



See our How To video at <http://youtu.be/cL6h8rKGgUM> or search for Milestone Decal Art in Youtube.

**Applying/ Decorating the Decal :**

1. Begin by removing the wax paper protecting the decal, if present.
2. The decals are water slide release, which means that the decal is printed on paper that is coated with a water release adhesive made of cornstarch. Thoroughly wet the decal in a bowl of warm water until it uncurls (about 30 sec but it will depend on the temperature of the water and the size of the decal). Do not let the decal sit for more than a minute or two in the water.
3. Place the wet decal still on the backing paper on top of the ware and let it sit for 3-5min. The decals should then release from the backing paper easily with no resistance. If the decal is not releasing easily, quickly re-wet and allow the decal to rest for a short while longer on your ware while the glue softens. Larger decals may need to rest longer in water.
4. When properly wetted the decal will slide straight from the backing paper and should not be flipped over. Gently position the decals as desired on the clean ware. Using a small squeegee (or rubber/silicone spatula) and a lint-free cloth, gently press and push the water from the center of the decal toward the edge. A good squeegee is the available from Mudtools.com. You should follow a clockwise motion around the piece starting with a gentle push and increasing the pressure by increments at the end of each rotation. Ideally, you will squeeze all water and any air bubbles from underneath the decal.
5. Once applied, you shouldn't be able to move the decal. Clean the surface with a damp, lint-free towel to remove any water marks and then a dry, lint-free towel to wipe it clean. If possible, let the decorated ware sit in a dry environment overnight or at least a couple of hours before firing.

**Firing**

- MAKE SURE THE KILN IS WELL VENTILATED UP TO 1000°F (535°C)
- THE DECALS SHOULD BE FIRED VERY SLOWLY BELOW 500°F (260°C)

**Digital controller kiln firing:**

1. We recommend starting with a slow cycle and increase the speed if the firings are good. Silkscreen decals tend to be less reactive and can be fired with the fast cycle with less experience.

Here are examples of a regular and a fast firing cycle used in-house.

REGULAR FIRING CYCLE	FAST FIRING CYCLE
- 50°F/h (10°C/h) up to 185°F (85°C) soak for 20 min - 150°F/h (65°C/h) up to 300°F (175°C) soak for 15 min - 250°F/h (120°C/h) up to 500°F (260°C) soak for 15 min - 600°F/h (315°C/h) up to 1000°F (535°C) soak for 10 min - last cycle depends on type of ware and decals	- 100°F/h (40°C/h) up to 185°F (85°C) soak for 30 min - 200°F/h (100°C/h) up to 600°F (315°C) soak for 15 min - 600°F/h (315°C/h) up to 1000°F (535°C) soak for 10 min - last cycle depends on type of ware and decals

2. The last segment will depend on the type of decal (digital, silkscreen) the type of ware (glass, porcelain, enamel) and color palette (magenta, cadmium, leaded, lead free)

DIGITAL CADMIUM ON CERAMIC/PORCELAIN	1000°F/h (535°C/h) up to 1350~1420°F (730~770°C) soak for 10 min
DIGITAL MAGENTA ON CERAMIC/PORCELAIN	1000°F/h (535°C/h) up to 1400~1480°F (760~810°C) soak for 15 min
DIGITAL DECAL ON FUSED GLASS	1240~1380°F (670~750°C)

METALLIC DECALS (ceramic or glass)	1000°F/h (535°C/h) up to 1250~1450°F (670~790°C) soak for 10 min
SILKSCREEN** ON CERAMIC/PORCELAIN	1000°F/h (535°C/h) up to 1450~1550°F (790~ 840°C) soak for 15 min
SILKSCREEN ON FUSED GLASS	1240°F (670°C)~ 1370°F (745°C)
ENAMEL***	1355°F (735°C) ~ 1420°F (770°C)

\* DIGITAL DECAL ON FUSED GLASS: The digital decals are not very opaque and will appear translucent on clear glass. They work best on white or very light colors and will lose strength on medium to darker glass. They will adhere to most glass from 600°F (315°C) up to 1420°F (770°C) but are best kept in a 1275°F (690°C) to 1380°F (750°C) range. At higher temp if the glass gets too soft, the ceramic toner particles will start spreading down into the glass and will decrease the opacity.

\*\* The majority of our stock decals are silkscreen decals. Including all the single color prints. The colorful multi-colored decals are digital prints.

\*\*\* ENAMEL: The enamel should be pre-fired to between 700°F (370°C) and 900°F (480°C) and returned in the kiln between 1355°F (735°C) and 1420°F (770°C) for a couple of minutes (depending on the type of metal and the size of the piece). The firing range can be modified to match your specific enamel.

**Cone firing:** On porcelain and ceramic fire at cone 016 or 017. If you have a slow setting on your kiln you can use it for the first part of the firing. (below 500°F /260°C)

#### FAQs :

1. Why are the decals tinted yellow/orange/green?  
*We use a tint in the covercoat or flux to help ensure proper coverage of the decals. Don't fret! The tint is in the finish coating and will NOT be visible after the decal has fired.*
2. After firing, the decals have pinholes and blowouts. What happened?  
*These holes come from water or air bubbles that have remained underneath the decal. With your next decal application, use warmer water and also slightly warm up the ware. (A warm ware to the touch will help soften the decal. You can soak it in a tub of hot water, place under an incandescent light or even a quick toast in a toaster oven. A note about heating: if your ware is too hot to hold then it will be too hot to receive the decal. Also, try to ensure that you use a rubber/ silicone tool to chase all the air and water out and then wipe clean and dry with a lint free cloth. You also may want to consider letting the decal air dry for several hours. A close inspection under a light after the drying period should reveal any air bubbles. Using a thin needle, pierce the bubbles and use a piece of paper towel moistened with hot water to reapply the area. If your ware or clay is very textured or undulating then it will likely be difficult to avoid pinholes and blowouts.*
3. Where can I find a small squeegee?  
*Some of our clients speak well of Flexible Rib squeegees made by Mudtools which sell for about \$7. We'd recommend the medium or firm flex.*
4. The decal wiped right off after firing? What happened?  
*This can sometimes happen if you neglect to remove the white paper backing or wax paper on top before applying and firing. This can also happen if you accidentally apply the decal upside down or underfire it.*

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