Transparency and blending modes

About transparency

Transparency is such an integral part of Illustrator that it's possible to add transparency to your artwork without realizing it. You can add transparency to artwork by doing any of the following:

- Lowering the opacity of objects so that underlying artwork becomes visible.

- Using opacity masks to create variations in transparency.

- Using a blending mode to change how colors interact among overlapping objects.

- Applying gradients and meshes that include transparency.

- Applying effects or graphic styles that include transparency, such as drop shadows.

- Importing Adobe Photoshop files that include transparency.

Transparency panel overview

Use the Transparency panel (Window > Transparency) to specify the opacity and blending mode of objects, to create opacity masks, or to knock out a portion of one object with the overlying portion of a transparent object.

Show all options in the Transparency panel

- Choose Show Options from the panel menu.

Show a thumbnail of the selected object in the Transparency panel

- Choose Show Thumbnail from the panel menu. Or, click the double triangle on the panel's tab to cycle through the display sizes.

View transparency in artwork

It's important to be aware of when you're using transparency, because you need to set some extra options when printing and saving transparent artwork. To view transparency in

your artwork, display a checkered background grid to identify transparent areas of your artwork.

1. Choose View > Show Transparency Grid.
2. (Optional) Choose File > **Document Setup**, and set transparency grid options.
Note:

You can also change the artboard color to simulate what your artwork will look like if printed on colored paper.


Change the opacity of artwork

You can change the opacity of a single object, the opacity of all objects in a group or layer, or the opacity of an object's fill or stroke.

1. Select an object or group (or target a layer in the Layers panel).
To change the opacity of a fill or stroke, select the object, and then select the fill or stroke in the Appearance panel.

2. Set the Opacity option in the Transparency panel or Control panel.
Note:

To select all objects that use a specific opacity, select an object with that opacity, or deselect everything and enter the opacity value in the Transparency panel. Then choose Select > Same > Opacity.

If you select multiple objects in a layer and change the opacity setting, the transparency of overlapping areas of the selected objects changes relative to the other objects and shows an accumulated opacity. In contrast, if you target a layer or group and then change the opacity, the objects in the layer or group are treated as a single object. Only objects *outside* and below the layer or group are visible through the transparent objects. If an object is moved into the layer or group, it takes on the layer's or group's opacity, and if an object is moved outside, it doesn't retain the opacity.
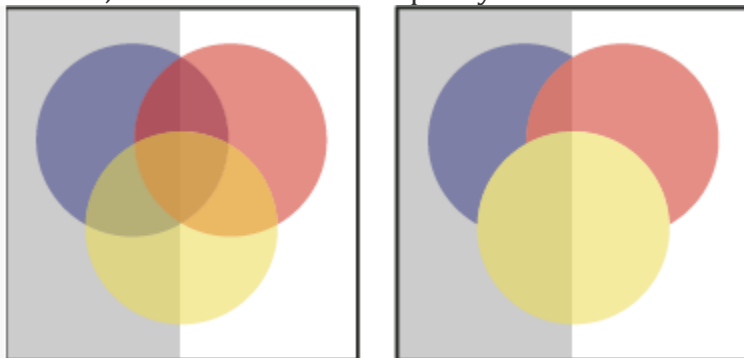
Individual objects selected and set to 50% opacity (left) compared to layer targeted and set to 50% opacity (right)

Create a transparency knockout group

In a *transparency knockout group*, the elements of a group don't show through each other.
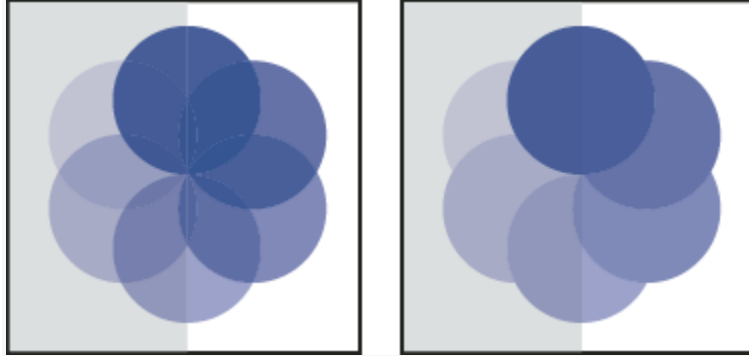
Group with Knockout Group option deselected (left) compared to selected (right)

1. In the Layers panel, target the group or layer you want to turn into a knockout group.
2. In the Transparency panel, select Knockout Group. If this option isn't visible, select Show Options from the panel menu.

Selecting the Knockout Group option cycles it through three states: on (check mark), off (no mark), and neutral (square with a line through it). Use the neutral option when you want to group artwork without interfering with the knockout behavior determined by the enclosing layer or group. Use the off option when you want to ensure that a layer or a group of transparent objects will never knock each other out.

Use opacity masks to create transparency

You use an *opacity mask* and a *masking object* to alter the transparency of artwork. The opacity mask (also referred to as masked artwork) provides the shape through which other objects show. The masking object defines which areas are transparent and the degree of transparency. You can use any colored object or raster image as the masking object. Illustrator uses the grayscale equivalents of the colors in the masking object for the opacity levels in the mask. Where the opacity mask is white, the artwork is fully visible. Where the opacity mask is black, the artwork is hidden. Shades of gray in the mask result in varying degrees of transparency in the artwork.
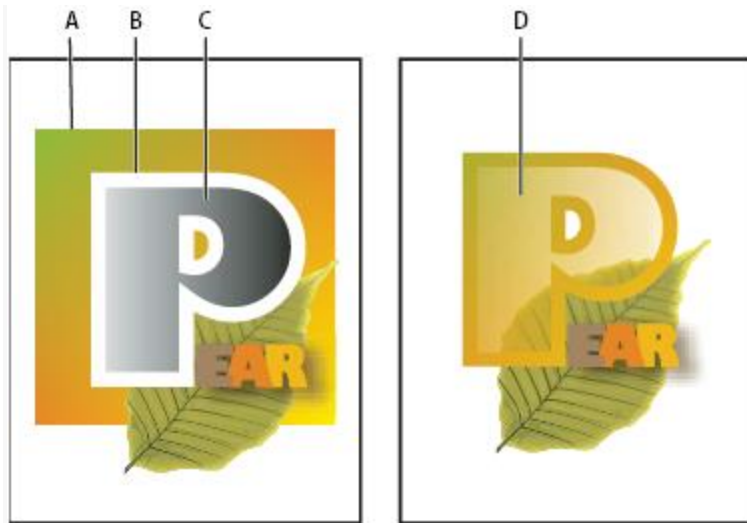
Creating an opacity mask

A. Underlying objects **B.** Opacity mask artwork **C.** Masking object filled with black-to-white gradient **D.** C moved over the area of B and masking B

When you create the opacity mask, a thumbnail of the masking object appears in the Transparency panel to the right of the thumbnail of the masked artwork. (If these thumbnails aren't visible, choose Show Thumbnails from the panel menu.) By default, the masked artwork and the masking object are linked (as shown by a link between the thumbnails in the panel). When you move the masked artwork, the masking object moves along with it. However, when you move a masking object, the masked artwork doesn't move. You can unlink the mask in the Transparency panel to lock the mask in place and move the masked artwork independently of it.
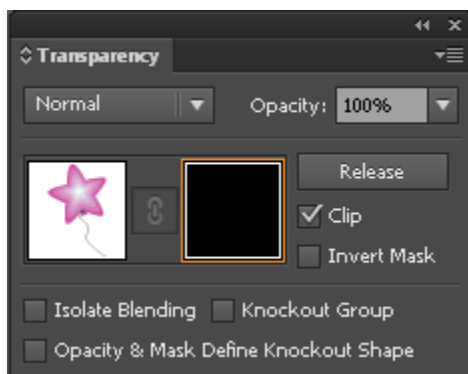
Transparency panel displays opacity mask thumbnails: left thumbnail represents the opacity mask, right thumbnail represents masking objects

You can move masks between Photoshop and Illustrator. Opacity masks in Illustrator convert to layer masks in Photoshop, and vice versa.

Note:

You can't enter isolation mode when working in mask-editing mode, or vice versa.

For a video on working with opacity masks, see [How to use Opacity masks](#).

Create an opacity mask

1. Select a single object or group, or target a layer in the Layers panel.
2. Open the Transparency panel and, if necessary, choose Show Options from the panel menu to see the thumbnail images.
3. Double-click directly to the right of the thumbnail in the Transparency panel.

An empty mask is created and Illustrator automatically enters mask-editing mode.

4. Use the drawing tools to draw a mask shape.
5. Click the masked artwork's thumbnail (left thumbnail) in the Transparency panel to exit mask-editing mode.

Note:

The Clip option sets the mask background to black. Therefore, black objects, such as black type, used to create an opacity mask with the Clip option selected will not be visible. To see the objects, use a different color or deselect the Clip option.

Convert an existing object into an opacity mask

- Select at least two objects or groups, and choose Make Opacity Mask from the Transparency panel menu. The topmost selected object or group is used as the mask.

Edit a masking object

You can edit a masking object to change the shape or transparency of the mask.

1. Click the masking object's thumbnail (right thumbnail) in the Transparency panel.
2. Alt-click (Windows) or Option-click (Mac OS) the mask thumbnail to hide all other artwork in the document window. (If the thumbnails aren't visible, choose Show Thumbnails from the panel menu.)
3. Use any of the Illustrator editing tools and techniques to edit the mask.
4. Click the masked artwork's thumbnail (left thumbnail) in the Transparency panel to exit mask-editing mode.

Unlink or relink an opacity mask

- To unlink a mask, target the masked artwork in the Layers panel, and then click the link symbol between the thumbnails in the Transparency panel. Alternatively, select Unlink Opacity Mask from the Transparency panel menu.

  The masking object is locked in position and size, and the masked objects can be moved and resized independently of the mask.

- To relink a mask, target the masked artwork in the Layers panel, and then click the area between the thumbnails in the Transparency panel. Alternatively, select Link Opacity Mask from the Transparency panel menu.

Deactivate or reactivate an opacity mask

You can deactivate a mask to remove the transparency it creates.

- To deactivate a mask, target the masked artwork in the Layers panel, and then Shift-click the masking object's thumbnail (right thumbnail) in the Transparency panel. Alternatively, select Disable Opacity Mask from the Transparency panel menu. When the opacity mask is deactivated, a red x appears over the mask thumbnail in the Transparency panel.
- To reactivate a mask, target the masked artwork in the Layers panel, and then Shift-click the masking object's thumbnail in the Transparency panel. Alternatively, select Enable Opacity Mask from the Transparency panel menu.

Remove an opacity mask

- Target the masked artwork in the Layers panel, and then select Release Opacity Mask from the Transparency panel menu.
The masking object reappears on top of the objects that were masked.

Clip or invert an opacity mask

1. Target the masked artwork in the Layers panel.
2. Select either of the following options in the Transparency panel:
Clip

Gives the mask a black background which crops the masked artwork to the boundaries of the masking object. Deselect the Clip option to turn off the clipping behavior. To select clipping for new opacity masks by default, select New Opacity Masks Are Clipping from the Transparency panel menu.

Invert Mask

Reverses the luminosity values of the masking object, which reverses the opacity of the masked artwork. For example, areas that are 90% transparent become 10% transparent after the mask is inverted. Deselect the Invert Mask option to return the mask to the original state. To invert all masks by default, select New Opacity Masks Are Inverted from the Transparency panel menu.

If these options aren't visible, select Show Options from the panel menu.

Use transparency to shape a knockout

Use the Opacity & Mask Define Knockout Shape option to make a knockout effect proportional to the object's opacity. In areas of the mask that are close to 100% opacity, the knockout effect will be strong; in areas with less opacity, the knockout effect will be weaker. For example, if you use a gradient-masked object as a knockout, the underlying object will be knocked out progressively, as if it were being shaded by a gradient. You can create knockout shapes with both vector and raster objects. This technique is most useful for objects that use a blending mode other than Normal.

1. Do one of the following:

- To use an opacity mask to shape the knockout, select the masked artwork, and then group it with the objects you want to knock out.

- To use the alpha channel of a bitmap object to shape the knockout, select a bitmap object that contains transparency, and then group it with the objects you want to knock out.

2. Select the group.
3. In the Transparency panel, select Knockout Group until the option displays a checkmark.
4. Among the grouped objects, target the masking objects or transparent image in the Layers panel.
5. In the Transparency panel, select Opacity & Mask Define Knockout Shape.
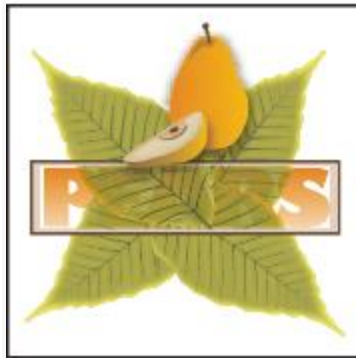
Knocking out shapes using a bitmap object

A. Original artwork **B.** Darken blending mode applied to the word "PEARS," and Group option selected **C.** Opacity & Mask Define Knockout shape option applied to word

About blending modes

Blending modes let you vary the ways that the colors of objects blend with the colors of underlying objects. When you apply a blending mode to an object, the effect of the blending mode is seen on any objects that lie beneath the object's layer or group.

It's helpful to think in terms of the following color terminology when visualizing a blending mode's effect:

- The *blend color* is the original color of the selected object, group, or layer.
- The *base color* is the underlying color in the artwork.
- The *resulting color* is the color resulting from the blend.
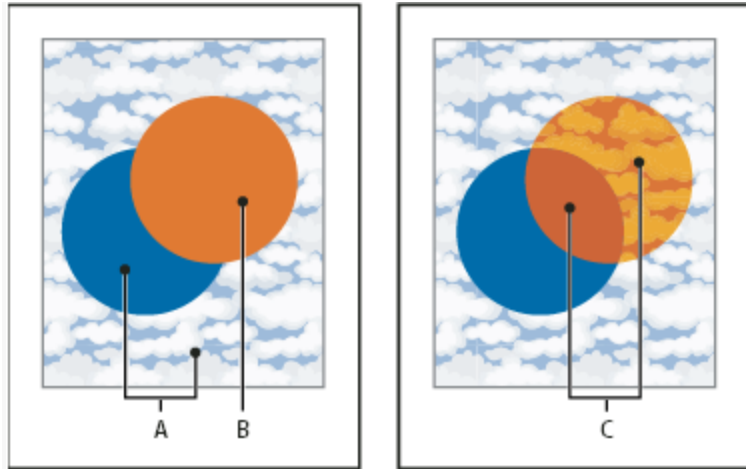
Topmost object with Normal blending (left) compared to Hard Light blending mode (right)

Illustrator provides the following blending modes:

Normal

Paints the selection with the blend color, without interaction with the base color. This is the default mode.

Darken

Selects the base or blend color—whichever is darker—as the resulting color. Areas lighter than the blend color are replaced. Areas darker than the blend color do not change.

Multiply

Multiplies the base color by the blend color. The resulting color is always a darker color. Multiplying any color with black produces black. Multiplying any color with white leaves the color unchanged. The effect is similar to drawing on the page with multiple magic markers.

Color Burn

Darkens the base color to reflect the blend color. Blending with white produces no change.

Lighten

Selects the base or blend color—whichever is lighter—as the resulting color. Areas darker than the blend color are replaced. Areas lighter than the blend color do not change.

Screen

Multiplies the inverse of the blend and base colors. The resulting color is always a lighter color. Screening with black leaves the color unchanged. Screening with white produces white. The effect is similar to projecting multiple slide images on top of each other.

Color Dodge

Brightens the base color to reflect the blend color. Blending with black produces no change.

Overlay

Multiplies or screens the colors, depending on the base color. Patterns or colors overlay the existing artwork, preserving the highlights and shadows of the base color while mixing in the blend color to reflect the lightness or darkness of the original color.

Soft Light

Darkens or lightens the colors, depending on the blend color. The effect is similar to shining a diffused spotlight on the artwork.

If the blend color (light source) is lighter than 50% gray, the artwork is lightened, as if it were dodged. If the blend color is darker than 50% gray, the artwork is darkened, as if it were burned in. Painting with pure black or white produces a distinctly darker or lighter area but doesn't result in pure black or white.

Hard Light

Multiplies or screens the colors, depending on the blend color. The effect is similar to shining a harsh spotlight on the artwork.

If the blend color (light source) is lighter than 50% gray, the artwork is lightened, as if it were screened. This is useful for adding highlights to artwork. If the blend color is darker than 50% gray, the artwork is darkened, as if it were multiplied. This is useful for adding shadows to artwork. Painting with pure black or white results in pure black or white.

Difference

Subtracts either the blend color from the base color or the base color from the blend color, depending on which has the greater brightness value. Blending with white inverts the base-color values. Blending with black produces no change.

Exclusion

Creates an effect similar to but lower in contrast than the Difference mode. Blending with white inverts the base-color components. Blending with black produces no change.

Hue

Creates a resulting color with the luminance and saturation of the base color and the hue of the blend color.

Saturation

Creates a resulting color with the luminance and hue of the base color and the saturation of the blend color. Painting with this mode in an area with no saturation (gray) causes no change.

Color

Creates a resulting color with the luminance of the base color and the hue and saturation of the blend color. This preserves the gray levels in the artwork and is useful for coloring monochrome artwork and for tinting color artwork.

Luminosity

Creates a resulting color with the hue and saturation of the base color and the luminance of the blend color. This mode creates an inverse effect from that of the Color mode.

Note: The Difference, Exclusion, Hue, Saturation, Color, and Luminosity modes don't blend spot colors—and with most blending modes, a black designated as 100% K knocks out the color on the underlying layer. Instead of 100% black, specify a rich black using CMYK values.

Change the blending mode of artwork

1. Select an object or group (or target a layer in the Layers panel).
    To change the blending mode of a fill or stroke, select the object, and then select the fill or stroke in the Appearance panel.

2. In the Transparency panel, choose a blending mode from the pop-up menu.
    You can isolate the blending mode to a targeted layer or group in order to leave objects beneath unaffected. To do this, select the target icon to the right of a group or layer in the Layers panel that contains an object using a blending mode. In the Transparency panel, select Isolate Blending. (If the Isolate Blending option isn't visible, select Show Options from the Transparency panel menu.)
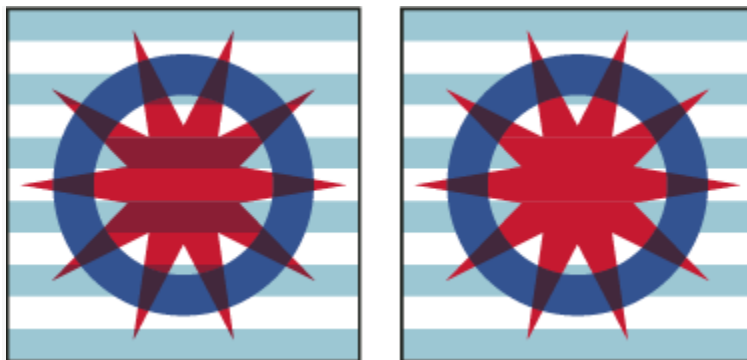
Group (star and circle) with Isolate Blending option deselected (left) compared to selected (right)

Note:

To select all objects that use the same blending mode, select an object with that blending mode, or deselect everything and choose the blending mode in the Transparency panel. Then choose Select > Same > Blending Mode.