branded 3M Graphics products, including 3M ink purchased through a qualified 3M distributor or 3M printing partner, may register to be recognized with a Certificate of  $3M^{TM}$  MCS<sup>TM</sup> Warranty. Only graphic manufacturers having a current Certificate of  $3M^{TM}$  MCS<sup>TM</sup> Warranty are eligible to extend this warranty to their customers.

**NOTE:** For non-digitally printed finished graphics, check your eligibility for the 3M<sup>™</sup> MCS<sup>™</sup> Warranty by viewing the warranty period found within this product bulletin or by using the warranty selector at <a href="https://www.3mgraphics.com/warranties">www.3mgraphics.com/warranties</a>.

## Characteristics

These are the typical values for unprocessed product. Processing may change the values.

#### Physical Characteristics

Characteristic	Value					
Material	Vinyl					
Film Color	Film Series 3630: Translucent, 78 colors Film Series 3730: Translucent, 25 colors See "Colors" on page 4.					
Thickness	Without adhesive: 2 mil (0.05 mm) With adhesive: 3 – 4 mil (0.08 – 0.1 mm)					
Adhesive	Pressure-sensitive					
Adhesive Color	Clear					
Liner	Translucent, synthetic lay-flat liner					
Typical Adhesion 24 Hours After Application	Acrylic and uncoated, clear polycarbonate: 4 lbs/in. (0.7 kg/cm)					
Chemical Resistance	Resists mild alkalis, mild acids, and salt Excellent resistance to water (does not include immersion)					
Flammability	Users may view the linked ASTM E84 reports 3630 and 3730 or go to the online product catalog at 3Mgraphics.com. For all other test reports call 1-800-328-3908.					



info@solartint.com



# 3M<sup>™</sup> Scotchcal<sup>™</sup> Translucent Graphic Film Series 3630 3M<sup>™</sup> Envision<sup>™</sup> Translucent Film Series 3730

## **Application Characteristics**

Characteristic	Value			
Finished Graphic Application Recommendation	Surface type: Flat, without rivets Surface type*: 3M flexible substrates; rigid substrates such as flat acrylic, polycarbonate**, high temperature co-polyester sheet, glass Application method: Wet or dry, typical Application temperature: 60°F (16°C) minimum air, substrate			
Temperature Range After Application	-50°F to +170°F (-45°C to +77°C) (Though not for extended periods of time at the extremes.) Low temperature impacts on film applied to flexible substrates may result in cracking of the film and/or substrate			
Recommended Light Source (for best results)	Film Series 3630: Fluorescent bulbs Film Series 3730: LEDs			
Graphic Removal	Not removable			

<sup>\*</sup>These films typically adhere to solar-grade polycarbonate substrates. However, some lots of this substrate may inhibit adhesion. See <u>3M Instruction Bulletin 5.7</u> for additional information.

## IMPORTANT NOTE

Surface impressions may occur when the film is rolled up and the liner impresses slightly upon the vinyl surface. These impressions may disappear when the film is exposed to the sun, or a heat gun can be used on dull areas to restore the film's original appearance. Surface impressions are not considered a product quality defect as they are temporary in nature.

## (i) IMPORTANT NOTE

The user is responsible for determining and complying with all applicable building codes affecting the use of materials in interior and exterior awning, banner, and sign face applications, including flammability standards. For more information on flammability requirements, contact your local building code officials. For information on the results of flammability testing on 3M flexible substrates, call 1-800-328-3908.





<sup>\*\*</sup>Polycarbonate substrates require oven drying before use to remove moisture from the polycarbonate that will otherwise cause the film to bubble. Refer to manufacturers instructions for proper drying times and temperatures.

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#### Colors

Colors shown on a monitor and when printed are approximate representations of the actual color available.

Some of these products are a simulation of the closest PANTONE®-identified color standard. Consult current PANTONE Color Publications for accurate color. PANTONE® is a trademark or registered trademark of Pantone LLC in the United States and/or other countries.

## (i) IMPORTANT NOTE

All color references are based on reflected, not transmitted, light viewing.

## Color Chart for 3M<sup>™</sup> Scotchcal<sup>™</sup> Translucent Film Series 3630

		NTONE Color	Produ	ict Color PA 3630-74	ANTONE Color	Produ	uct Color PA 3630-137	ANTONE Cold PANTONE
lvo		PANTONE 7500 C		Kumquat Orang	PANTONE 151 C ge		European Blue	2757 C
	30-015 llow	PANTONE 116 C		3630-75 Marigold	PANTONE 7549 C		3630-141** Gold Nugget	Not Available
	30-20 hite	Not Available		3630-76 Holly Green	PANTONE 7734 C		3630-143 Poppy Red	PANTONE 485
	30-22* ack	PANTONE Black C		3630-77 Indigo	Not Available		3630-144 Poppy Orange	Not Available
	30-25 nflower	PANTONE 130 C		3630-78 Vivid Rose	PANTONE 206 C		3630-146 Lt. Kelly Green	PANTONE 340
	30-26 een	PANTONE 7727 C		3630-83 Regal Red	PANTONE 200 C		3630-147 Lt. European Blu	PANTONE 7690 e
	30-27 ectric Blue	Not Available		3630-84 Tangerine	PANTONE 1575 C		3630-149 Light Beige	Not Available
36 Re	30-33 d	PANTONE 1797 C		3630-86 Blue Lagoon	Not Available		3630-156 Vivid Green	PANTONE 356
36 Blu	30-36 Je	PANTONE 281 C		3630-87 Royal Blue	PANTONE 2745 C		3630-157 Sultan Blue	PANTONE 287
	30-37 pphire	Not Available		3630-93 Fire Engine Red	Not Available Not		3630-158 Bright Violet	Not Available
	30-38 chsia	Not Available		3630-97 Bristol Blue	Available Not		3630-163 Scarlet	Not Available
	30-39 arm Beige	Not Available		3630-98 Electric Pink	Available		3630-167 Bright Blue	PANTONE 294
	30-43 Tomato Re	Not Available d		3630-106 Brilliant Green	PANTONE 368 C		3630-187 Infinity Blue	Not Available
	30-44 ange	Not Available		3630-111 Dover White	Not Available		3630-196 Forest	Not Available
	30-47 triot Blue	Not Available		3630-115 Lt. Lemon Yello	Not Available w		3630-216 Blue Coral	Not Available
	30-49 rgundy	Not Available		3630-118 Intense Magent	PANTONE 241 C		3630-217 Deep Sea Blue	Not Available
	30-51 ver Gray	Not Available		3630-121** Silver	PANTONE 877 C		3630-227 Azure	Not Available
	30-53 Irdinal Red	PANTONE 187 C		3630-124 Burnt Orange	Not Available		3630-235 Autumn Yellow	Not Available
	30-56 acial Green	Not Available		3630-125 Golden Yellow	PANTONE 1235 C		3630-236 Turquoise	PANTONE 328
	30-57 ympic Blue	Not Available		3630-126 Dk Emerald Gre	PANTONE 3425 C		3630-246 Teal Green	PANTONE 321
	30-59 irk Brown	Not Available		3630-127 Intense Blue	PANTONE 300 C		3630-276 Kentucky Blue G	Not Available rass
	30-61 ate Gray	PANTONE 431 C		3630-128 Plum Purple	PANTONE 525 C		3630-287 Marine Blue	Not Available
	30-63 st Brown	PANTONE 7610 C		3630-131** Gold Metallic	PANTONE 872 C		3630-297 Twilight Blue	Not Available
	30-69* Iranodic	PANTONE Black 7 C		3630-133 Raspberry	PANTONE 220 C		3630-316 Jade Green	Not Available
	30-71 adow Gray	PANTONE Warm Gray 7 C		3630-135 Yellow Rose	Not Available		3630-328 Berry Burgundy	Not Available
36	30-73 ark Red	PANTONE 7621 C		3630-136 Lime Green	PANTONE 361 C		3630-337 Process Blue	Not Available

 $<sup>^{\</sup>star}$  Films 3630-22 and 3630-69 are effectively opaque for most sign uses.

<sup>\*\*</sup> Films 3630-121, 3630-131, and 3630-141 are metallic colors with reduced MCS™ Matrix warranties. Refer to the MCS™ Matrix Warranty for additional information.







#### Color Chart for 3M™ Envision™ Translucent Film Series 3730



#### **Custom Colors and Color Matching**

- Custom colors are available by request. Pigment durability and manufacturing limitations do not permit exact color matching of all colors.
- When viewed in reflected light rather than illuminated light, similar colors in Film Series 3630 and 3730 will look the same.
- Because Film Series 3630 and 3730 are optimized for different light sources, an exact color match between these two colored films may
  not be possible when illuminated. 3M formulates the Film Series 3730 colors to match the Film Series 3630 colors as closely as possible.
  However, in some instances a slight color variation between the products may be noticeable in transmitted light.
- The "L" behind a color number (e.g., 3730-33L) designates the color is optimized for LED light sources.

# Factors Affecting Graphic Performance Life

The actual performance life of a graphic is affected by:

- The combination of graphic materials used
- Complete ink drying or curing
- Selection, condition, and preparation of the substrate
- Surface texture
- Application methods
- Angle and direction of sun exposure
- Environmental conditions
- Cleaning and maintenance methods

# **Graphics Manufacturing**



Before using any equipment, always read the manufacturer's instructions for safe operation.

## Illuminated Signs Require Special Consideration

Clear and translucent films tend to be more sensitive to shrinkage when printed with high total ink coverage. Printed film that is not sufficiently dried prior to creating an overlap may shrink and result in a light leak.

Backlighting any film, no matter how it is imaged, may reduce the density of the colors on the image.







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## Illuminated Signs Using LEDs

Making a successful sign requires users to consider many factors. This section provides general guidelines for illuminating signs using LEDs. Please contact Technical Service (1-800-328-3908) before starting to resolve any questions or concerns about sign making.

#### Comparing Light Transmission using LEDs

Most 3M™ Envision™ Translucent Films 3730 are designed to deliver an increase in light transmission compared to 3M™ Scotchcal™ Translucent Films 3630.

Film		Typical % Increase (Gain) in Light Transmission (New Calculation)*			
Product Number 3630-xxx/3730-xxx		When Comparing Unmounted Film with Adhesive - 3630 Series to Similar 3730 Series			
015 / 015L	Yellow	-6			
20 / 20L	White	64			
33 / 33L	Red	61			
43 / 43L	Lt. Tomato Red	12			
44 / 44L	Orange	36			
49 / 49L	Burgundy	15			
57 / 57L	Olympic Blue	0			
73 / 73L	Dark Red	42			
76 / 76L	Holly Green	16			
83 / 83L	Regal Red	29			
106 / 106L	Brilliant Green	19			
125 / 125L	Golden Yellow	28			
127 / 127L	Intense Blue	18			
128 / 128L	Plum Purple	3			
133 / 133L	Raspberry	4			
156 / 156L	Vivid Green	35			
157 / 157L	Sultan Blue	29			
167 / 167L	Bright Blue	52			
246 / 246L	Teal Green	43			
337 / 337L	Process Blue	36			
26 / 26L	Green	-3			

<sup>\*</sup> Instrument:

#### Color-to-Color Variation for Gain

The variation in gain from color-to-color is attributable to the different film color formulations. In general, every individual color in Film Series 3630 and 3730 produces its own unique light transmission value.





X-Rite Ci7800 d/8° benchtop spectrophotometer. CIE Y is the reported transmission metric based on D65/10° weighting functions. Sample measurement: Samples tested through poly liner, adhesive, and film.

## Other Considerations for Signs using LEDs

- A significant reduction in LEDs may affect other performance factors of an illuminated sign, such as uniformity. Users are responsible for ensuring their LED layout meets all of its intended performance requirements.
- If the brightness of signs created using a film from the 3630 series is acceptable, then:
  - a comparable brightness may be achieved using a film from the 3730 series with fewer LEDs.
  - a similar level of brightness for white may be maintained.
  - acceptable sign face uniformity may be maintained without any changes to the light box depth if the LED layout is adjusted properly.
- Some sign box manufacturers prefer to apply color translucent films directly to a rigid diffuse substrate, such as diffuse polycarbonate or acrylic; instead of using diffuser film. In this case, there will still be an increase in light output over the use of 3630 films, however, the gain in light transmission for using 3730 films would be less than the values shown in the "Comparing Light Transmission using LEDs" on
- See <u>3M Instruction Bulletin 4.60</u> for additional guidelines and suggestions for using 3M™ Envision™ Translucent and Diffuser Films.

#### Video

Click here to see a brief lightbox demonstration comparing Film Series 3730 to Film Series 3630.

## Screen Printing

Formulations and processing conditions can affect ink durability. Users should refer to their ink's product and instruction bulletins for limitations and proper usage.

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

Whether users apply screen print clears with traditional screening methods or roller coating, they should use equipment designed to handle high viscosity materials and ensure the coating is evenly applied according to the specifications in the clear's instruction bulletin.

## **Construction Options**

See 3M Instruction Bulletin 4.26 for detailed information.

#### Maximum of Three Layers of Film



#### **IMPORTANT NOTE**

A third layer of film on any one surface is warranted only if the top layer is an approved overlaminate and no more than two layers of any film are even with the edges of the substrate.

NEVER place an overlap over an existing overlap, as doing so creates four layers.

## Thermoforming



#### CAUTION

The Products may emit vapors during the thermoforming process. Be sure to read and follow the information contained in 3M. Instruction Bulletin 5.16 before thermoforming.

#### Channel Letter Faces



#### **IMPORTANT NOTE**

When using the Products on rigid plastic channel letter faces, avoid contact between the film and the adhesive used to attach the trim cap edge. These adhesives attack film and cause curling, lifting, and premature failure of the film.









## **Spray Painting**

The performance of or application of Lacryl™ or other diffuser paints to the Products is not warranted. The Products can be spray painted with Lacryl™ diffuser paints with good performance. However, certain additional warranty limitations apply. Additionally, the user is responsible for ensuring that the selected diffuser paint is compatible with the Products. 3M reserves the right to deny warranty coverage if 3M determines, at its sole discretion, that the use of diffuser paint adversely affected the appearance, durability, or performance of the Products.

#### Cutting

See 3M Instruction Bulletin 4.1 for Sheeting, Scoring and Film Cutting details.

## **Graphic Protection**

Graphic protection may improve the appearance, performance, and durability of the graphic. Click on the graphic protection options listed in this product bulletin or see the <u>3M Graphics Materials Product Catalog</u> for more information.



#### **IMPORTANT NOTE**

During installation, scratches may occur on films without graphic protection.

#### **Application Tapes**

There are two types of application tapes. See <u>3M Instruction Bulletin AT-1</u> to determine what application tape is recommended for your film or finished graphic.

#### **Premasking Tape**

Premasking tape increases stiffness during application while preventing stretching and damage. Use when little or no liner is exposed. See <u>3M Instruction Bulletin 4.3</u> for complete details.

## **Prespacing Tape**

Prespacing tape holds cut and weeded letters or graphics in place during application and after removal of the film liner, while preventing stretching and damage. Use when large amounts of liner are exposed. See <u>3M Instruction Bulletin 4.3</u> for complete details.

# Application and Installation

In addition to other 3M bulletins specified in this document, the following bulletins provide details users may need to successfully apply a graphic.

- 3M Instruction Bulletin 4.22 Lamination Basics for Inkiet Printed Graphics
- 3M Instruction Bulletin 4.60 3M™ Envision™ Translucent and Diffuser Films, Guidelines for Backlit Signs.
- 3M Instruction Bulletin 5.1 Select and Prepare Substrates for Graphic Application
- 3M Instruction Bulletin 5.30 Application of 3M Pressure Sensitive Films to 3M Flexible Substrates
- 3M Instruction Bulletin 5.4 Application: Fleet Trucks.
- 3M Instruction Bulletin 5.5 Application, General Procedures for Interior and Exterior Dry Application
  - For roll application, the dry method is acceptable.
- 3M Instruction Bulletin 5.7 Application, Wet Method for Translucent, Inkjet, Screen Printed and Cut Graphics
  - For applications by hand, the detergent and water application method is recommended for this pressure-sensitive film. Dry application by hand may leave dark streaks or bubbles that could be visible in transmitted light.
- 3M Instruction Bulletin 6.5 Storage, Handling, Maintenance, and Removal of Films and Sheetings

#### Maintenance and Cleaning

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

#### Removal

These films are not removable. See <u>3M Instruction Bulletin 6.5</u> for details.









## Shelf Life, Storage, and Shipping

#### Shelf Life

The shelf life is **never more than three years** from the date of manufacture on the original box.

Processing the film changes its shelf life to one year from the processing date, but no later than three years from the manufacturing date.

## Storage Conditions

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

## **Shipping Finished Graphics**

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

## 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 for 3M products go to 3M.com/SDS. To request SDS by mail, or in case of an urgent situation, call 1-800-364-3577 or 1-651-737-6501.

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

# Warranty Information

## Warranty Coverage Overview

The warranty coverage for eligible graphics is based on the user both reading and following all applicable and current 3M Graphics Product and Instruction Bulletins. The warranty period for eligible graphics is as stated in the 3M Graphics Warranties Matrices at the time that the film was purchased. Information found at 3M.com/graphicswarranties includes:

- 3M Graphics Warranties Bulletin
  - This bulletin contains information on limitations and exceptions, and warranty period reductions for 3M Graphics Warranties. The warranty period may be reduced and stipulations may apply for certain constructions, applications, and graphic exposures as covered in this Bulletin.
- 3M Graphics Warranties Selector
  - Use this selector to search for your vertical warranty period by product type, ink type, film name, and/or ink/printer platform.
- U.S. Desert Southwest Region Map
  - Use this map of hot, arid desert areas to determine if you are subject to reduced warranted durabilities.

The warranties set forth in this Bulletin are made in lieu of all other express or implied warranties, including any implied warranty of merchantability, fitness for a particular purpose, or arising out of a course of dealing, custom, or usage of trade.

#### Technical Information

The technical information, guidance, and other statements contained in this document or otherwise 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 under any 3M or third party intellectual property rights is granted or implied with this 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.

## Warranty, Limited Remedy, and Disclaimer

Unless a different warranty is specifically stated on the applicable 3M product packaging or product literature (in which case such warranty governs), 3M warrants that each 3M product meets the applicable 3M product specification at the time 3M ships the product. 3M MAKES NO OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OR CONDITION OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR ARISING OUT OF A COURSE OF DEALING, CUSTOM, OR USAGE OF TRADE. If a 3M product does not conform to this warranty, the sole and exclusive remedy is, at 3M's option, replacement of the 3M product or refund of the purchase price.

### Limitation of Liability

Except for the limited remedy stated above, and except to the extent prohibited by law, 3M will not be liable for any loss or damage arising from or related to the 3M product, whether direct, indirect, special, incidental, or consequential (including, but not limited to, lost profits or business opportunity), regardless of the legal or equitable theory asserted, including, but not limited to, warranty, contract, negligence, or strict liability.



