

# Breaking the Rules

## Pushing the Limits with Decals

by Justin Rothshank

**D**ecals are typically thought of as low-fire, post-glaze decorating tools, but laser decals are actually far more versatile. Laser decals can actually withstand virtually any firing temperature and can be used in any step of the creation process. I've been drawn to creating ceramic decals because of my interest in expressing fine details, vibrant colors and text on ceramics, and the decal process serves as an avenue for me to do this. And, I am not limited to firing in an electric kiln—decals work great for me in my gas kiln and even in atmospheric firings.

I create my own decals using a laser printer and decal paper. My images originate from numerous sources: drawing within Photoshop, free-hand drawing and scanning into the computer, photo manipulation, Google image searches, or any other way to digitally enhance an image. Photo transfers can work if you put the photo into a Bitmap setting in Photoshop, but it can be very challenging to get clear resolution of photos on ceramic ware. I've been specifically interested in industrial images, line drawings, farm imagery and prayer and hymn texts, as well as old patent drawings, road maps and elevation drawings. (For a detailed step-by-step article on using a laser printer to create custom decals, see "Do-It-Yourself Decals," by Frank Gaydos, PMI Sept/Oct 2006. This article is also available online at [www.ceramicartsdaily.org/magazines](http://www.ceramicartsdaily.org/magazines)).

### Layering Images

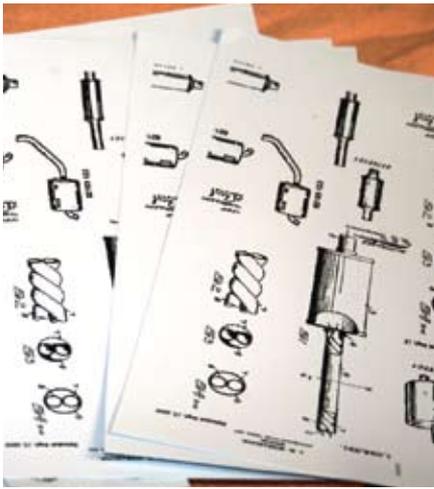
I layer decals both in the printing process, as well as during the application process. Occasionally I'll print different images onto the same decal sheet multiple times in order to achieve a layered effect on one decal. When layering the decals during the application process, it's



Pitcher and mugs, to 7 inches in height, stoneware. Reduction fired to cone 10, laser decal fired to cone 04, commercial decal fired to cone 015. This set uses commercial decals along with laser decals. Layering the decals enhances the visual impact.



Mugs, 2½ inches in height, porcelain, reduction fired to cone 10, laser decal fired to cone 04, commercial decal fired to cone 015. There are three layers of decals here and it's important to be sure that no water or air bubbles are caught between the decals and the ware, which can cause the decal to burn off during the firing process causing a loss of detail.



**1** Maximize the decal sheet by filling an 8½x11 sheet with multiple images.



**2** Trim decals as close to the image as possible since the decal film may leave a mark on the clay, even if there is no ink on the film.



**3** Soak the decal in water until the film slides on the paper backing. The decal will curl in the water.



**4** When applying decals to bone dry greenware, dampen the surface.



**5** Work quickly to properly position the decal. A wet decal picks up a cloudy clay residue as soon as it touches the clay body and the more you handle it the cloudier it can become.



**6** Remove excess water and air bubbles with a damp sponge.

important to be sure that no water or air bubbles are caught between the decals and the ware. This can cause the decal to burn off during the firing process resulting in a loss of detail.

Because of the stability of laser decals, their low cost and their ease in transferring, this process can serve as the baseline guide for further surface decoration. I apply laser decals at all points of the ceramic process: greenware, bisque ware and glaze ware.

## Unfired Clay

When applying the laser decal to unfired clay, there are three things to consider. First, the decal “sticks” to the piece with water so applying decals to wet or damp clay can be easier than applying decals to bone dry clay, even though both surfaces can accept laser transfer decals. Second, a wet decal picks up a “cloudy” clay residue as soon as it touches the clay body. The more you handle the decal the cloudier it can become. Because of this, it’s often easier to transfer smaller images than larger images until you become accustomed to handling decals. Limiting the number of times you need to smooth the decal with a rib or a sponge also prevents contaminating the decal with the cloudy residue. Third, the decal film may leave a mark on the clay, even if there is no ink on the film. Therefore it’s important to cut out the decal as close to the image as possible. Again, the less water you use in making the transfer, the less chance of leaving a mark behind to influence the surface of the pot.

## Bisqueware or Unglazed Fired Ware

Similar to applying a decal to bone dry clay, it can be difficult to get the decal to adhere to bisqueware. I’ve found that moistening the piece before applying the decal often allows the decal to adhere long enough to fire it. Using this technique likely requires a second bisque firing before glaze application, which can be a nice option for allowing layering of decals.

## Decals with Wood-Fired Ware

Laser decals, commercial decals and china paints can all be used in partnership with wood-fired wares. All of these processes can be effectively used on pieces after they have come out of the wood kiln. Laser decals can also be applied prior to the wood firing.

Decals are more visible on porcelain or white stoneware in the wood kiln. Laser decals can turn very nice shades of iron red on wood-fired pieces. When using laser decals during a wood firing I apply my decals to green ware, and then bisque fire the pieces. In order to improve the chances of having the decal remain visible post-firing, I try to avoid glazing over

the decals at all. If I do decide to apply a glaze or a flashing slip, I spray the glaze and try to do a very light dusting over the decal, just enough to encourage flashing. During the kiln loading process I'm careful to load the decal ware so that the decal is not directly in any flame channels or high ash areas. This not only helps to keep the decal visible, but also often highlights the decals with flashing and ash build-up surrounding it.

When applying decals to wood-fired pieces after they've been fired, I follow the same steps as with any other decal process, but there are a couple of things to keep in mind dur-

ing this process. First, commercial decals, especially old ones, tend to transfer poorly on wood-fired ware, especially the more crusty wood-fired pieces. This can sometimes lead to a nice effect, but only if you're not concerned with the intricate details of the decal. Secondly, wood-fired pieces can become somewhat muddled in the refiring process. This is especially apparent on pieces with glossy ash runs or areas of very high ash build up. The refiring will often change the appearance of the piece, and depending on your goal with the decals this can either enhance or destroy the wood-fired effects.

## Glazed Ware

I frequently apply laser decals to glazed ware. Since much of my glazed ware is fired in reduction to cone 10, or in a wood kiln beyond cone 10, I apply and fire laser decals to cone 04 to "set" the decal. Again, you must be careful to cut the decal out as close to the image as possible in this transfer process, and to squeegee out any excess water and air bubbles to inhibit a low quality transfer or burning away detail in the firing process. If you notice a cloudy outline after the firing process you may have tap water with too much calcium or other minerals in it. Switching to distilled water can potentially solve this problem.

For me, the most challenging aspect of using decals on high-fired ware is finding glazes that remain consistent, or even improve, during the refiring process. I've spent considerable time testing a series of glazes that I know will remain consistent throughout several firing steps. Many glazes that use iron as the main colorant (temmoku and celadon specifically) do not remain consistent in color through the cone 04 firing. I have also noted that some of my glazes that use tin as a colorant will occasionally pinhole more than other glazes. I'm not much of a glaze expert, and haven't had adequate time to continue testing glazes to determine the qualities that make refiring at cone 04 a possibility. I do have a yellow, white and red glaze that work well in the refiring process. I also use Shinos, which are



"Fossil Fuel Oil Can," 12 inches in height, stoneware with dinosaur decal, wood fired, 2006.

typically both frustrating and rewarding. Shinos with iron can sometimes yield what I consider to be the most fascinating and pleasing results, as the image can fire into a very bright red color with beautiful contrast against the bright whites, tans or blacks of the Shino glaze. With all other glazes the traditional laser decal takes on a sepia color.

One problem that has occurred is that certain glaze and clay body combinations will dunt or crack after being fired several times. While I'm still trying to figure out what causes this problem, I have found that slowing the firing process down during both heating and cooling it and reformulating glazes helps reduce this problem. I've also been able to minimize the issue by holding the kiln for an hour at peak temperature before turning it off. I do this for both laser decals, and for commercial decals, lusters and china paints fired to cone 015–017.

The decal process, while very simple, can also be combined with numerous other surface treatment methods, for example I also use commercial decals, china paints, screen-printed underglazes, lusters and commercial luster decals. The versatility of the laser decal makes it a fabulous tool in the clay studio.

## Tips for Success

- In my experience most laser transfer decals fire permanently onto glazed ware at cone 04 for both low-fire and high-fire glazes.
- Most commercial decals, decals from [www.easyceramicdecal.com](http://www.easyceramicdecal.com) and most china paints and lusters fire to cone 016.
- The red ribs from [www.mudtools.com](http://www.mudtools.com) make great squeegees.
- The Versa Color china paints from [www.amaco.com](http://www.amaco.com) are great for silk screening or painting over glaze.
- Sometimes regular water can leave a silhouette mark around decals. In this case, buy distilled water from the store to use in applying the decals.
- Any bubbles will burn out leaving holes and gaps in the decal. Remove all bubbles with a squeegee or damp sponge immediately, but do not overwork the decal. ●

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Mug, 3 inches in height; Plate 4 inches in diameter, stoneware, reduction fired to cone 10, laser decal fired to cone 04.

## Resources



### Printer

HP LaserJet 1022—for printing laser decals. Note: Different printers use different inks with varying amounts of metal oxides so you'll need to test.

### Decal Paper

Micro-Mark Company—buy the clear decal paper for laser printers. You don't need the fixative spray.  
[www.ares-server.com/Ares/Ares.asp?MerchantID=RET01229&Action=Catalog&Type=Product&ID=82274](http://www.ares-server.com/Ares/Ares.asp?MerchantID=RET01229&Action=Catalog&Type=Product&ID=82274)

### Custom Color Decals

[www.easyceramicdecals.com](http://www.easyceramicdecals.com) \$30 per 11x17 sheet of custom designed CMYK color decals

### Commercial Decals

<https://secure.harbon.com/cgi-bin/harbon/index.html>  
[www.artdecalcorp.com/index.htm](http://www.artdecalcorp.com/index.htm)  
[www.ebay.com](http://www.ebay.com)  
[www.fthstudio.com/](http://www.fthstudio.com/)  
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