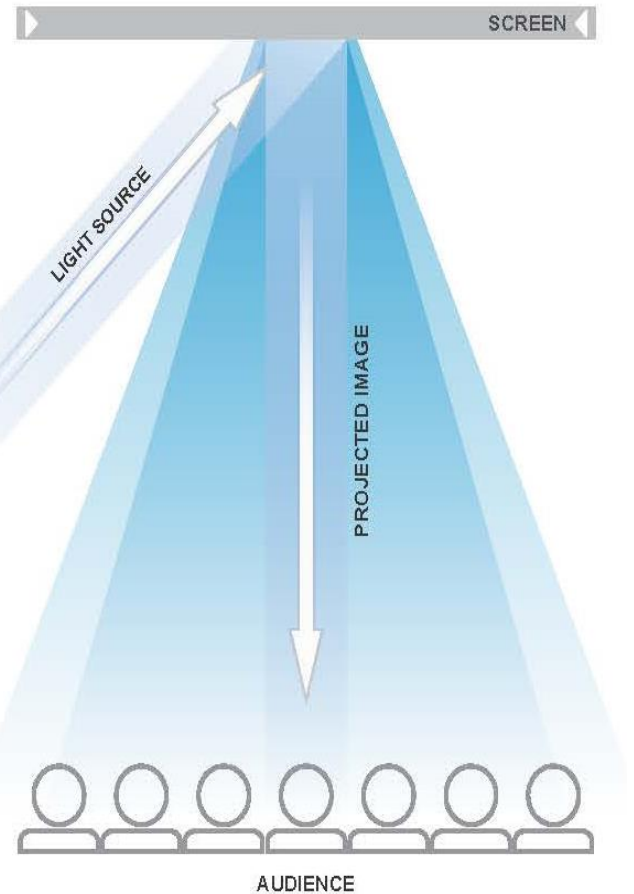


FRONT PROJECTION SCREENS

Front projection is the use of a source to bounce an image off a surface and back to the viewer.

In this case, the surface should be highly reflective for the audience to get the brightest possible image. On equal intensity, distance, and the size-of-image basis, a front projection is brighter than a corresponding rear projection. In short, **it takes less wattage to project the same image from the front than from the rear.** The source is normally hidden from the audience but must be placed with a clear throw to the surface. If the throw is very long, a source with the appropriate wattage should be chosen.

This method is best for situations where the source is not very strong, as a highly reflective surface will maximize the amount of light being bounced back at the user. A front projected image maintains its intensity, clarity, and contrast through a wide angle of vision, meaning those sitting house right and left can see the image almost as well as those in the center of the audience.



Using a front projection surface has some disadvantages.

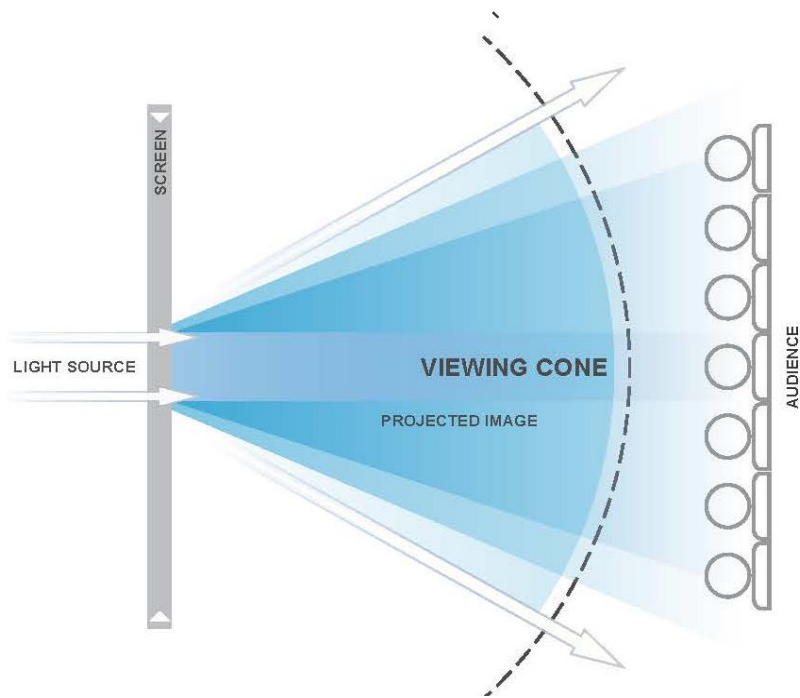
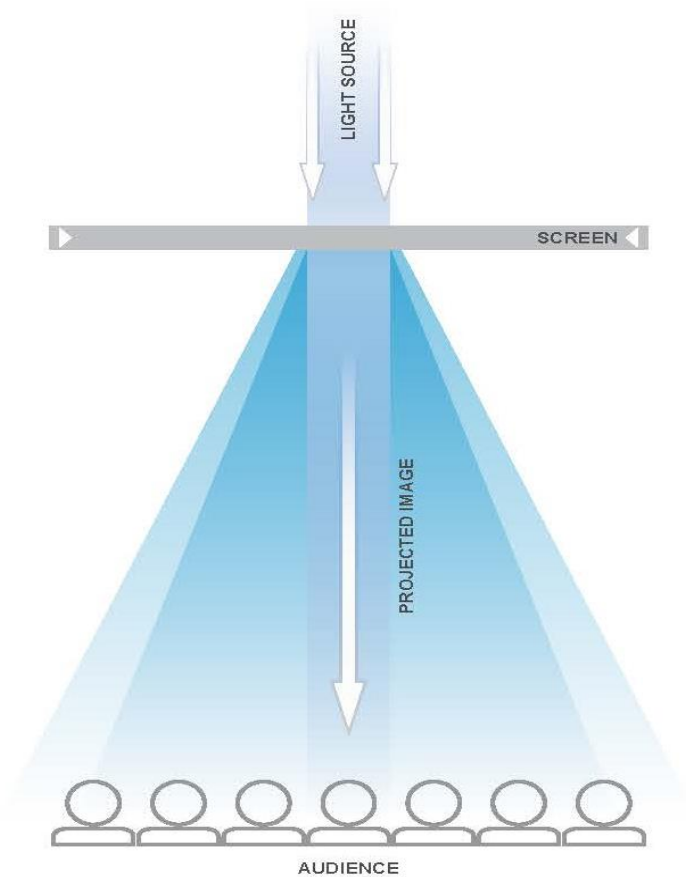
First, having a very light colored surface on stage can be distracting. Some designers feel their audiences are left "waiting for the movie to start". The bright surface may reflect ambient light causing the image to look washed out, if care is not taken in lighting the areas adjacent to the surface. Backlighting and side lighting actors and scenery becomes very important in this situation in order to keep the actor's shadow off the projection surface. Hiding the source in an extreme lighting position to avoid casting shadows can cause distortion in the image and may require keystone correction.

REAR PROJECTION SCREENS

Rear projection is the use of the source to transmit the image through a screen to the viewer.

In this case, the surface should transmit an image with true optical clarity and brightness. A higher intensity source is necessary as the light rays are forced through the surface of the screen to the viewer. By definition the source is masked to the audience, but space must be left backstage between the source and the surface, in order to prevent the actors and crew from casting shadows on the surface. The darker colors included in the rear projection palette allow the surface to blend inconspicuously into the scenery. Actors can stand in front of the screen without blocking the image. Because the image is usually projected on an angle directly perpendicular to the surface, distortion is not a problem.

If the surface is painted, varied and interesting effects can be achieved by projecting them from behind so that they blend with the painted picture. Day to night effects are a perfect example of this.



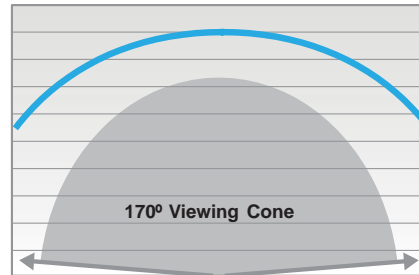
A rear projection surface also has its disadvantages.

In order to allow the image to pass through it, and because the viewer is usually looking almost directly at the source through the screen, a “hot spot” is often visible at the center of rear projected images. Because of density of the material required to diffuse the image and prevent hot spotting, the image quality falls off sharply when the viewer is seated outside the 60 to 110 degree viewing cone. (see diagram) The actual size of the viewing cone is dependent on the color of the surface chosen, with darker surfaces “falling off” fairly close to the center axis.

SCREENS FOR FRONT PROJECTION ONLY

Front White WP01 projection screen is a highly reflective, opaque PS material. Front White is best for those situations requiring the brightest images combined with the widest viewing angles. Because the reflectiveness is so high, this screen will pick up any ambient light. Therefore, care must be exercised in the lighting design to minimize bounce light. Suitable for 4K Images.

Front White Screen Optical Properties

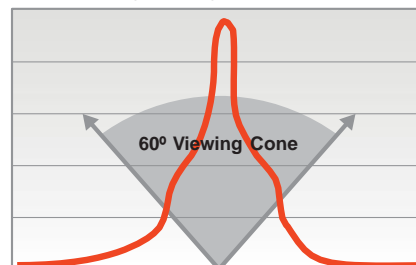


Viewing Angle: 170°
(85° off normal axis)
Gain: 1.1

SCREENS FOR REAR PROJECTION ONLY

Black GP01 projection screens PVC are best used in situations with high quantities of ambient light. The dark grey color comes magically to life with fine detail resolution when back lit with STRONG (bright) image. The color makes the screen inconspicuous within the framework of the set, but its viewing cone is limited to 60 degrees. The direct light transmission is only about 6%, but the excellent contrast between light and dark make for an image that appears substantially brighter. Black is particularly well suited for ballet and opera where the dark surface absorbs the reflections of follow-spots on the floor.

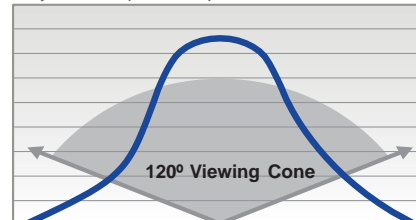
Black Screen Optical Properties



Viewing Angle: 60°
(30° off normal axis)
Gain: 2.30

Grey GP02 projection screens PVC have many of the advantages of black screens while opening up the viewing angles to accommodate a wider audience. The medium grey color still helps the screen blend into the scenery, and provides true-to-life images, color and clarity. The viewing cone opens up to 120 degrees, and the lighter color means higher light transmission, and therefore, a brighter image.

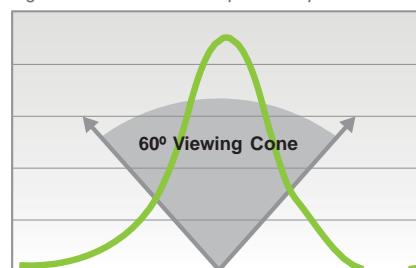
Grey Screen Optical Properties



Viewing Angle: 120°
(60° off normal axis)
Gain: 1.1

Light Translucent GP03 projection screen PVC is a slightly opaque, very light grey screen with a variety of uses. For projection, it is best used in high ambient light situations, particularly in outdoor installations, because the extremely high light transmission of the screen allows the image to compete with the bright ambient light. Care should be exercised in avoiding the line of sight between the viewer and the projector, however, due to the hot spot that would be seen because the screen is so translucent. *Light translucent screen is an excellent choice for bounce drops and diffusion materials.*

Light Translucent Screen Optical Properties



Viewing Angle: 60°
(30° off normal axis)
Gain: 4.4

