



3M™ Controltac™ Print Film

40C-10R and 40C-20R

For the most current 3M Technical Information available to successfully use this product, please view this Bulletin electronically and click on the blue underlined links to view the relevant documents.

For Inkjet Printing with Solvent, UV and Latex Inks and Screen Printing

1. Product Description

A. Product Features

- 3-mil vinyl films
- Available in gloss and matte finishes
- Pressure-activated adhesive for easy sliding, tacking, snap up and repositioning
- Includes Comply™ Adhesive for fast, easy bubble-free installations
- Removable

B. Suggested Uses

The user is responsible for determining the product's suitability for the intended application. This product should be used on a test-and-approve basis.

- General intermediate signage for outdoor and indoor applications
- Interior and exterior building windows and dividers
- Indoor floor and carpet graphics
- Truck graphics on flat or simple curved areas
- Partial vehicle wraps on flat or simple curved areas

C. Expected Performance Life

Expected Performance Life is a good faith estimate of how long the product may perform satisfactorily based on 3M testing. Please note that this product is offered with only a 3M Basic Product Warranty and does not include a warranted period of durability.

Most General Signage: 7 years in a vertical exposure with typical usage.

Indoor Floor Graphics: 1 year when protected by [3M™ Scotchcal™ Luster Overlamine 3645](#) and used in a horizontal indoor exposure with typical usage.

Indoor Floor and Carpet Graphics: 3 months when protected by [3M™ Scotchcal™ High Gloss Overlamine 3648](#) or [3M™ Scotchcal™ Luster Overlamine 8509](#) and used in a horizontal indoor exposure with typical usage.

Note: 3M Product and Instruction Bulletins provide practical recommendations for using this product in a way that maximizes performance, but using other 3M products or procedures with this film does not change the terms of the 3M Basic Product Warranty.

D. These Uses are Not Recommended

- Do not use on any vehicle window (i.e., regulated or non-regulated vehicle windows).
- Do not use on substrates with coatings such as anti-reflection and scratch resistance; such coatings may be damaged during film removal.
- Not intended for use on complex or compound curves, such as found on full vehicle wraps, corrugated or riveted substrates. Bubbles and lifting may occur at the time of application or sometime after wards, regardless of the skill of the installer.

(1) Be Aware of All Laws and Regulations

Some countries have laws or regulations requiring minimum light transmission that may limit or preclude the use of this product on windows. The user is responsible for determining and complying with all applicable standards.

E. Floor Graphics and Carpet Graphics

Floor and carpet graphics are for use on indoor floors only. They require the use of overlamine 3645, 3648 or 8509, which provides a slip-resistant surface.

When applying graphics to carpet, it is solely the user's responsibility to be aware of and comply with the Americans with Disabilities Act Standards for Accessible Design, which includes but is not limited to:

302.2 Carpet. Carpet or carpet tile shall be securely attached and shall have a firm cushion, pad, or backing or no cushion or pad. Carpet or carpet tile shall have a level loop, textured loop, level cut pile, or level cut/uncut pile texture. Pile height shall be 1/2 in (13 mm) maximum. Exposed edges of carpet shall be fastened to floor surfaces and shall have trim on the entire length of the exposed edge.



CAUTION

Loose or damaged floor or carpet graphics may cause a person to slip or trip and fall.

To reduce the risk of slipping or tripping on floor graphics:

- Use only 3M overlamine 3645, 3648 or 8509 which has a slip-resistant surface.
- Properly apply graphics only on hard indoor floors or carpets with a pile as described in ADA Standards for Accessible Design, Section 302.
- Immediately remove or replace loose or damaged graphics. Do not attempt to repair or re-adhere.

Failure to heed this Caution may result in personal injury.

F. Wall Graphics

Two-mil cast films are typically the best choice for indoor smooth surface wall graphics, although thicker films may be suitable for intermediate or short term applications. In any case, the user is responsible for determining the product's suitability, including adhesion and, if required, removal characteristics. Due to the wide variability of smooth indoor walls, neither finished graphics nor removal is warranted, even for removable or changeable films. [3M Instruction Bulletin 5.37](#) provides comprehensive information for the most successful wall graphics film selection and application.

2. Characteristics

A. Physical Characteristics

All values are typical for unprocessed film and are not for use in specifications. Contact your 3M representative for a custom specification.

Characteristic	Value
Material	Vinyl
Color	White opaque
Gloss	Matte: 40C-20R Gloss: 40C-10R
Film thickness	Without adhesive: 3 mil (0.081 mm) With adhesive: 4.0 mil (0.102 mm)
Adhesive type	Pressure-activated (slide, tack, snap up, reposition) with air release channels
Adhesive color	Gray
Liner	Polycoated paper
Flammability	ASTM E84 reports: 40C-10R and 40C-20R or go to the On-line Product Catalog at 3Mgraphics.com All other test reports: call 1-800-328-3908

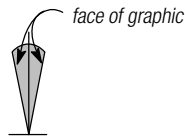
B. Application Characteristics

Characteristic	Value	
Finished graphic application recommendations	<p>Most Graphics Surface type: Smooth, flat and simple curved surfaces; rivets (expect tenting; see Section C, page 5) Substrate type: Painted metal and other painted substrates, rigid plastic, glass</p>	<p>Indoor Floor Graphics Only Surface type: Smooth, flat Substrate type: Most indoor floors including, tile, sealed concrete, terrazzo, ceramic and finished wood; Low pile, secured floor carpet</p>
	<p>Application temperature: <i>air and substrate</i> 40° to 100°F (4° to 38°C)</p>	
Application method	Dry	
Finished graphic exposure temperature	-30° to +200°F (-34° to +93°C)	
Graphic removal	Removable, may require heat	

3. Definitions

A. Exposure Types

U.S. Vertical Exposure



The face of the graphic is +/- 10° from vertical.

U.S. Horizontal Exposure



The face of the graphic is +/- 5° from horizontal.

4. Warranty Information

A. Warranty Coverage Overview

This film is covered by the 3M Basic Product Warranty. It has been tested and is believed to be a good product when used as recommended in this Product Bulletin. However, there is no assurance or guarantee for the following:

- printability.
- visual appearance.
- fitness for use.
- removability or changeability.
- damage to the substrate.
- durability.

B. 3M Basic Product Warranty

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.

This 3M Product is 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 and as further set forth in the [3M Graphics Warranties Brochure](#).

C. Limited Remedy

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.

D. Application to Glass

3M accepts no liability for glass breakage when using this film for window graphics. See [3M Instruction Bulletin 5.1](#) for details.

E. Additional Limitations

See the [3M Graphics Warranties Brochure](#) at 3Mgraphics.com, which gives the terms, additional limitations of the warranty, if any, and limitations of liability.

5. Limitation of Liability

Except where prohibited by law, 3M SHALL NOT UNDER ANY CIRCUMSTANCES BE LIABLE TO PURCHASER OR USER FOR ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, LABOR, NON-3M MATERIAL CHARGES, LOSS OF PROFITS, REVENUE, BUSINESS, OPPORTUNITY, OR GOODWILL) RESULTING FROM OR IN ANY WAY RELATED TO SELLER'S PRODUCTS OR SERVICES. This limitation of liability applies regardless of the legal or equitable theory under which such losses or damages are sought including breach of contract, breach of warranty, negligence, strict liability, or any other legal or equitable theory.

6. Graphic Manufacturing

A. All Printing Methods

This film has been optimized to perform well with a variety of inkjet printers and inks as well as screen printing inks and processes. It is the graphic manufacturer's responsibility to determine the film's suitability for use with their printers and inks.

To maximize the film performance:

- Use graphic protection. See [3M Instruction Bulletin GP-1](#) for other options and details.
 - Cost effective: 3M™ Scotchcal™ Gloss Overlamine 8508 or Luster Overlamine 8509 or Matte Overlamine 8510.
 - For more durable applications: 3M™ Scotchcal™ Gloss Overlamine 8518 or Luster Overlamine 8519.
- Thoroughly dry the ink and film or properly cure the ink before applying graphic protection, and before storing or installing a graphic.

B. Inkjet Printing Only

- **Sheeted film:** When used on a flat-bed inkjet printer, sheeted film may produce printing defects.
- **Ink limiting:** The **typical maximum ink limit is 250%**. Too high a total physical ink amount on the film results in media characteristic changes, incomplete drying, overlamine lifting, and/or poor graphic performance.
- **If sheeted or stacked graphics will be stored:** If you plan to store sheeted and stacked finished graphics for an extended period of time, leave an unprinted margin (about 1/4 inch) to allow for possible shrinkage before trimming the graphic.

C. Floor and Carpet Graphics

Applying an Overlamine, Cutting, Application and Removal

- See [3M Instruction Bulletin 5.19](#) for specific information on these tasks.
- After applying overlamine 3645, 3648 or 8509, soften any sharp corners by cutting radii on them. Use a hand cutter or cut with an electronic drum or flatbed plotter. This reduces the risk of corner lifting due to foot scuffing and equipment abrasion.
- The finished graphic may be scrubbed, cleaned and waxed during routine maintenance of the floor.

7. Application

A. Working with Pressure-activated Adhesive

- The pressure-activated adhesive on this film offers:
 - smooth sliding into position on a substrate;
 - fast finger tacking to check position; and
 - easy snap up and repositioning when you need it.
- Snap up and repositionability is lost when:
 - firm pressure with a squeegee or other application tool is applied. This ensures a good adhesive bond while completing the installation.
 - at application temperatures above 100°F (38°C) even if only light finger pressure was used for tacking.
 - if any part of the film is removed from the original liner and reapplied to the same or another liner.
 - solvent from inkjet ink or a solvent-based clear coat has not completely dried, which affects both slideability and snap up.

B. Working with Air Release Channels

- Air release channels are a characteristic of 3M's Comply adhesive that allow fast, easy, virtually bubble-free installations.
- The channels will be damaged and effective air removal affected if you remove and attempt to change liners or reapply the same liner.
- For the best results, always work from the center out to the edges of the graphic to allow trapped air to exit through the air release channels. If the channels are closed off by firm pressure and air is trapped, use an air release tool to aid in removing air bubbles. See [3M Instruction Bulletin 5.4](#) for details.

Video

[See how 3M's Comply adhesive technology works](#)

C. Working with Rivets

- This film will tent when applied over rivets.
- If the rivets are closely spaced, the film will bridge between rivets.
- Tented or bridged film may fail prematurely.
- For the best appearance and durability, 3M recommends cutting around the rivet, removing the circle of film, and then re-squeegeeing around the rivet.

D. Application Method

Always use a dry application method.

E. Film Lifting and Tenting

Film 40C is an excellent choice for graphics applied to flat and simple curved surfaces, and even rivets if tenting is not a concern. 3M feels it is important for you to understand the challenges of using this film on complex surfaces to ensure both you and your customer are satisfied with the results.

Important Note!

Film 40C is not highly conformable, meaning it has a memory for its original shape. It is not a good choice for complex curves, deep channels, severe contours, or corrugations. Even with the use of primer, heat, tools and advanced installation skills, the film is likely to lift or tent, either during the application or within hours or days of the application.

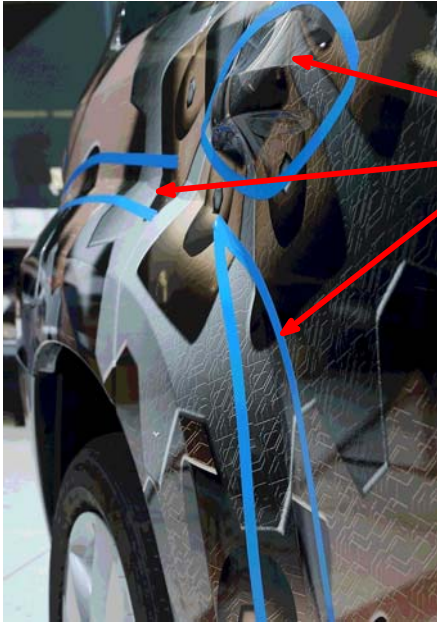
The following photos show the risk of applying film 40C to complex surfaces.

Film 40C is not recommended for corrugations. Lifting from corrugations and tenting over rivets.



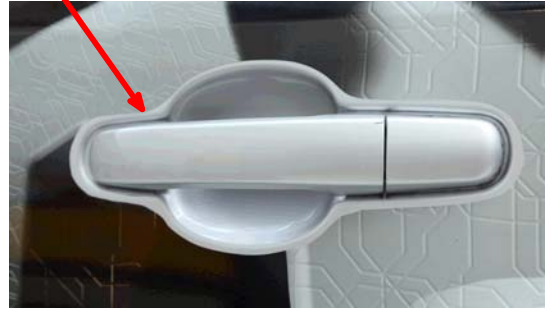
Tenting over rivets even on relatively flat surfaces.

Continued on the next page.



Tenting over door handle
Lifting in deep contours

For good results on flat or simple curved vehicle surfaces with doors, cut film out around door handle.



F. For More Information

These 3M Instruction Bulletins can help you achieve a good, durable graphic application for its Suggested Uses (see Section 1B, page 1).

- Application, substrate selection, preparation and substrate-specific application techniques [3M Instruction Bulletin 5.1](#)
- Application: Fleet Trucks, Partial Vehicle Wraps and Architectural Windows. [3M Instruction Bulletin 5.4.](#)
- Application: General Procedures For Indoor And Outdoor Dry Applications. [3M Instruction Bulletin 5.5.](#)
- Storage, Handling, Maintenance, Removal. [3M Instruction Bulletin 6.5.](#)

8. Shelf Life, Storage and Shipping

Activity	Recommendations
Shelf life	<p>Total shelf life: 2 years from the date of manufacture on the original box</p> <ul style="list-style-type: none"> • If you <u>do process</u> the film, do so within 1 year and apply within 1 year of processing. (<i>Example: If you process at month 6, apply by month 18.</i>) • If you <u>do not process</u> the film, apply it within 2 years.
Storage conditions	<ul style="list-style-type: none"> • 90°F (32°C) maximum • Out of direct sunlight • Clean, dry area • Original container • Bring film to print room temperature before using.
Shipping finished graphics	<p>Flat: may be separated by paper</p> <p>Roll: printed side out on 6 inch (15 cm) diameter or larger core This helps prevent the liner and, if used, the application tape from popping off.</p>

9. Health and Safety



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 sheets for 3M products go to 3M.com/MSDS, or 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.

10. Differences in Product Bulletin IJ40C and 40C

3M™ Scotchcal™ Graphic Film IJ40C-10R and 40C20R has been directly replaced by 3M™ Controltac™ Print Film 40C-10R and 40C-20R. The new film includes 3M's versatile pressure-activated adhesive with slide, tack, snap up and repositionability. The film continues to include 3M's air release channels. A Film Lifting and Tenting section has been added to this Bulletin that includes important information about lifting and tenting if applying this film to complex surfaces. The 3M Related Literature section has been replaced by direct links to the most current versions of Bulletins or warranty information you may need to successfully use this product. All links are blue underlined text.



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