

Ghosting - How to Detect and Avoid it when Designing Animation-effect Artwork For Lenticular Printing

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Ghosting - An undesirable result of lenticular printing which happens when more than one image is visible at certain viewing angles. Possible causes are: images on the same lenticule (lens) have too much color contrast, poor registration, mismatched pitch, or too many frames.

Technically speaking, rendering and printing a lenticular animation effect image on a lenticular sheet are less difficult than a 3D effect image. However, from the designer's perspective, it is much more difficult to design a ghosting-free animation lenticular effect image than that of a 3D effect image.

In fact, the most common cause of ghosting is when "images on the same lenticule (lens) have too much color contrast". Color contrast is the most difficult design challenge for the graphic designer who is not used to designing artwork for lenticular printing.

The main focus of this article is to address the ghosting challenge in lenticular printing and introduce a simple method called "*Finger Finding*" to detect potential ghosting problems. It concludes by discussing ways to avoid potential ghosting issues in lenticular printing.

The Finger Finding Method and How it Works:

"*Finger Finding*" is a simple, yet very effective method which uses the index finger as a tool to locate an area in an artwork set where a lenticular ghosting issue will most likely occur.

How "*Finger Finding*" works. There are two different approaches:

- A. By locating an object that has a very dark color.

1) Open the first image and set your index finger on an object that has a very dark color.

2) While keeping your index finger in the same location, open the second image.

3) If you see a light colored object under your finger, this spot will likely appear as a dark shadow (ghosting) in this image.

- B. By locating an empty spot or an object that has a very light color.

1) Open the first image and set your index finger in either an empty area where the background color is very light or on an object that has a very light color.

2) While keeping your index finger in the same location, open the second image.

3) If you see a dark colored object under your finger, this dark object will likely appear as a dark shadow (ghosting) in the first image.

To illustrate what is described above, please take a look at following two images; Image A and Image B. By using the *Finger Finding* method, you will find the dark glasses case in Image A will show up as a dark shadow (ghosting) in the right hand side of the Juice Can in Image B.

Image A



Image B



How to Avoid Potential Ghosting Problems in your Animation Effect Artwork?

1) Object Color:

For an object that will be flipped, morphed, or zoomed, use a **similar color pallet** without a big color contrast across all images.

2) Object Location:

For an object that will be flipped, morphed, or zoomed, keep the object in the **same** location across all images.

3) Object Size:

For an object that will be flipped, morphed, or zoomed, use a **similar sized** object across all images.

4) Background Color:

Avoid using a light colored background. If you have to use a light background color, avoid placing a dark object which will be flipped, morphed, or zoomed in front of it.

5) Background Texture:

Adding texture to the background may minimize a potential ghosting issue.

6) Avoid Entire Image Change:

Keep certain objects in the images static, especially the background unless the background has similar color pallet and texture.

7) Text Length:

Keep text in the artwork of similar length.

8) Text Color:

Avoid using light colored text.

Artwork Design Example for a 2 Image Flip Lenticular Effect

Here is the artwork set that demonstrates a good design for a 2 Image Flip lenticular effect.



