MGI
Digital Graphic Technology

JETVARNISH 3D

Best Practices Guide
Tips, tricks and recommendations

IMAGINE WHAT YOU COULD DO WITH AN **MGI**

Technology Overview
Working with Masks

JETvarnish 3D: a brief history

MGI first introduced the JETvarnish as a prototype at drupa 2008. It was the launch of MGI's inkjet product line and represented a new direction for a company that had previously focused on dry toner (electrophotographic) technology for printing.

The first JETvarnish prototype in 2008

The JETvarnish was the first solution to successfully utilize inkjet technology for spot UV coating, a special effect long desired for its stunning visual impact, but one that came at a price - expensive makeready (plates, screens, etc) that required long runs in order for customers to break even financially. With the JETvarnish, printers finally had a way to apply spot UV coating to even the shortest runs, and the 100% digital technology meant that making changes to the mask file was as simple as the click of a mouse.

The response from visitors at drupa 2008 was overwhelmingly positive, which led MGI to move forward with additional R&D, then into production. While the initial prototype had a14x20" maximum format, feedback from prospects at drupa indicated that a B2 format (20x29") was required in order to accommodate sheets printed on half size offset presses. The B2 format JETvarnish was commercially released in 2009 and from 2009-2012, MGI cemented their position as the leading manufacturer of inkjet spot UV solutions, installing more than 130 units worldwide.

The JETvarnish 3D production model, introduced in 2012

At drupa 2012, MGI introduced the next-generation JETvarnish 3D, which featured faster speeds for spot UV coating and new 3D raised effects onto digital or offset prints. This dual set of capabilities was a true game-changer: the response at drupa was beyond wildest expectations, which led to delaying the start of production to integrate additional technical upgrades, including the ARC registration camera system. The first JETvarnish 3D units came out of production in November 2012 and the rest, as they say, is history.

100% digital process

Create mask in design software (InDesign, Photoshop, etc.

Load mask into JETvarnish 3D front end system

Spot UV coating on the JETvarnish 3D!

Working with masks

One of the major advantages of the JETvarnish 3D is the fact that no plates or screens are required. By eliminating this costly makeready step, the spot UV coating process is greatly simplified and streamlined. It's easy to spot UV coat just one printed sheet as a proof, a capability never possible with traditional offset or screen spot UV methods.


This digital spot UV coating file is what we refer to as a "mask." The mask is a separate layer in the original design file (created in Photoshop, InDesign, Illustrator, etc) which denotes the areas of the image with spot UV highlights. The major benefit to creating the mask within the print file is that it ensures your image & mask will align perfectly.

The following pages give a basic overview of the mask creation process.
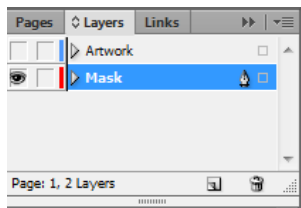
JETvarnish 3D mask setup - InDesign/Illustrator
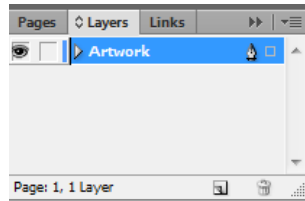
1 In Adobe Illustrator or InDesign, create your design (vector or raster images) on a layer and name it "Artwork." Raster images that are used should be saved as .tiff (360 dpi) format before importing them into Illustrator or InDesign

2 Create another layer and label it "Mask." In the "Mask" layer, create areas of 100% black (K). This is the layer mask that will have the spot UV highlights. In order to ensure registration, please make sure all layers are perfectly aligned.
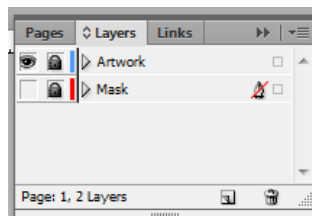
3 Turn off the "Mask" layer, so that only the "Artwork" layer is visible. Save or export your file as as pdf (ie. "FileName.pdf").

4 Turn off the "Artwork" layer so that the "Mask" layer is visible. Save or export your file as a pdf ("FileNameMask.pdf").
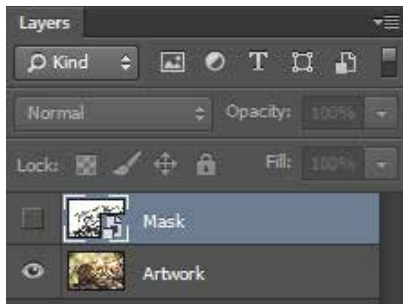
5 You now have 2 pdf files with identical size dimensions, so when the files are laid out for printing, they will line up perfectly (see example above).

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JETvarnish 3D mask setup - Photoshop

1 In Photoshop, create your design or artwork on a layer and name it "Artwork". Please make sure your document is working in CMYK *(Image> Mode> CMYK Color)*. Save your file as .psd.
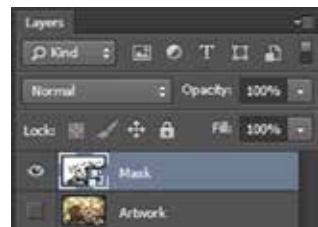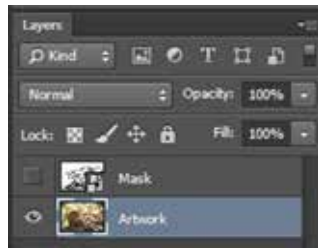

2 Create another layer and label it "Mask". This layer will be the overlaid mask layer that will represent the spot UV highlights.

3 On the "Mask" layer, create areas of 100% black (K). This is the layer mask that will be the spot UV highlighted area. Save your file as a layered .psd CMYK document.

JETvarnish 3D mask setup - Photoshop (continued)

4 Turn off the "Mask" layer so the "Artwork" layer is visible. Save your file as "FileNameCMYK.tif" using the Tiff Options shown to the left.

FileNameCMYK.tif

5 Turn off the "Artwork" layer so the "Mask" layer is visible. Change the document color setting to "Grayscale" *(Image> Mode> Grayscale)*. Merge the layers when prompted.

Make image 360dpi *(Image> Image Size)* without altering the document size. See 'Image Size' window (shown bottom left) for options.

Save your file as "FileNameMask.tif" using the Tiff Options shown to the left.

FileNameMask.tif

6 You will now have two .tif files with identical size dimensions so that when the files are laid out for print, they will perfectly line up. Example shown to the right.

"Mask" layer overlaying "Artwork" layer.

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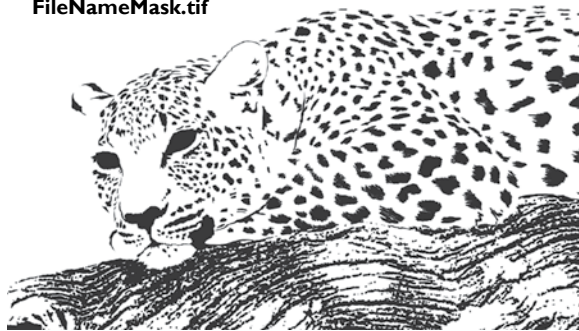
Creating masks: an overview

The previous page provides a technical overview of the steps involved in creating a mask that accompanies your image. However, the creative process behind developing the mask is just as important and is key in ensuring your final printed piece has the visual impact that you desire.

When creating a mask, the first question you need to ask is "what areas of this image do I want to draw attention to?" Depending on your design, you might think this is pretty obvious, but a good rule of thumb with mask creation is **less is more**.

Let's go deeper! Tips & tricks for creative and best quality results.

The first thing to keep in mind is that you're working with a liquid (UV coating), which will react differently to each type of surface that it comes in contact with. Knowing how the coating behaves on any given surface will help you to design your mask in order to achieve the best possible results.

Points to keep in mind:

1. Does the coating bead or spread?
Since naturally the volume of coating applied is much greater at higher thicknesses (ie. 100μ), some spreading and globulation will occure when printing finer textures.

Best practice: textured or fine detail mask areas should use a lower micron value in order to preserve details that can get lost at thicker levels. If you have areas you want 100μ thick (for example, a solid circle) and then in another spot you want use a texture (for example, a basketball's dimples.), you would leave the circle area at 100% black to get the desired thickness. The basketball's dimples should be set at a lower percent of black to keep the details.

2. Does the surface have lamination or aqueous coating?
The type of surface (and surface tension) will affect how the coating beads or spreads. Some substrate surfaces will show spread more than others, most notably in areas without ink on the paper white.

3. Is the print digital or offset? If digital, is it dry toner or liquid toner?
Inks and toners will also affect how the coating spreads on the surface. **Testing of your print material is crucial in order to understand limitations and results**. Lower level spot UV (flat) applications may require lamination for some substrate surfaces in order to achieve desired results.

4. From a marketing standpoint: is the mask going to enhance my visual or overpower the entire piece?
As mentioned at the beginning of this section, less is more. Along with the abilities to highlight many areas of your design also comes aesthetics. What areas will best enhance the work? What features will add to its appeal but not overpower the message?
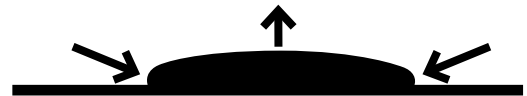
Image mask of textured fur	Coating behavior on substrate surfaces

The intended look after applying coating. Note all the fine details that are visible.

Here we see the coating drop laying on the surface and keeping its shape. The substrate's surface tension helps bead the edges of the coating and keeps even fine mask details intact and thicker sections intact. **This is the result you want!**

This image shows the same mask at a higher coating thickness. The extra coating causes globulation and spread, which fills into the spaces in the design and obscures fine detail.

The drop below has lost all its energy, thus spreading beyond the original shape of the mask and losing fine details. Two areas are of concern: the surface tension as well as the amount of coating applied. Both will increase dot gain or coating spread.

Spot UV

Traditionally, spot UV coating (or "flat" UV coating) was used to highlight key elements of a design - and this is still what we recommend. For example, on a book cover, you may want to spot UV the title text and a main portion of the cover image. Or on a corporate brochure, you may want to spot UV the company's logo. In this case, less really is more, because if you spot UV every element on a page, the important elements will lose the visual impact.

Here's a couple of examples of effective spot UV coating (print on the left, spot UV mask on the right).

Spot UV continued

While many designs feature spot UV highlights directly overlaid onto the printed image, it's also important to consider designs that are blind printed - in other words, they do not directly line up with the image. You can create stunning visual impact by spot UV coating a logo in the background like a watermark, or using other more abstract design elements.

Here's a few examples of how this works.
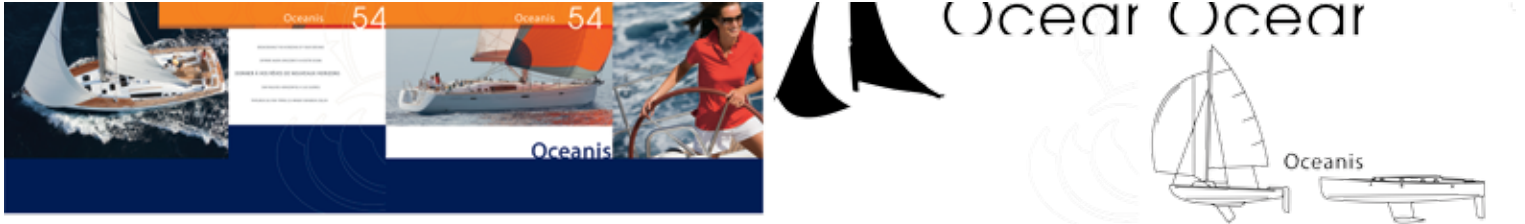
For this file, the design features a combination of overlaid & blind elements. The print is above left and the mask is above right. You can see how the two elements work together to enhance the overall design below.

This design takes the corporate logo and uses it as a watermark, adding depth and creating a high-end appearance. The image below shows the result

3D Effects

While spot UV coating is very effective in drawing attention to certain elements of an image, the use of 3D effects truly brings images to life. FYI, we consider 3D effects anything above 20 microns in thickness.

As consumers, we know what catches our attention on a shelf or in a display in a store. We are more likely to remember a brand that creates an experience that appeals to our senses - most importantly, our sense of touch. Academic research has shown that the power of touch can be a tremendously persuasive factor in making a purchasing decision.

Here's a few key findings from these studies (the full studies can be found in the appendix).

The Effect of Mere Touch on Perceived Ownership
Peck and Shu, 2009
- For humans, touch can connect you to an object in a very personal way. In fact, Illinois tried to ban touching of products during shopping.
- The experience of touching an object can influence persuasion, even if the touch element provides no information regarding the product
- The valuation and affective reaction of an object increases when the touch provides sensory feedback
- Touch statistically increases perceived ownership. The higher the perceived ownership, the more likely you are to buy

It Just Feels Good: Customers Affective Response to Touch and its Influence on Persuasion
Peck and Wiggins, 2006
- The marketing implications of touch are more substantial than previously believed
- Touching a product increases confidence and affective response. The higher the affective response, the higher the positive attitude towards the ad
- Touch leads to an increase in persuasion

If I Touch it, I Have to Have it: Influences on Impulse Purchasing
Peck and Childers, 2006
- Almost all unplanned purchases are a result of touching, hearing or smelling something within the premises of the store
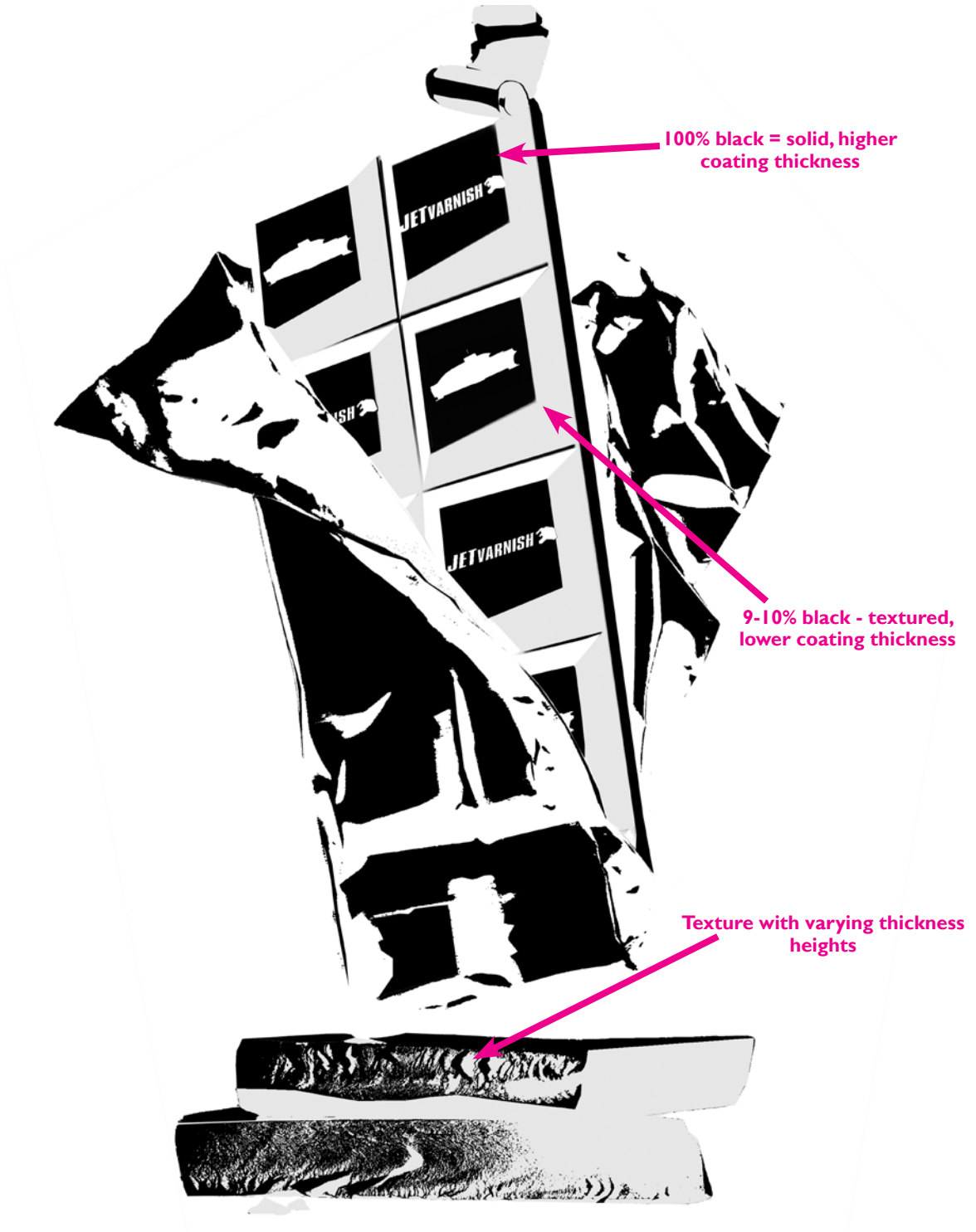
An understanding of how the power of touch enhances experiences from the point of a consumer makes it natural to want to bring this same level of connection and recognition into other types of marketing. That's where the JETvarnish 3D can take print to the next level, adding value to your projects and creating a memorable experience, no matter your audience.

These are important points to keep in mind as you design your mask with 3D effects, paying special attention to image selection and where you can utilize textures and other tactile effects to engage your audience and make your piece stand out. For example, if you are creating a direct mail piece promoting a golf tournament, you can add 3D effects to a golf ball that allow the audience to feel the dimples, just like on a real golf ball.

It's also important to understand how textures are created through the JETvarnish 3D mask. You essentially have a thickness scale from 0-100%, based on grayscale values. A section of the image that is 100% black will have the highest, most solid thickness of coating, while a section of the image that is, say, 50% black will not be as high. Gradients and texture variations are very helpful here as well.
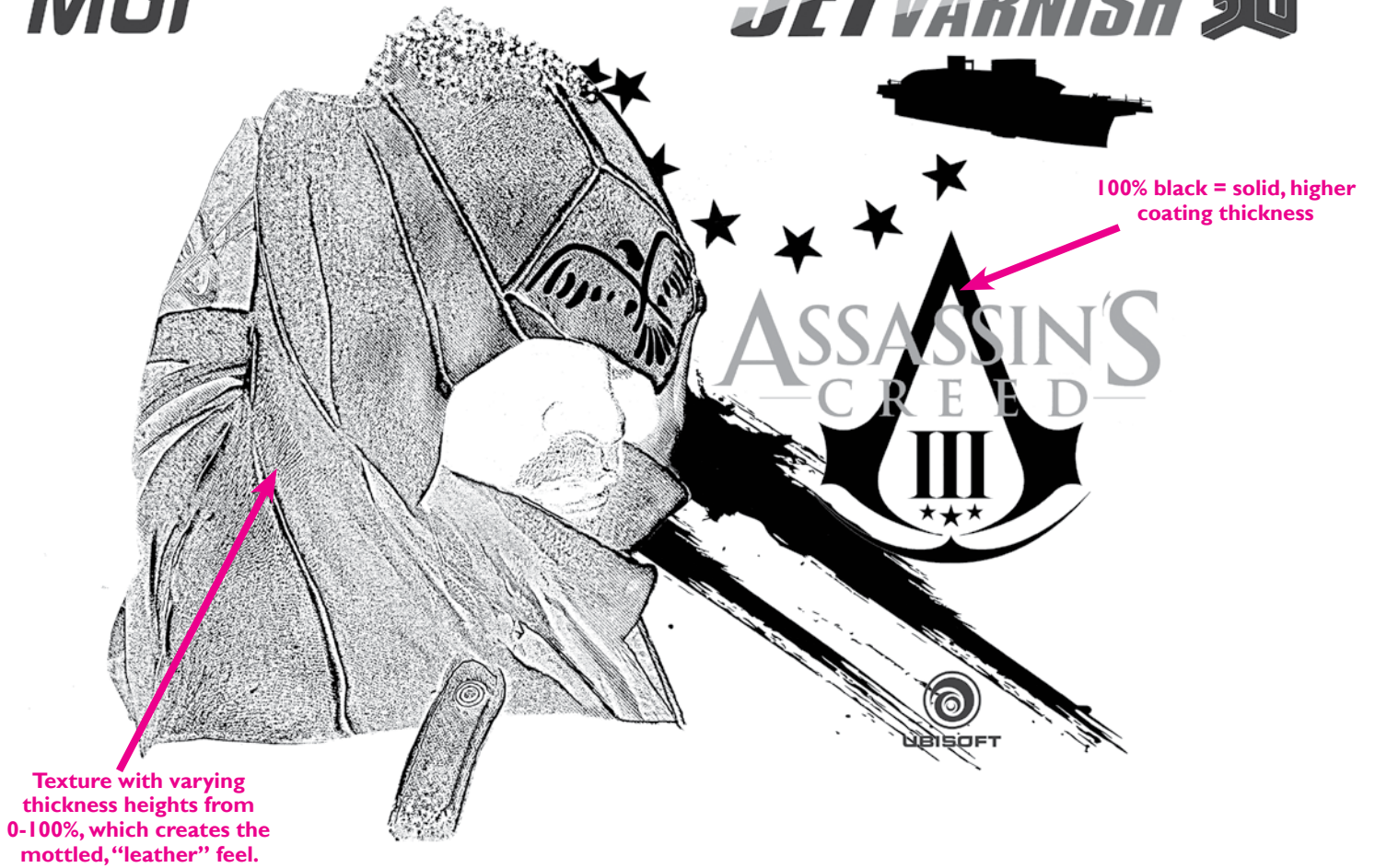
You'll find tutorial videos on the USB key included with this Best Practices Guide that show you several step-by-step examples of mask creation.

Here's a few examples of how the mask design shapes the texture and thickness of the JETvarnish 3D coating.

100% black = solid, higher coating thickness

9-10% black - textured, lower coating thickness

Texture with varying thickness heights

100% black = solid, higher coating thickness

Texture with varying thickness heights from 0-100%, which creates the mottled, "leather" feel.

3D effects: thinking beyond the mask

Like with spot UV coating, effective design can feature not only 3D effects overlaid in registration with the printed image, but blind printed/non-registered as an accent or complement to the printed image. In fact, this technique can be even more effective with 3D effects because of the tactile element.

There's no set guide about when to add these elements to a design. The more creative your designer is, the more you'll be able to think beyond the design and come up with elements that can truly enhance the image and create a powerful impact for the target audience. As you become more familiar with your JETvarnish 3D and its capabilities, it'll also be easier to know when these elements are appropriate to integrate.

A perfect example comes from a demo with representatives from Perrier. They had a printed image of a Perrier bottle and a glass, and their designer had created the mask to highlight the bottle and the glass (see right).

**3D effects highlighting moisture on the bottle & glass**

The Perrier representatives thought it was nice, but it was lacking the WOW factor they were looking for.

So MGI designers took a look at the file and decided to add bubbles coming out of the glass, plus they added a silhouette of a wineglass in the background. The bubbles added an "action" element to the image, and the silhouette of the wineglass emphasized the luxurious message they wanted to convey.

Bubbles & moisture flying out of the bottle and glass

Champagne glass silhouette, implying that Perrier is a beverage deserving of being served in a flute

Needless to say, Perrier loved it.
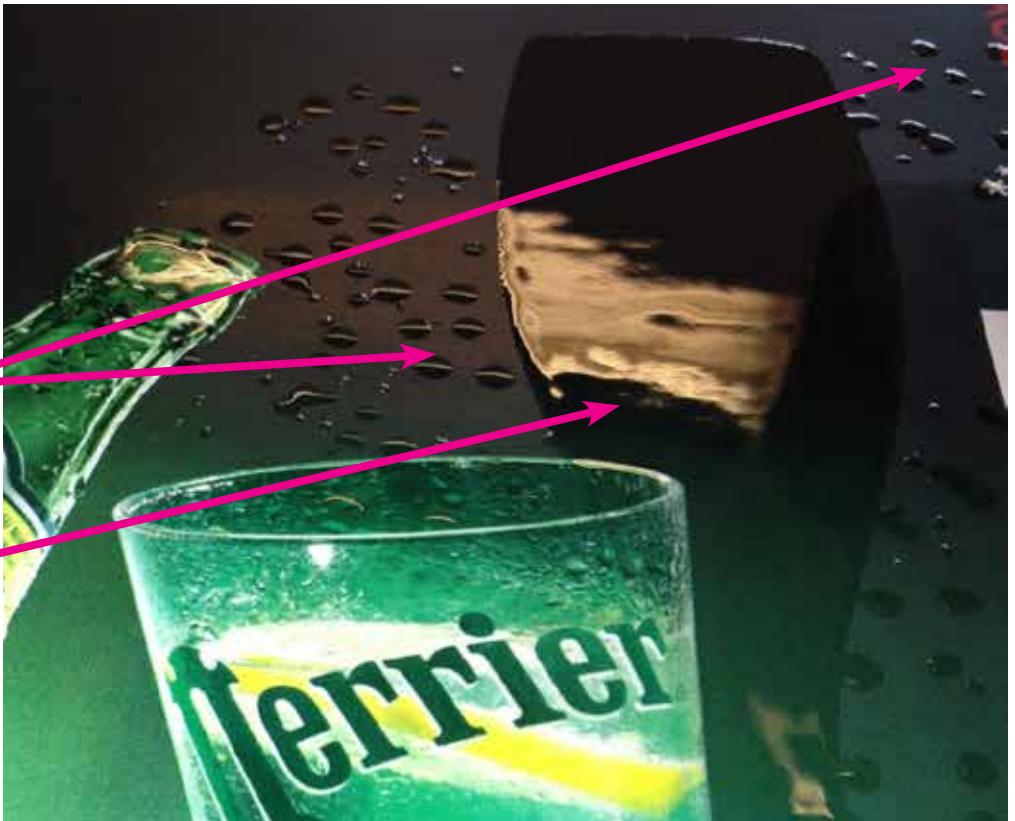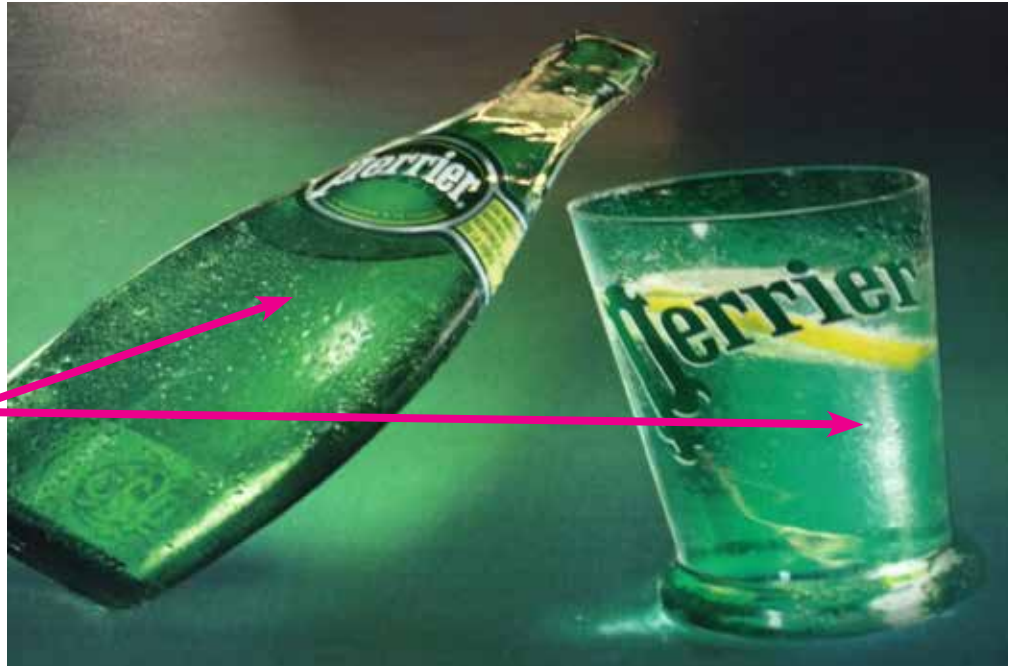
Here are a few more examples of effective masks utilizing 3D effects.

This image would be enhanced by just using 3D effects on the microphone, but the designers chose to elevate the impact using non-registered/blind elements...
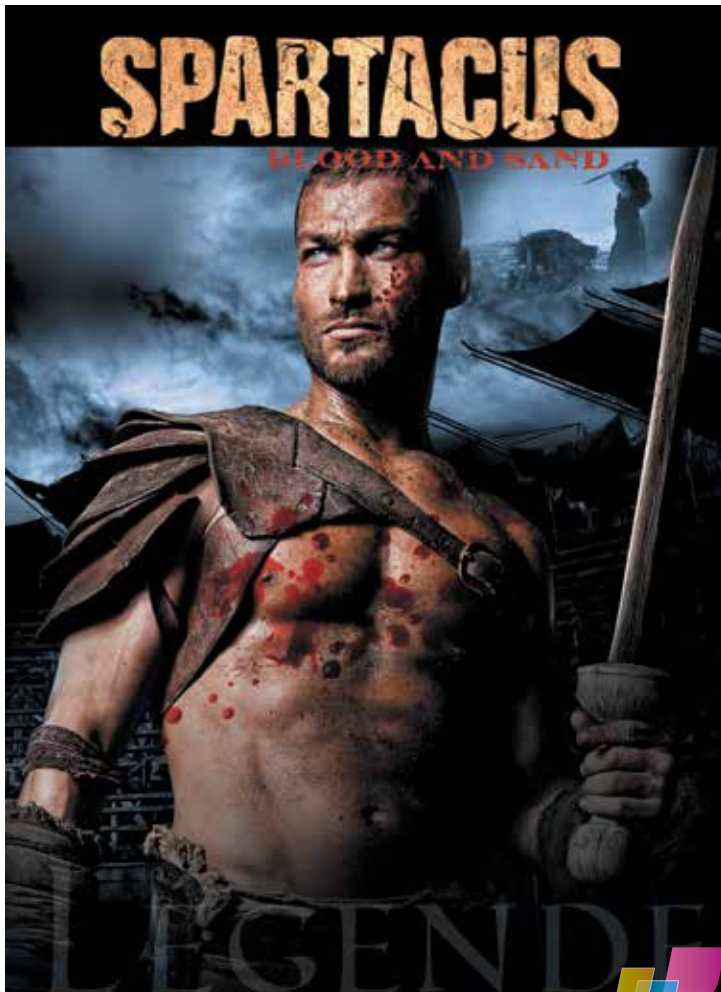

The final image w/mask is much more dynamic and engaging

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In these examples, you can see how utilizing 3D effects enhances key elements of the image.

Using 3D effects to highlight the snakeskin boots as well as the scales on the snake, plus thicker spot UV coating on the apple allows the image to come to life in a new way

This is one of our favorite files and truly illustrates the impact the 3D effects add to a piece. The 3D effects over the printed blood give it a wet look that always attracts attention and entices people to reach out and touch it.

Textures & Patterns

One of the simplest elements that delivers stunning tactile effects is the use of textures & patterns. From recognizable patterns (leopard, snake,fur, etc) to abstract elements involving dots, lines and other designs, textures can really take a design to a new level.

Ideas include using as a background effect or as a watermark over a design, or intgrating into the mask over a printed element to draw attention to that element.

Text is also a very simple (and low coverage) element that can be very effective in enhancing a design.