Vikuiti™ rear projection displays
Introduction

Window Films and Screens
for high-impact rear projection

Now you can transform any window or glass partition into a digital display screen simply by applying Vikuiti Rear Projection Film and installing a 3M™ Digital Projector.

Ideal for dynamic advertising and promotional messaging, corporate and sales presentations, your extra-bright, ultra-legible digital display will attract and maintain everyone's attention.

Displays can be projected in practically any shape or size. And when a window or glass panel is not availabe, lightweight rigid Vikuiti Rear Projection Screens provide the perfect solution for free-standing or suspended installations.

More affordable than plasma monitors.
Brighter, sharper than conventional screens.
And available in any shape or size.

Visually amazing

Widening your audience
in more ways than one

1

Wider viewing angles, wider audiences

The unique screen construction of Vikuiti™ technology allows extremely wide viewing angles.

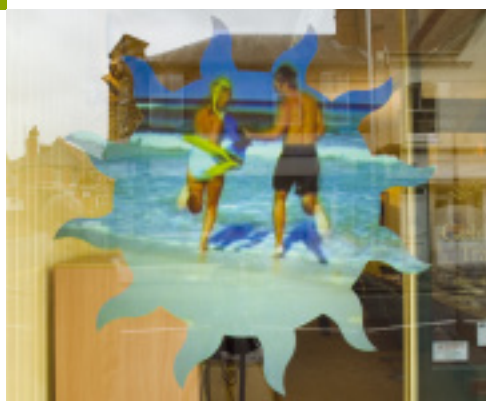
2

Higher contrast and colour, higher viewing figures

Vikuiti technology continues to perform when others start to fail – especially in bright daylight.

3

Different shapes, added impact



For added visual impact Vikuiti window films and rigid screens can be easily cut to any shape.

window films

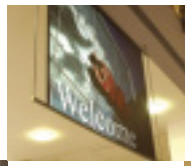
- Wide viewing angle
- Performs exceptionally well even in high ambient lighting or bright daylight conditions
- True colour reproduction from any angle
- Cut to any shape and size
- Lightweight and easy to install
- Can be applied to rigid clear acrylic panels to create easily-portable displays

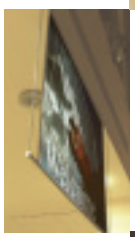
rigid screens

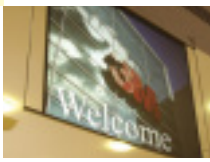
- Lightweight rigid acrylic panels
- Slim, elegant 5mm profile
- 4:3 and 16:9 formats
- Sizes from 1.5m (60") to 2.4m (95") diagonal
- Can be cut to any custom shape
- Ideal for suspended and free-standing installations

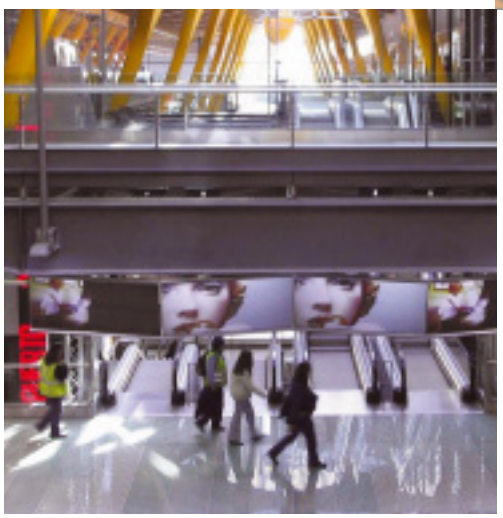
Wide viewing angles

Outstanding legibility across a wide range of viewing angles









Courtesy of 3M customer Imagic-Vision, Madrid, Spain

Custom shapes

make Vikuiti Rear Projection Screens the clear choice for eye-catching presentations, whilst the high clarity and definition of Vikuiti technology provide non-stop, round-the-clock performance – even in bright conditions.

case studies

Lloyds TSB Bank, UK

As part of a nationwide branch rebranding, Lloyds TSB chose to incorporate digital signage into their new branch design to maximise the impact of brand and promotional messages. 65" pieces of Vikuiti™ Rear Projection Film applied to exterior windows enable the impactful communication of messages direct to passers-by.

Madrid Barajas Airport, Spain

New Terminal 4 at Barajas International Airport features a number of 95" Vikuiti™ Rear Projection Screens and Window films displaying advertising content. 3M's Vikuiti technology ensures wide 180 degree viewing angles and strong high colour images in this bright environment, maximising the impact of the promotional messages.

Courtesy of 3M customer Imagic-Vision, Madrid, Spain

Broadmarsh Shopping Centre, Nottingham, UK

Vikuiti™ Rear Projection Film totalling 4.5 square metres has t ransformed the entire frontage of a vacant retail unit in the Broadmarsh Centre into a full-colour video screen capable of carrying a variety of informational content or fee-paying advertising. The concept, introduced by the US-based solutions provider, WindowGain, instantly turns empty shop windows into customer attractions, enhancing the experience of shoppers visiting the retail centre. By combining the film and 3M Digital Signage software with its own patent-pending technology, WindowGain plans to expand the facility into other shopping centres following a positive response from the public and shopping centre owners.

Vikuiti™ rear projection displays
Product Range

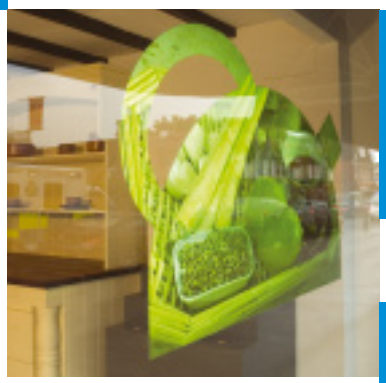
Window Films and Screens
Sizes and formats

How do you create maximum visual impact from any angle? Well, that's easy: whether you choose Vikuiti Rear Projection Film for application to windows or glazed panels, or a lightweight rigid Vikuiti Rear Projection Screen for free-standing/suspended installations, you're sure to grab your audience's attention with the brightest, most legible digital displays available.
For our extensive range of stock and customised products, take a look inside...

Window film in rolls or sheets.
Lightweight screens in all sorts of sizes.
Eye-catching performance
Whichever format you choose.

Film or Rigid Screen?
The choice is your's

1 Vikuiti™ Window Film



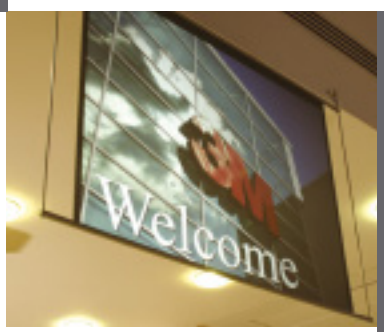
ROLLS

Size	Width	3M Product Code
2.5 metres	1.2 metre	75-3470-9941-0
5 metres	1.2 metre	75-3470-9942-8
10 metres	1.2 metre	75-3470-9943-6

SHEETS

Description	Size	3M Product Code
60˝ Rear Projection Film Kit (4:3)	1219 x 914mm	98-0440-4424-0
60˝ Rear Projection Film Kit (16:9)	1321 x 734mm	98-0440-4426-5

2 Vikuiti™ Rigid Screens



OFF-THE-SHELF SIZES

Size	Format	Width/Height (Inches)*	Width/Height (mm)*	3M Product Code
60˝	4:3	49.0/37.0	1245/940	98-0440-1294-0
67˝	4:3	55.0/41.75	1397/1060	98-0440-1293-2
80˝	4:3	64.0/48.0	1626/1219	98-0440-1292-4
60˝	16:9	53.5/30.5	1359/775	98-0440-1291-6
80˝	16:9	70.75/40.25	1797/1022	98-0440-1289-0
95˝**	16:9	84.0/48.0	2134/1219	98-0440-1288-2

*Actual screen dimensions include 1˝ (25mm) allowance for framing i.e. when framed, each screen has a visible screen diagonal as in column 1

**No allowance needs to be made for the 95˝ screen

Vikuiti™ Rigid Screens – CUSTOM SIZES

Screens may be obtained cut to any size or shape up to a maximum width of 84 inches (2134mm) or height of 48 inches (1219mm). Please contact your 3M Sales office for furhter details.

3M

Contáctanos

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Escribenos o llámanos

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TECIP

TECNOLOGÍA INDUSTRIAL PERUANA S.A.C

Vikuiti™ rear projection displays
Installation Hints and Tips

Window Films and Screens
Getting started

Vikuiti Rear Projection Film and Rigid Screens are simple to install and maintain. Inside, our guide will take you, step-by-step, through everything you need to know to get the best out of your digital projection system:

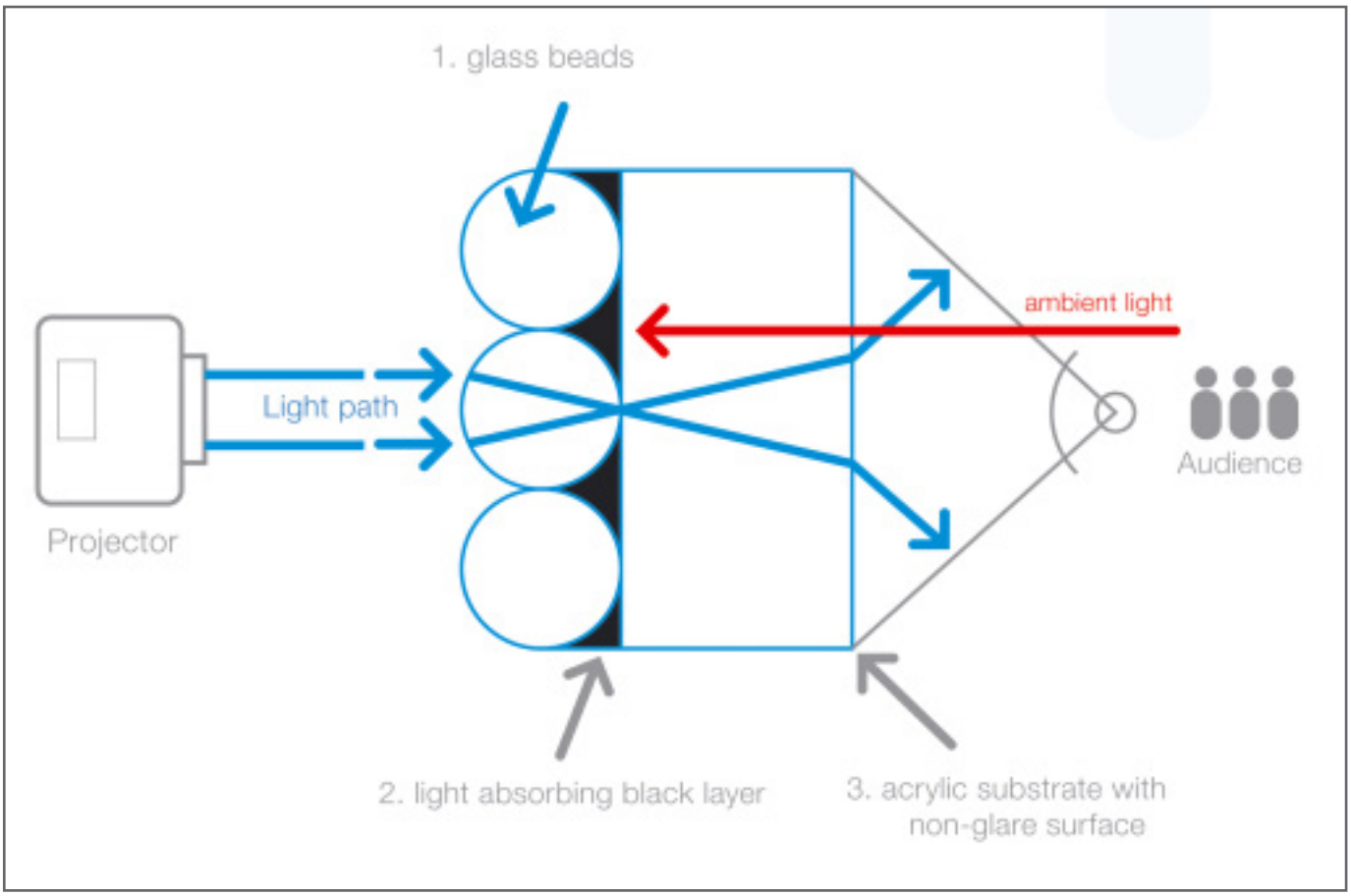
- Vikuiti rear projection technology: How it works
- Projector/Film/Screen positioning and set up
- Window Film: Window preparation
- Window Film: Installation
- Window Film: Creating special shapes using Vectors and Masking
- Rigid Screens: Cutting to shape and size
- Wndow film and screens: Cleaning and maintenance

Ready. Set. Go! Your guide to setting up.

Vikuiti™ rear projection technology: How it works

Vikuiti™ rear projection window films and screen combine the focusing power of an optical lens with a black, light-absorbing layer to produce high contrast images, even in brightly-lit environments.

Millions of microscopic glass spheres focus the projected light so it exits at just one small point. The black layer then absorbs the ambient light, producing a high contrast image.



Projector/Film/Screen: Positioning and set up

3M offers a software package that automatically calculates the optimum projector/film/screen set up for a wide range of installations. For further details, please contact your 3M Sales Office.
Alternatively, the following guidelines will help you get the best out of your Vikuiti rear projection display:

Throw distance

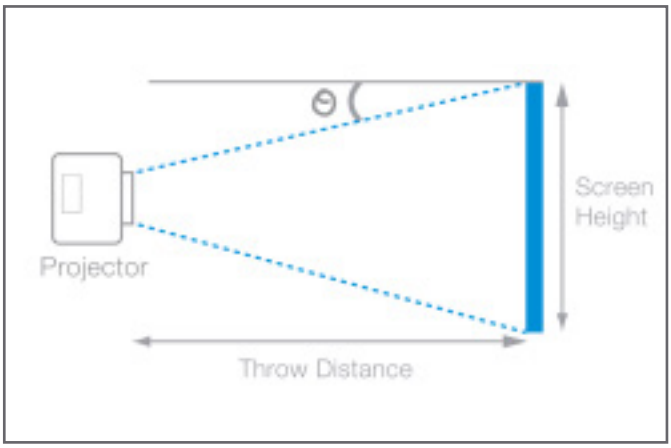
The throw distance of the projector is determined by the screen size and the type of projector lens used.
Keep the throw angle to less than 15 degrees for centre-to- corner brightness fall-off of less than 50%.

Off-axis projector

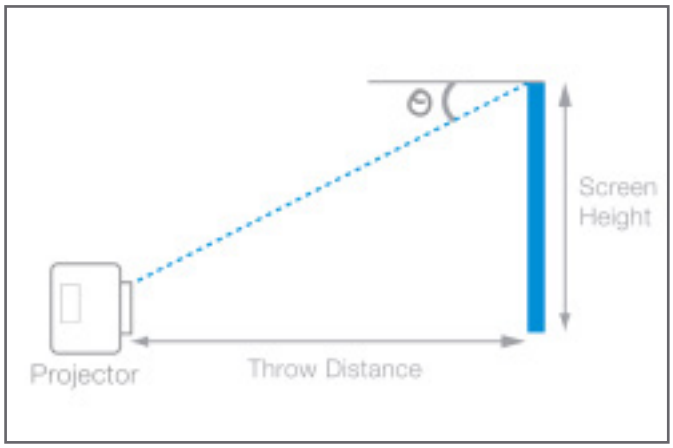
With the projector placed off-axis to the screen, a throw distance/screen diagonal ratio of at least 1.80 is recommended.
For ratios less than 1.80 a fresnel lens is recommended.

Centred projector

With the projector placed on-axis (centred) to the screen, a throw distance/screen diagonal ratio of at least 1.10 is recommended.
For ratios less than 1.10 a fresnel lens is recommended.



Centred projector



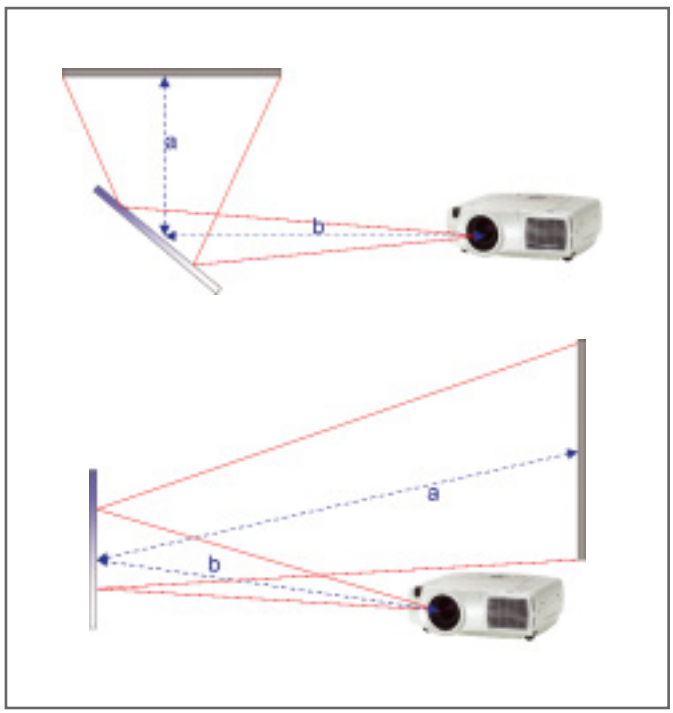
Off-axis projector

Using mirrors for other projector set-ups

Where neither of the above set-ups can not be achieved it may be possible to use front-silvered mirrors to shorten the relative straight throw distance and change the installation position of the projector to suit the installation. In this instance 3M should be contacted for advice on set-up – examples of projection set-up using mirrors can be seen here on the right. Throw distance is equal to a+b.

Recommended throw distances to screen diagonal

Please see next page for thow distance tables.



Projector set-ups using mirrors

Continued

Projector/Film/Screen: Positioning and set up (continued)

Recommended throw distances to screen diagonal

4:3 Aspect Ratio Screens			Off-Axis Projector	Centred Projector
Diagonal (inches)	Height (in)	Width (in)	Throw Distance (in)	Throw Distance (in)
40.00	24.00	32.00	77.0	44.0
50.00	30.00	40.00	93.5	55.0
60.00	36.00	48.00	110.0	66.0
67.00	40.20	53.60	121.0	73.5
72.00	43.20	57.60	129.0	79.0
80.00	48.00	64.00	143.0	88.0

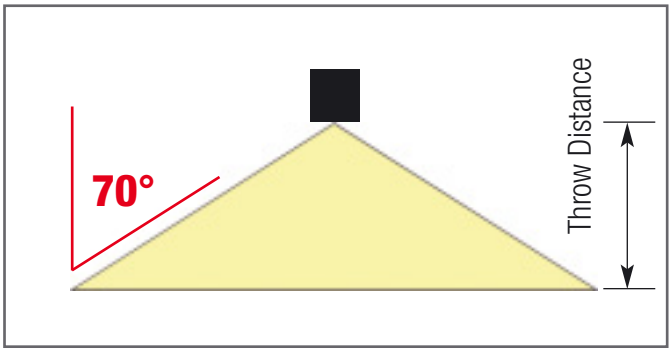
16:9 Aspect Ratio Screens			Off-Axis Projector	Centred Projector
Diagonal (inches)	Height (in)	Width (in)	Throw Distance (in)	Throw Distance (in)
40.00	19.61	34.86	65.0	48.0
50.00	24.51	43.58	78.5	60.0
60.00	29.42	52.29	92.0	72.0
70.00	34.32	61.01	105.5	84.0
80.00	39.22	69.73	119.0	96.0
90.00	44.12	78.44	132.5	108.0
100.00	49.03	87.16	146.0	120.0

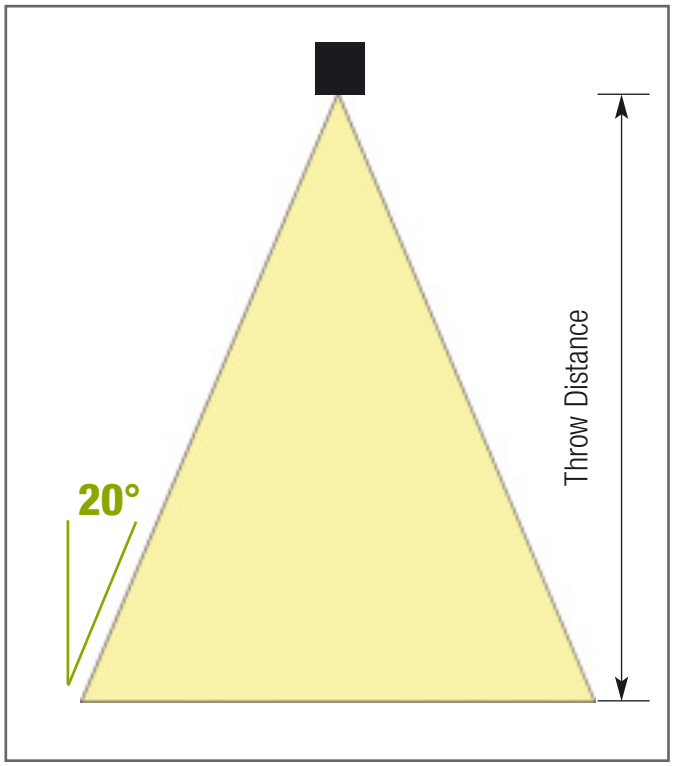
Optimum projector configuration

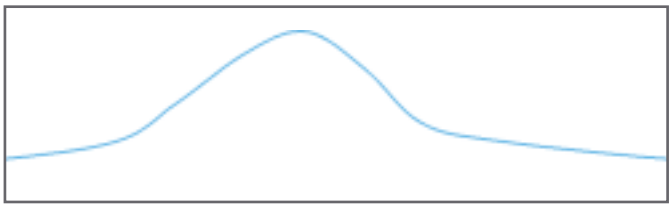
The following criteria should be taken into account:

Health and safety: Ceiling-mounted projectors should be at least 6’ 3” from the floor in locations with open access to staff or public.

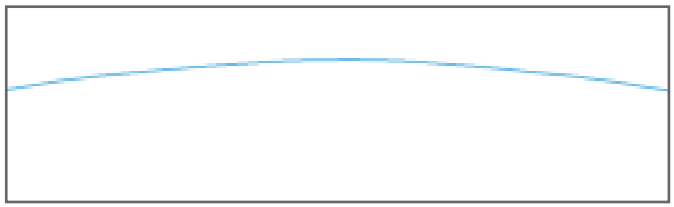
Avoiding hot spots: The angle of the light from the projector hitting the Vikuiti™ film or screen should be no more than 20-25° to the perpendicular. To avoid hotspots keep angle 20° or less – see diagrams.







Luminance (x-) location on screen



Luminance (x-) location on screen

Window Film: Window preparation

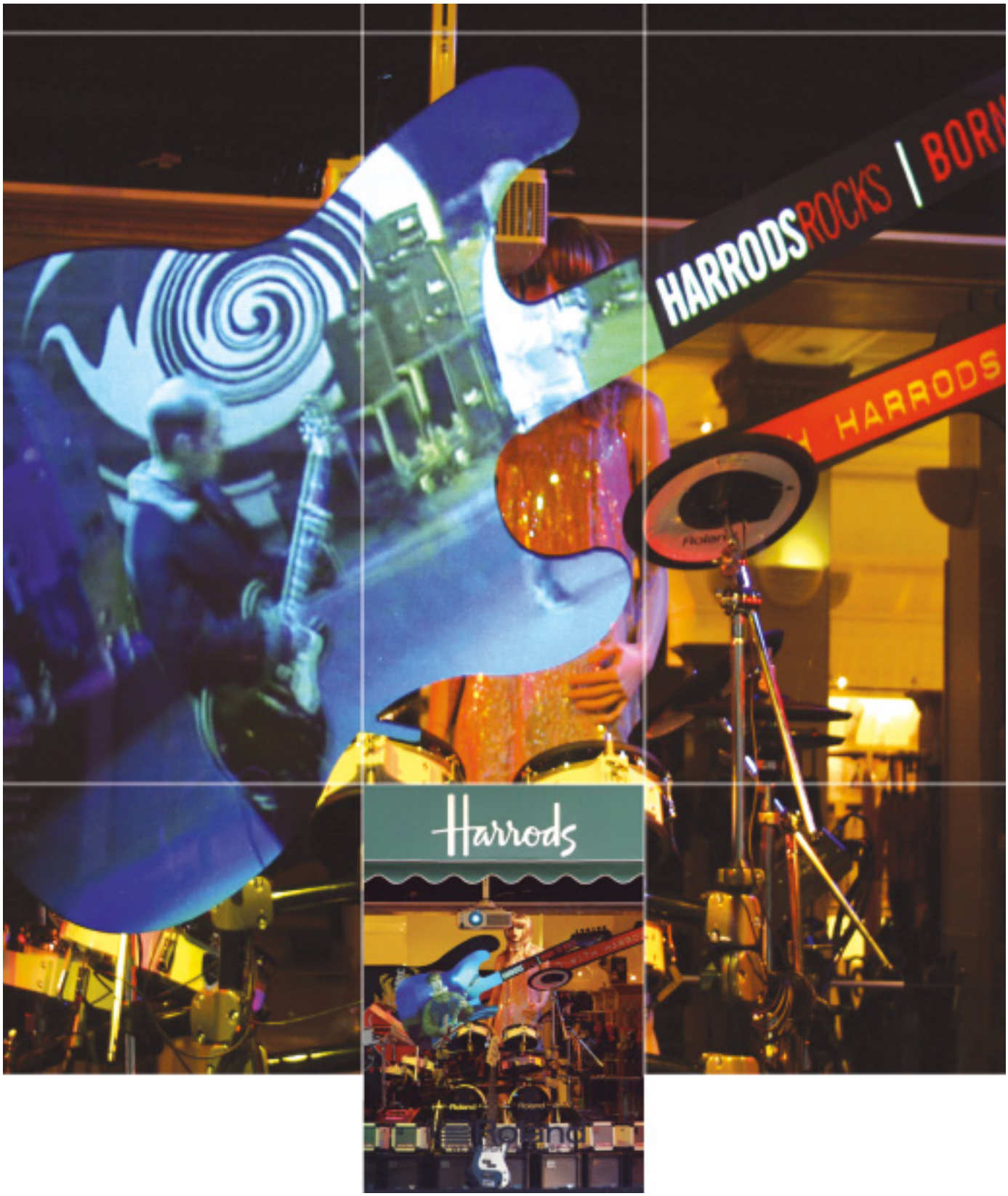
The following criteria should be taken into account in relation to the windows/glazed panels at the intended display location.

- Windows must not have any sort of tint or film that darkens the window appearance, unless this is removable.
- Double glazing is not recommended, but can be used. This will reduce the quality of the image and is only recommended where the window does not suffer from high levels of reflection.
- Any kind of bomb blast or protective film on the inside of the window must not have a seam in the install area or have any kind of imperfections, as this will affect the quality of the image and installation. If this is the case, the film will need to be removed and can be reinstalled around the Vikuiti™ film, or can be re-installed on the window to remove the seam/imperfection prior to the Vikuiti film installation.
- Film cannot be installed on/across the seam of where windows are joining. The film can be installed across two or more panes in separate pieces and would require specifically masked content to be effective.
- Due to the nature of rear projection it is recommended that the film is installed to the top area of glass for the following reasons:
  - To allow the correct angle of light from the projector to hit the Vikuiti™ film (see projector set up)
  - To allow staff and customers to freely walk close to the screen without breaking the projector light beam and hence interrupting the image.
  - Screens at the top of windows allow the Vikuiti display to be easily seen from a distance.
- The Vikuiti™ film can be cut to any size or shape (up 95" diagonal in one piece), therefore a specific size can be specified to suit the window in question.

Window Film: Creating special shapes with Vectors and Masking

Vikuiti™ window film is easily cut to any shape.
Imagine the possibilities! Displays in the shape of logos, marquees, geometric shapes, thought bubbles, human figures, animal outlines, product outlines… anything you can think of!

Guidelines for preparing and cutting your film to shape, plus how to create a graphic projection 'mask' to optimise play-back of your digital content can be downloaded by clicking onto [www.3m.com/vectors].



Window Film: Installation

Compatible Surfaces

- Glass
- Acrylic
- Polycarbonate

Tools and Materials for Installers

- 3M™ Applicator PA–1 (Blue or Gold) with SA-1 Low friction sleeve
- Scotch™ Blue Masking Tape 2090 Spray bottle with tap water
- Large, high–quality window squeegee recommended for large graphics.

Key Application Tips for Installers

- Vikuiti™ Rear Projection Film in sizes larger than 60" diagonal should be professionally applied by experienced film applicators.

Clean work area

- Make sure the work surface and surrounding area are properly cleaned to avoid contaminating the film.

Temperature

- Apply when the air and application surface temperature is at least 16° C (60° F). If applying the film at or near the minimum application temperature, the adhesive bond will develop more slowly than in higher temperatures. Thoroughly resqueegee the film as directed in the application procedure.

Squeegee tools and techniques

Use PA–1 (blue or gold) or similar plastic applicator that is smooth and not nicked. A large window squeegee may be used to remove the water. However, an applicator PA–1 with a low friction sleeve SA–1 is recommended to be used with firm, overlapping strokes. Re–squeegee the film after 24 hours.

To remove application tape

If used, always remove application tape at an angle as close as possible to 180 degrees and immediately re–squeegee the film.

Continued

Window Film: Installation (continued)

For best performance

Avoid applying the film on a surface that will be in direct sunlight. Glare from sunlight will make the image hard to read and will heat the black film increasing shrinkage and/or edge lift.

Application Procedure for Installers

Put some tap water into a spray bottle. Clean and Prepare the Substrate.

Applying the Film

Note: Keep the liner dry until ready to be removed.

1. If possible, lay the application surface substrate face up on a clean surface.
2. Spray the application surface with water.
3. Clean the film with a clean, lint–free cloth.
   Lay the film, liner side up, in a dry location near the wetted surface.
4. Lift one corner of the liner while spraying the water onto the exposed adhesive. See Fig 1.

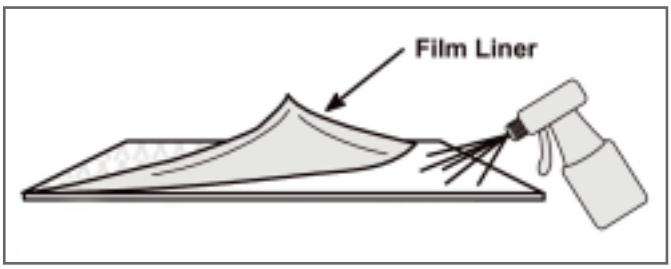


Fig 1: Lift corner of liner while spraying

5. Note: Depending upon the size of the film, another person may be needed to help complete the next steps.
6. Continue to remove the liner and spray the water.
   By the time the liner is completely removed, the entire adhesive surface should be wet. Spray on more water, if necessary.
7. Lift and turn over the film, adhesive side toward the wetted application surface and align any registration marks. See Figure 2.

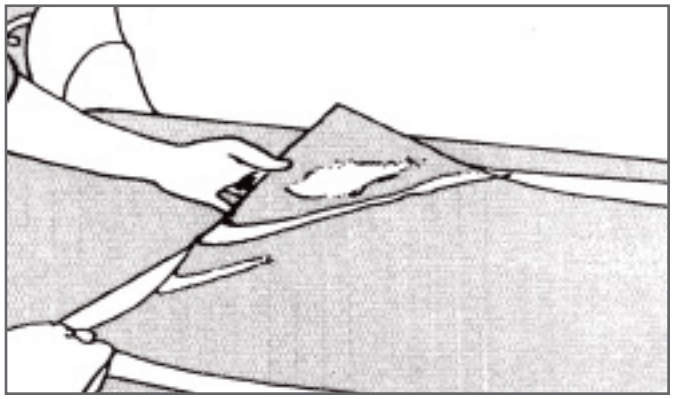


Fig 2: Lifting and turning over the film

8. To smooth out wrinkles and bubbles:
   a. Use a large window squeegee and very light pressure to smooth out the entire graphic, starting at the center and working toward the edge, in the order shown in Figure 3. After this step, the film should be flat on the substrate and most of the water squeezed out.

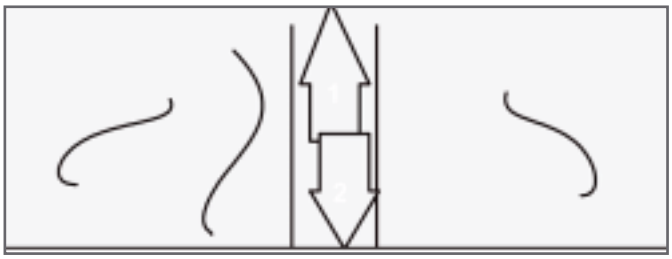


Fig 3: Squeegee from the centre

   b. Use the PA-1 Applicator to apply firm pressure to the entire screen, beginning in the center and working toward the edges in overlapping strokes. After this step, all of the water and as many bubbles as possible should be removed
   c. Wipe the entire surface dry.

Continued

Window Film: Installation (continued)

9. Remove any remaining bubbles from the film:
10. Puncture the film at one end of the bubble with an air release tool or a pin. Do not use a razor or blade.
    a. Use your thumb to carefully push the trapped air or wetting water toward the puncture. See Figure 4.

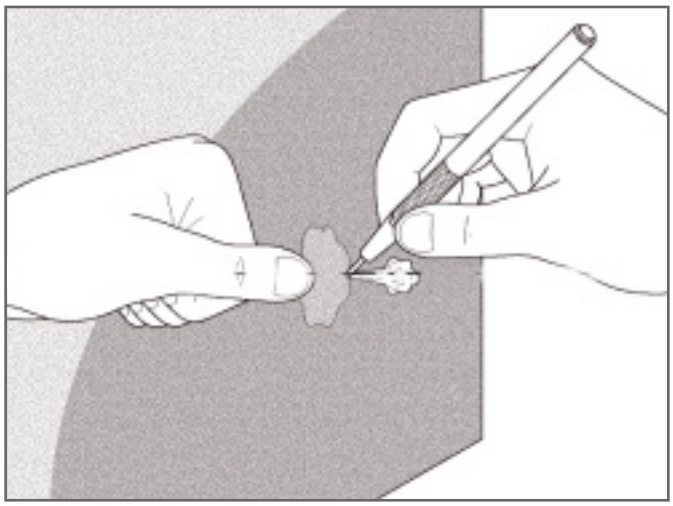


Fig 4: Removing bubbles from the film

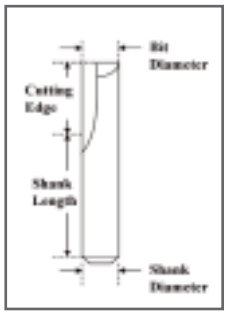
11. Keep the newly applied screen film out of direct sunlight for 24 hours.
12. After 24 hours:
    Use a PA-1 applicator with an SA-1 low friction sleeve to re–squeegee the film.

Rigid Screens: Cutting to shape and size

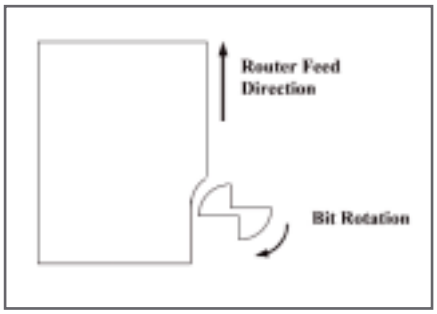
Vikuti™ Rear Projection Rigid Screen screens can be cut using circular saws (table or radial) or by routing. Because the screen material softens quickly it is necessary to keep the cutting tool and the machined edge of the screen as cool as possible. Tool sharpness is essential to prevent gumming, heat build-up, stresses, and de-lamination of the screen.

Routing

- Most commercially available routers are acceptable for cutting Vikuiti rigid screens. The router should have a minimum of one horsepower and a no-load speed of approximately 20,000 rpm.
- The XRVS screen to be cut should be placed on the vacuum table with the film side up.
- Router bits may be of high-speed steel, carbide-tipped, solid carbide, or diamond-tipped. They may be one piece, multiple part, piloted, non-piloted, straight cutting, forming or specialised bits. Router bits may consist of one to four flutes – single and double fluted bits are the most commonly used. The length of the cutting edge should not exceed three times the diameter of the tool. If possible, the shank diameter should be equal to or larger than the cutting tool diameter. The length of the shank should be long enough so that the entire cutting edge is usable.
- Proper feed direction is essential for a smooth cut. Routers rotate clockwise and have a tendency to pull the bit into the work. The feed direction for external cuts should be anticlockwise. When routing inside edges the router should be fed clockwise.
- The tools designed for routers are of small diameter and operate at high speeds. Therefore is of utmost importance that vibration be avoided. Even small vibrations can cause crazing and fractures in the screen material during routing.
- A larger diameter cutter will provide a better surface with less tendency to chip. Use a 1/2 inch or larger diameter cutter whenever possible.
- Recommended speeds are 18,000 to 28,000 rpm. The higher rpm rate will allow faster feed rates and a smoother finish.
- Do not overload the motor. Operate the feed rate just below the chipping speed for maximum production.



Router bit



Feed direction

Circular Saw

- The Vikuiti screen to be cut should be placed on the cutting surface with the film side up.
- Circular saws used for cutting the screen should have minimal vibration. The run-out of the saw arbor and blade collar should be no greater than 0.002 inches.
- Several blade types work well for cutting Vikuiti screens. Carbide tipped blades are recommended for the longer life of the cutting edge. A 10 inch, 80 tooth blade is recommended for general cutting. The blades teeth should be the triple-chip design, where every other tooth has a bevelled cutting edge to help clear away saw chips.
- Best results are achieved when the teeth have a clearance angle of 10 – 15°. To prevent chipping the saw blade teeth must have a constant height and must all be in the same plane, i.e. one tooth cannot extend to one side more than the others. Installing a stiffener 1/2 to 2/3 the saw blade diameter and mounting it against the outside of the blade greatly reduces vibration and unwanted runout.
- The blade should protrude approximately 1/8 to 1/2 inch above the screen to be cut. Feed the screen through evenly, a relatively fast rate of cutting (40 ft/min) minimizes heat build up between the screen and the blade.

Window Film and Screens: Cleaning and Maintenance

Film Care and Handling

- Perspiration and oil from skin contact can stain the film.
- Avoid laying film on uneven or dirty work surfaces. Small chips or dirt particles can damage the film surfaces or become trapped in adhesive during lamination.

Film Cleaning Recommendations

- Vikuiti™ Rear Projection Film can be cleaned by wiping with mild soap or detergent and lukewarm water.
  Use a clean soft cloth, such as the 3M Micro-Fiber Cleaning Cloth, applying only light pressure.
  Rinse with clean water and dry by blotting with a dry cloth or chamois.

Rigid Screen Storage

- Sreens should be stored vertically or in special racks where the sheets can lean at an angle of approximately 10°. If screens are stored horizontally, they must not be allowed to sag.
- Care must be taken to prevent chips or dirt from becoming lodged between the screens as they may damage the screen's surface.

Rigid Screen Cleaning Recommendations

- Screens an be cleaned by washing with a solution of mild soap or detergent and lukewarm water.
  Use a clean soft cloth, applying only light pressure.
  Rinse with clean water and dry by blotting with a damp cloth or chamois.
- DO NOT USE Window cleaning sprays, kitchen scouring compounds or solvents such as acetone, gasoline, benzene, alcohol, carbon tetrachloride or lacquer thinner. These can scratch/deteriorate the screen surface.

3M

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Rear Projection: Introduction July 2008