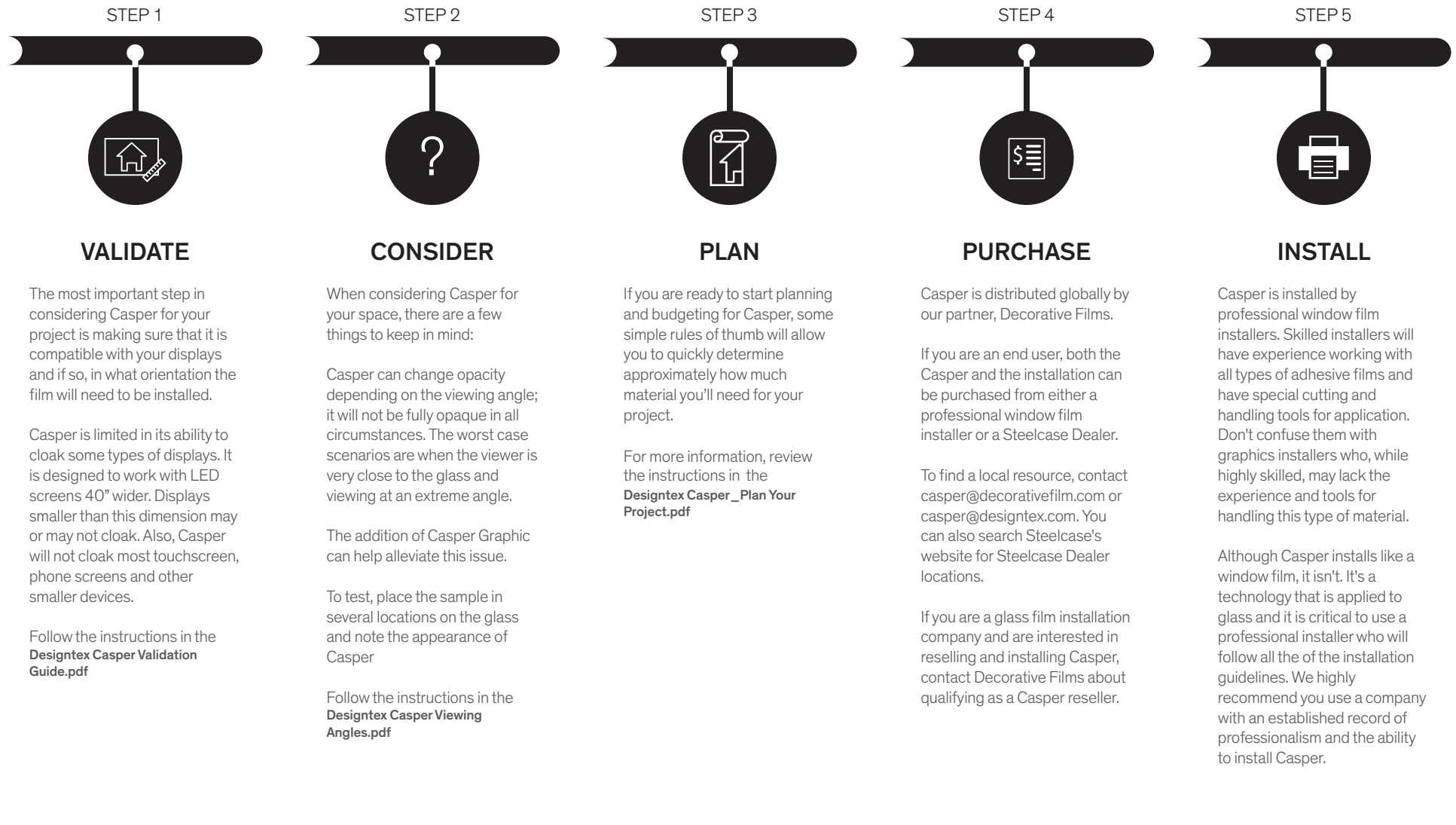


Process Overview

To ensure success for your Casper project, please review the 5 steps below. Any questions, please contact casper@designtex.com



Display Compatibility Limitations

Casper is an amazing product, but due to differences in manufacturing practices and display technologies, it does have limitations. The following are guidelines you can use to help you determine what typically works with Casper and what doesn't.

Remember, always validate the displays you intended to use with Casper.

Questions? Contact casper@designtex.com

WILL CLOAK	MAY CLOAK	WON'T CLOAK
<p>Most LED displays 40" and larger</p> <p>Telepresence and media:scape units</p> <p>Google Jamboard</p>	<p>Small computer monitors</p> <p>Laptop computers</p> <p>Notebook computers</p> <p>Touchscreen computers and kiosk displays</p> <p>Displays mounted behind glass</p>	<p>Microsoft Surface Hubs</p> <p>Cisco Spark Board</p> <p>Direct LED displays</p> <p>Passive 3D displays</p> <p>OLED displays</p> <p>Plasma displays</p> <p>CRT monitors and displays</p> <p>Prysm Laser Phosphorous Displays (LPDs)</p> <p>Smart Kapp white boards</p> <p>Traditional white boards</p> <p>Projection devices</p>

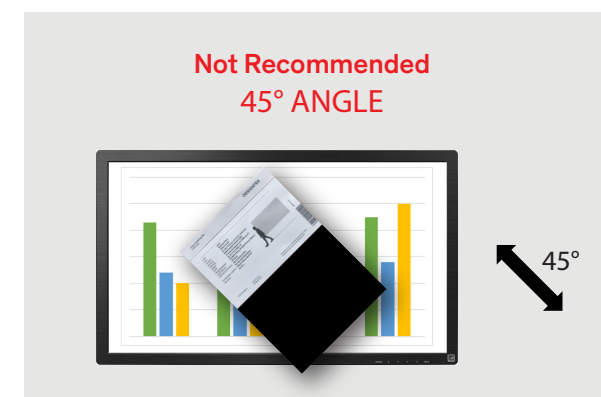
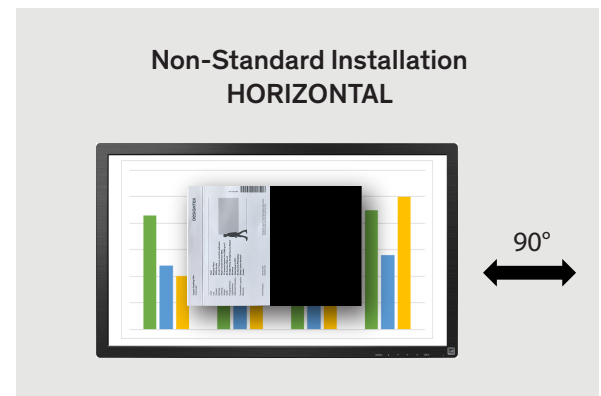
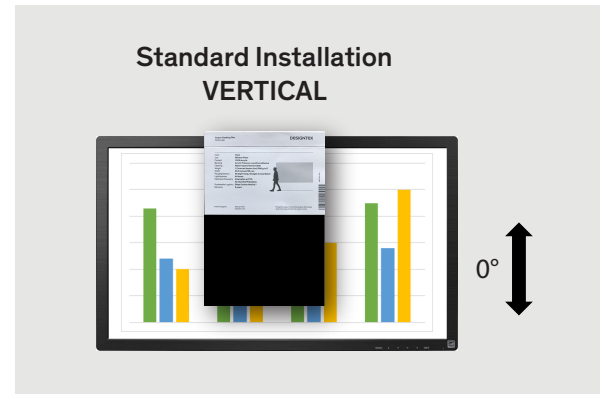
Validation Guide

Validating Monitors For Compatibility with Casper

To ensure that a monitor works properly with Casper and to determine the correct installation orientation of the film, use the following validation process:

1. Be sure to test the monitor with some of type of image or data being shown.
2. Always test Casper while standing in the room with the monitor to be cloaked with nothing between the monitor and the Casper sample
3. While standing in front of the monitor to be cloaked, hold a Designtex Casper sample **vertically** and view the monitor.
 - If the information on the monitor can't be seen, then the technology is compatible with Casper when it is installed vertically at 0°
 - If the information on the monitor is clearly visible, try rotating the memo 90° so it is horizontal
 - If when the memo is rotated 90° the information on the monitor can't be seen, then the technology is compatible with Casper when installed horizontally at 90°
 - If the monitor DOES NOT cloak and the image is clearly visible no matter how the sample is rotated, then the technology is not compatible with Casper
 - You may find that Casper DOES cloak the information on the screen when held at a 45°, but an installation at this angle is impractical and very expensive due to the difficulty of installation and large amount of waste.
4. Note the direction of intended installation and include this information when planning your Casper application.

Questions? Contact casper@designtex.com

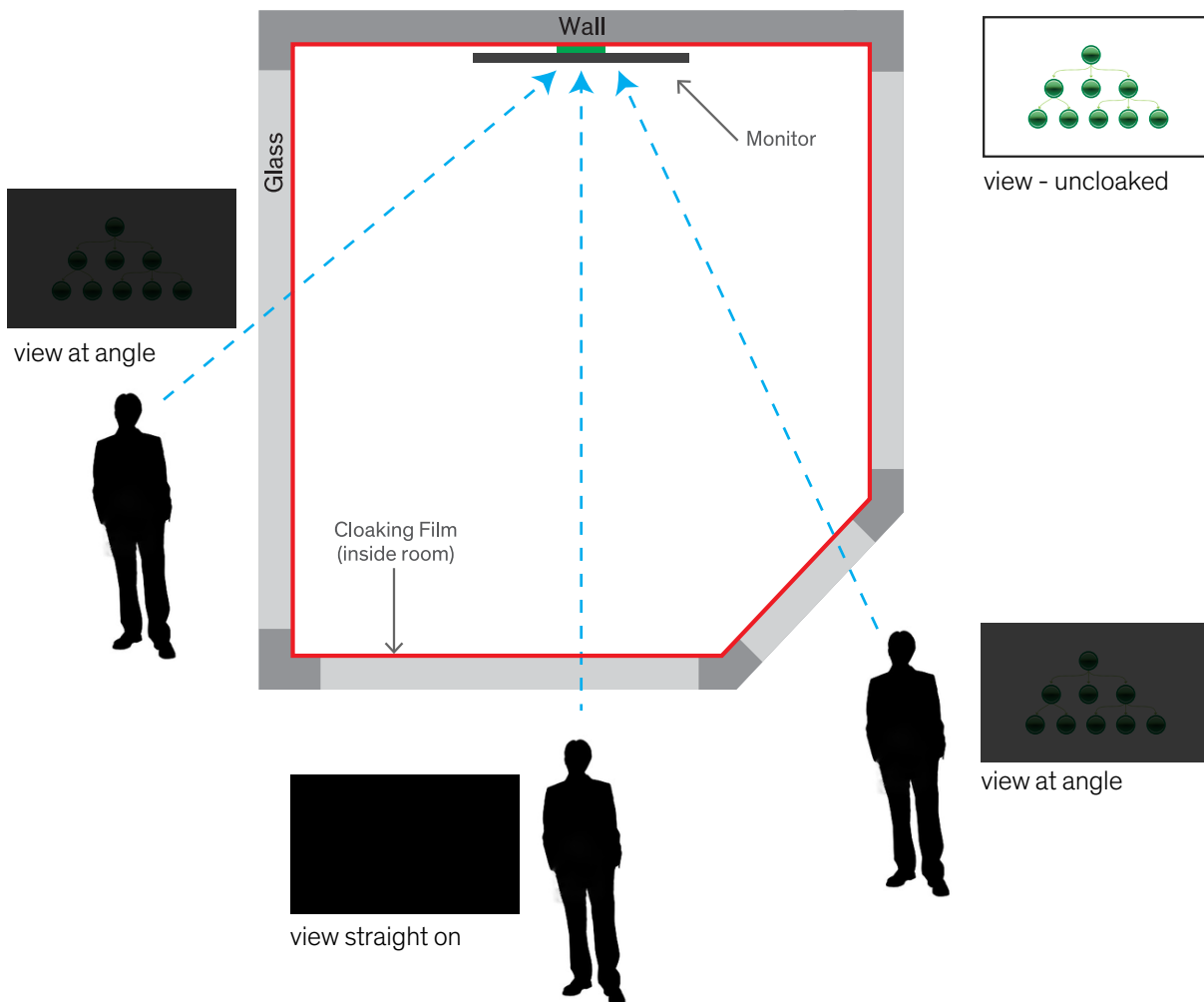


Viewing Angles

Casper is most effective when viewing a display that is parallel to the glass where the technology is installed. Casper should appear completely opaque when viewed from directly in front of the display and the display is at eye level. To an observer moving past the conference room at an acute angle or viewing a display at table level, Casper will appear less opaque. This light leakage may make displays partially visible while still providing confidentiality.

To determine if this will be an issue for your application, position a sample at several locations – centered, far left, and far right - in the room to demonstrate the degree of opacity/confidentiality that Casper will provide at different positions. The worst case scenarios are when the viewer is very close to the glass and viewing at an extreme angle. The addition of Casper Graphic can help alleviate this issue.

Questions? Contact casper@designtex.com.



Planning Your Project

Once you've determined that Casper works with your technology, you can use the following guidelines to estimate how much material you'll need depending on how you choose to install the film.

This tool is intended to help you calculate a rough quantity of material required for your project. Always confirm direction of install and total linear feet required with your installer based on site conditions.

This guide assumes a VERTICAL installation of the film. To plan using a non-standard, horizontal installation, please contact your local Designtex representative or qualified Casper film Installer.

To **roughly** determine the number of linear feet your project will require, first determine if you plan a floor to ceiling coverage or a specific height band.

Now count the numbers of panels* of glass you wish to cover and multiply by the height of the Casper film.

*For panels wide than 56", count as 2

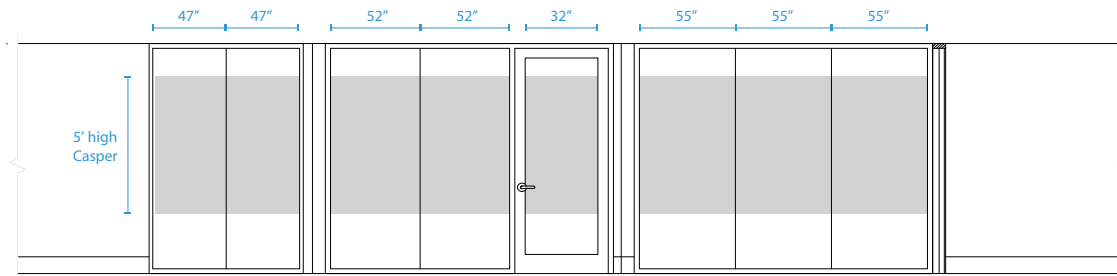
Questions? Contact casper@designtex.com

$$\text{Height of Casper in feet} \times \text{Number of glass panes wider than 48"} = \text{Total linear feet of 56" Casper}$$

$$\text{Height of Casper in feet} \times \text{Number of glass panes narrower than 48"} = \text{Total linear feet of 48" Casper}$$

+ 20% to cover waste

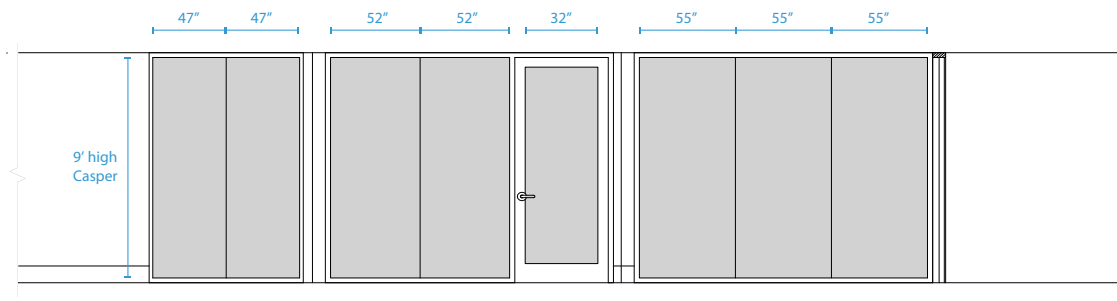
Example for a 5' High band of Casper



$$3 \text{ panels } <48" \times 5' = 15 \text{ linear feet} + 20\% = \mathbf{18 \text{ linear feet of 48" Casper}}$$

$$5 \text{ panels } >48" \times 5' = 25 \text{ linear feet} + 20\% = \mathbf{30 \text{ linear feet of 56" Casper}}$$

Example for a Floor to Ceiling Casper



$$3 \text{ panels } <48" \times 9' = 27 \text{ linear feet} + 20\% = \mathbf{34 \text{ linear feet of 48" Casper}}$$

$$5 \text{ panels } >48" \times 9' = 45 \text{ linear feet} + 20\% = \mathbf{54 \text{ linear feet of 56" Casper}}$$

Installing Casper

Casper is installed by professional window film installers. Skilled installers will have experience working with all types of adhesive films and have special cutting and handling tools for application. Don't confuse them with graphics installers who, while highly skilled, may lack the experience and tools for handling this type of material.

Although Casper installs like a window film, it isn't. It's a technology that is applied to glass and it is critical to use a professional installer who will follow all the of the installation guidelines. We highly recommend you use a company with an established record of professionalism and the ability to install Casper.

Casper will be installed using a wet installation method. Using this method, an installer removes the release liner from the back of Casper to expose the adhesive. Using a spray bottle, the installer coats the cleaned glass and the adhesive with a water and soap solution. The installer then positions Casper on the glass, and uses a squeegee to push out the fluid so the adhesive can dry. This "curing" process can take several days before the adhesive is completely set.



For assistance with installation or to learn more about the process, contact Decorative Films.

decorativefilms 

www.decorativefilm.com

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Industry Standard Viewing Conditions for Installation

General Visual Appearance: Visual Quality Standard for Applied Window Film As Adopted By the IWFA May 15, 1999

1. Installed film on flat glass surfaces is not expected to have the same level of visual quality as glass. The following criteria apply to the installed film only and not to any defect inherent in the glass.
2. Installed film has a discrete time for full adhesion to be effected since installation utilizes a detergent solution in the water to float the film onto the glass: the excess water is squeegeed out, but inevitably residual water will remain between the film and glass. The time to achieve full adhesion is often referred to as "the adhesive cure time". Adhesion will be increasing from a lower value during this time. Visual and adhesive cure time is related to thickness of the film and various metallic coating on the film. Typical visual cure times may be extended or shortened according to climatic conditions.
3. Inspection for optical quality can be made before full visual cure is attained. Table 1 provides a guide for typical visual cure times. It should be noted that effects during cure, such as water bubbles, water distortion, and water haze are not to be regarded as defects.
4. The glass with applied film shall be viewed at right angles to the glass from the room side, at a distance of not less than 6 feet (2 meters). Viewing shall be carried out in natural daylight, not in direct sunlight, and shall assess the normal vision area with the exception of a 2 inch (50mm) wide band around the perimeter of the unit.
5. The installation shall be deemed acceptable if all of the following are unobtrusive (effects during visual cure should be disregarded): Dirt Particles, Hair and Fibers, Adhesive Gels, Fingerprints, Air Bubbles, Water Haze, Scores and Scratches, Film Distortion, Creases, Edge Lift, Nicks and Tears. Inspection may be within 1 day of installation. Obtrusiveness of blemishes shall be judged by looking through the film installation under lighting conditions described in
6. The 2 inch (50mm) wide band around the perimeter shall be assessed by a similar procedure to that in 3 and 4, but a small number of particles is considered acceptable where poor frame condition mitigates against the high quality standards normally achieved.
7. Edge gaps will normally be 1/32 - 1/16 inch (1-4mm). This allows for the water used in the installation to be squeegeed out. This ensures that film edges are not raised up by contact with the frame margin. Contact with the frame margin could lead to peeling of the film.
8. For thicker safety films the edge gaps will normally be 1/32 - 1/16 inch (1-4mm), with 1/32 - 1/8 inch (1-5mm) being acceptable for films of (7 mil (175)). Combination solar control safety films will also fall within this standard. An edge gap of up to 1/16 inch (2mm) is recommended, especially for darker (tinted, metalized, tinted/metalized, and sputtered) films, to minimize the light line around the edge of the installed film.
9. Splicing of films is necessary when larger panels of glass are treated, where both length and width of the glass exceed the maximum width of film. The splice line itself should not be viewed as a defect. This line should be straight and should be parallel to one edge of the frame margin. The two pieces of film may be butt jointed. The maximum gap at any point in the splice line should be 1/64 inch (1mm). Film may be overlapped, spliced or butt jointed. (Visual Inspection Standards For Applied Window Film, International Window Film Association 1999)

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