

⊕ Using Milestone Decals

Milestone decals are printed on water-release backing paper coated with an adhesive made from cornstarch. A layer of wax paper protects the decal. For best results, apply decals to pre-fired glass. We also recommend firing these decals on the surface, not between layers. (For supplemental video instructions, please visit [videos.bullseyeglass.com](https://www.bullseyeglass.com/videos).)



Materials, Tools, and Supplies

To apply the decals, you'll need the following:

- Glass with a smooth surface
- A lint-free towel
- A small rubber spatula or squeegee (our **Polymer Rib Squeegee 7082** works well)
- Scissors

Applying

Clean your glass before you begin with glass cleaner and a lint-free towel.

1. Remove the layer of wax paper.
2. Thoroughly wet the decal on its backing paper in a bowl of room-temperature water until it uncurls. This takes about 30 seconds, depending on the temperature of the water and the size of the decal. Do not let the decal sit in the water for more than a minute or two.
3. Remove the decal (still on its backing paper) from the water, and set it on top of the glass with the decal facing up. Let it sit for 1–2 minutes, at which point the decal should release from the backing paper with no resistance. If the decal is not releasing easily, re-wet the decal and allow it to rest a while longer on your glass while the glue softens. Larger decals may need more time in the 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 glass. Using a small squeegee or rubber/silicone spatula, gently press the water and any air bubbles from the center of the decal toward the edge. Starting with the gentle pressure, use a clockwise motion on the piece, increasing the pressure by increments at the end of each rotation until you squeeze all the water and air bubbles from underneath the decal.
5. Wick away any surface moisture with the lint-free cloth.
6. Once applied, you shouldn't be able to move the decal. If possible, let the applied decal sit in a dry environment overnight (or at least a couple hours) before firing.

Safety

The decals should be fired in a well-ventilated room, preferably one that vents to the outside.

Firing

- Make sure the kiln is ventilated up to 1000°F (535°C)
- The decal should be fired very slowly below 500°F (260°C)
- For best results, apply decals to pre-fired glass (see FAQ for more information)
- Slumping is an option in a subsequent firing

Below are suggested schedules for digital decals (four-color), metallic decals (platinum, gold, copper), and solid colors (black, blue, white) on Bullseye Glass. Your results may vary, depending on your kiln. You may want to do a few tests.

SOLID COLOR & METALLIC DECALS		
Rate	Temperature	Hold
80°F (44°C)	185°F (85°C)	:20
200°F (111°C)	600°F (316°C)	:15
600°F (333°C)	1370°F–1450°F (743°C–788°C)*	:10

Anneal according to the needs of the piece.

*Solid colors such as black, blue, and white mature towards the low end of the range, while metallic decals mature at the high end. Solid colors become slightly less opaque if fired at the high end. For decals that combine solid colors with metallic, we suggest firing to 1425° (774°C).

DIGITAL DECALS		
Rate	Temperature	Hold
80°F (44°C)	185°F (85°C)	:20
200°F (111°C)	600°F (316°C)	:15
600°F (333°C)	1275°F–1380°F (691°C–749°C)	:10

Anneal according to the needs of the piece.

Notes on Digital Decals: These decals are not very opaque and will appear translucent on clear glass. They work best on white or other light colors and will not show up well on medium to darker shades of glass. They will adhere to glass from 600°F to 1420°F, but are best kept in a 1275°F to 1380°F range as opacity decreases at higher temperatures.

GOALS FOR EACH SEGMENT

- Drying segment
- Slow burning of the organics in the decal
- Fusing with rapid heat to process soak

Ⓢ Using Milestone Decals (continued)



Bullseye Glass Videos—Milestone Fusible Decals

Frequently Asked Questions

1. Do I have to fire the glass before applying a decal?

At Bullseye Glass studios, we have had success with applying decals directly to the smooth areas of unfired, double-rolled sheet glass. Take care to squeeze out any water and air as directed. This approach works well when working on a single layer object, such as a 3mm slumped dish (two firings; the first to fuse the decal to the sheet, the 2nd firing to slump). When using decals on a 6mm thick piece, composed of two layers of glass, it makes sense to pre-fuse the blank, apply and fire the decal, then lastly slump the piece (3 firings).

2. Why are the decals tinted orange/green?

A tint is used to improve visibility while working with the decals and will not be visible after firing.

3. After firing, decals have pinholes and blowouts. What happened?

These holes come from water or air bubbles that have remained underneath the decal. Review your decal application methods. Be patient and thorough. Pre-firing your glass to make it smooth can be helpful, as it allows air and water to escape more easily.

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 under fire it.

5. My glass is hazy around the fired decal. What can I do?

Sift a layer of clear powder over the decal and the hazed area. Fire to 1425°F (774°C) for a glossy finish to mask the devitrification. This technique is most effective with solid color decals. Metallic and digital decals may become slightly dappled if covered with powder.

6. Do decals fire the same on various styles (colors) of glass?

We've noticed that Metallic decals fire shiny on transparent styles as well as Black and Opaline. Metallic decals fire to a semi-matte, antiqued finish on most Opalescent styles. The cornstarch layer tends to fire more cleanly on transparent styles as well as Black and Opaline.

These working notes are adapted from Milestone Decals for use with Bullseye Glass. For full instructions on using Milestone Decals with ceramic or other base materials, please see their instructions at their website: milestonedecalart.com/firinginstructions

You can also see our free video lesson—**Milestone Fusible Decals** at videos.bullseyeglass.com.